ELIOT QUARRY (SMP-23)
RECLAMATION PLAN AMENDMENT

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

VOLUME I: EXECUTIVE SUMMARY AND CHAPTERS 1—10

State Clearinghouse No. 2019060144



JANUARY | 2021

Lead Agency
Alameda County, Community Development

BENCHMARK RESOURCES

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Lead Agency
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224 West Winton Ave., Suite 111, Hayward, CA 94544

Prepared By:
Benchmark Resources
2515 East Bidwell Street, Folsom, CA 95630

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

RMC Pacific Materials, LLC. ("CEMEX") has applied to Alameda County (County) for an amendment to their approved reclamation plan ("approved reclamation plan") (Lone Star Industries, Inc. 1987), the proposed project under the California Environmental Quality Act (CEQA). The proposed project is a modification of the approved reclamation plan and a modification to Surface Mining Permit 23 (SMP-23) for a vested mining operation, at the location identified on Figure ES-1, "Regional Location." Except as specifically described below, the applicant proposes no change to any fundamental element of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, hours of operation).

The Eliot Quarry site was evaluated in the *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) (Alameda County 1980), which was certified by the County in 1981. That 1981 EIR contains information still relevant to the current CEQA review. The proposed project contains revisions to the project that were not analyzed in the LAVQAR EIR. The County has, therefore, determined that it will prepare a subsequent environmental impact report (SEIR). The SEIR will review and update some portions of the LAVQAR EIR because of project revisions, changed circumstances, and availability of new information that was not available in 1981. As a result, the relevant LAVQAR EIR sections will be reevaluated and expanded considering project revisions, new information, and changed circumstances, as required by CEQA. In addition, the SEIR would only replace and update portions of the LAVQAR EIR that pertain to the proposed project area. Other LAVQAR EIR analysis and mitigation for the larger LAVQAR Specific Plan area not owned by CEMEX are not addressed in this EIR and will therefore remain in place.

Pertinent mitigation measures to the project area from the LAVQAR EIR are provided in their relevant topical sections, as outlined in Table ES-1, "LAVQAR EIR Mitigation Measure Locations," below.

TABLE ES-1
LAVQAR EIR MITIGATION MEASURE LOCATIONS

Mitigation Topic	LAVQAR EIR Location	SEIR Location
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Air Quality	Page 41	Subsection 4.2.5.1 in Section 4.2, "Air Quality," and Subsection 4.5.5.1 in Section 4.5, "Greenhouse Gas Emissions"
Biological Resources	Page 40	Subsection 4.3.4.1 in Section 4.3, "Biological Resources"
Geology and Soils	Page 8	Subsection 4.4.5.1 in Section 4.1, "Geology and Soils"
Hydrology and Water Quality	Pages 32 through 35	Subsection 4.6.5.1 in Section 4.6, "Hydrology and Water Quality"
Land Use and Planning	Page 43	Subsection 4.7.5.1 in Section 4.7, "Land Use and Planning"
Noise	Page 49	Subsection 4.8.5.1 in Section 4.8, "Noise"

This Executive Summary provides an overview of the proposed project, describes alternatives to the proposed project, and presents a summary of the environmental impacts and related mitigation identified in the SEIR.

PUBLIC REVIEW

This SEIR is available for public review and comment during the 45-day period identified on the notice of availability/notice of completion (NOA/NOC) of an SEIR, which accompanies this document.

This SEIR and all supporting technical documents and reference documents are available for public review on the Alameda County website at:

http://nps.acgov.org/Eliot.page

The SEIR will not be available at any County office location due to closures relating to Covid-19. Hardcopies may be requested by e-mailing Bruce Jensen, Senior Planner, at bruce.jensen@acgov.org.

During the 45-day public comment period, written comments on the SEIR may be submitted to the Community Development Agency at the following address:

Attn.: Mr. Bruce Jensen, Senior Planner
Alameda County Community Development Agency
224 West Winton Avenue, Suite 111
Hayward, California 94544
Email: bruce.jensen@acgov.org

Oral comments on the SEIR are welcome and may be stated at a public meeting, which shall be held as indicated on the NOA/NOC.[1]

Following the public review and comment period, responses to all written and oral comments received on the environmental analysis in this Draft SIER will receive a response. The responses and any other revisions to the SEIR will be prepared as a response-to-comments document. The SEIR and its appendices, together with the response-to-comments document will constitute the Final SEIR for the proposed project.

OVERVIEW OF THE PROPOSED PROJECT

Site Location

The project site is situated between the cities of Pleasanton and Livermore, south of Interstate 580 and Stanley Boulevard in the Livermore-Amador Valley, north of Vineyard Avenue, and both east and west of Isabel Avenue (State Route 84 [SR 84]), as shown on Figure ES-1.

Project Objectives

The project purpose is to revise the approved reclamation plan to accommodate changed circumstances and to reflect regulatory changes. Since 1987, significant changes have occurred in both the regulatory setting that applies to the project site and physical conditions near the project site (e.g., new regulations related to biological resources, residential development in neighboring areas, widening of Isabel Avenue/State Route 84 [SR 84]), and sale of portions of the property.

[1] This is subject to change, based on circumstances and restrictions due to Covid-19, and may involve a virtual hearing via video conference (e.g. Zoom).



SOURCES: ESRI World Shaded Relief accessed Jan. 2020, ESRI World Topographic Map accessed Jan. 2020; ESRI World Streetmap, 2009; compiled by Benchmark Resources in 2020

Project Location
City Boundary
County Boundary
Major Highway
Major Road

BENCHMARK RESOURCES

N

0 2.5 5 10 Miles

Regional Location
ELIOT QUARRY SMP-23 SEIR
Figure ES-1

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The changed circumstances prompted County staff to recommend revising the approved reclamation plan to reflect the changed physical and regulatory conditions and to ensure that reclamation is feasible and carried out consistent with all controlling regulatory requirements. In addition, CEMEX would like to eliminate the two previously approved but not yet built concrete spillways because they are not necessary for the project and are not environmentally sensitive.

The reclamation plan amendment provides site-specific actions designed to meet the applicable statutory and regulatory requirements. The proposed project includes the following objectives:

1) Address the requirements of Condition 7 of County Resolution No. 12-20.
2) Realign and restore an approximately 5,800-foot reach of the Arroyo del Valle (ADV) resulting in an enhanced riparian corridor that flows south of, rather than through (as currently anticipated in SMP-23), Lake B.
3) Maximize the extraction of the remaining available on-site sand and gravel resources through the anticipated reclamation end date of 2056, including a change in the final bottom elevation of excavation in Lake B to 150 feet msl.

   Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate.
4) Reduce Vehicle Miles Traveled (VMT) and the related air emissions by retaining a local source of aggregate.
5) Carry out the objectives of the LAVQAR and Alameda County Flood Control and Water Conservation District, Zone 7 (hereafter referred to as "Zone 7") Agreement for implementation of the Chain of Lakes on the portions of land controlled by CEMEX.
6) Implement a public use pedestrian and bike trail on the southern perimeter of the CEMEX property.
7) Implement the proposed reclamation plan amendment to establish end uses of water management, open space, and nonprime agriculture in accordance with the California Surface Mining and Reclamation Act (SMARA) (Public Resources Code 2710, et seq.).

Project Features

As stated previously, CEMEX has applied to the County for an amendment to their approved reclamation plan (Lone Star Industries, Inc. 1987), the proposed project under CEQA. The project is a modification of an approved reclamation plan and a modification to SMP-23 for a vested mining operation. Except as outlined below, the applicant proposes no change to any fundamental elements of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, hours of operation).

The 1987 reclamation plan envisions mining Lakes A and B areas to create two large waterbodies for future operation and management by Zone 7. Lakes A and B are to be part of a larger "Chain of Lakes" that consist of a series of reclaimed gravel quarry pits converted into nine lakes (Lakes A through I), linked in a series, and used to store and convey seasonal and flood water and recharge groundwater. Under the approved 1987 reclamation plan, the natural channel of the ADV would be mined out and flow through Lakes A and B via tall concrete spillways at Vallecitos Road and Isabel Avenue and via a concrete and riprap apron at the downstream end of Lake B. The approved 1987 reclamation plan also includes an optional lake (Lake J) near the current processing plant site.

The applicant seeks to amend the approved reclamation plan to include changes that are more sensitive to the environment and surrounding community while fulfilling the intent of the *Specific*

Plan for the Livermore-Amador Valley Quarry Area Reclamation (LAVQAR) (Alameda County 1981). The proposed project serves to adjust reclamation boundaries and contours, enhance drainage and water conveyance facilities, incorporate a pedestrian and bike trail, and achieve current surface mining reclamation standards. The planned postmining end uses are water management, open space, and agriculture (nonprime).

Consistent with prior approvals, the project would develop Lakes A and B, which are the first two lakes in the Chain of Lakes pursuant to the LAVQAR. Upon reclamation, Lakes A and B, along with their appurtenant water conveyance facilities, would be dedicated to Zone 7 to store and convey surface water and manage the recharge of groundwater.

Unlike prior approvals, the ADV would remain separate from the Chain of Lakes. Lake A reclamation would include installation of a surface water diversion from the ADV to Lake A. No further mining would occur in Lake A. A water pipeline conduit would connect water from Lake A to both Lakes B and C. (Lake C is being developed on a neighboring property by another mining operator, Vulcan Materials Company, and is not within the project site.) A conduit would also connect Lake C to Lake B. Lake B would include an overflow outlet to allow water to flow back into the ADV when Lake B water levels are high.

To facilitate the southerly progression of mining within Lake B, the project includes realigning and restoring an approximately 5,800-linear-foot reach of the ADV. The proposed ADV realignment would result in an enhanced riparian corridor that flows around, rather than through Lake B (as currently anticipated under the approved reclamation plan for SMP-23). The ADV realignment was contemplated as a possibility in the LAVQAR and subject to environmental review in 1981.

Outside of Lakes A and B, reclamation treatment for other disturbed areas, including the excavation of a Lake J (not part of the Chain of Lakes), processing plant sites, and process water ponds, would involve backfilling and/or grading to return those areas to open space and/or agriculture. Lake J would be backfilled before final reclamation as part of ongoing mining and processing operations. Post-reclamation, the applicant would own the areas of the property used for open space and/or agriculture.

Required Approvals

As the local land use authority, Alameda County is the public agency with the greatest responsibility for approving the project as a whole and is therefore the lead agency for purposes of environmental review under CEQA. Other agencies may have permitting or approval authority over various aspects of the project. These agencies include the following:

Federal Agencies

- U.S. Army Corps of Engineers (CWA Section 404 permit)
- U.S. Fish and Wildlife Service (ESA Section 7 consultation; incidental take statement)
- U.S. (National) Marine Fisheries Service (ESA Section 7 consultation)

State Agencies

- California Department of Conservation, Division of Mine Reclamation (SMARA reclamation plan amendment review and review and release of financial assurance)
- California Department of Fish and Wildlife (streambed alteration agreement and possibly a California Endangered Species Act permit)

Regional and Local Agencies

- San Francisco Bay Regional Water Quality Control Board (Section 401 certification, waste discharge requirements, and state wetlands permit, as may be applicable)
- Zone 7 (Concurrence on the design of the diversion structure and pipelines)

DRAFT SEIR SCOPE AND ISSUES EVALUATED

Issues Evaluated and Issues Eliminated from Further Consideration

While CEQA does not require preparation of an Initial Study when the lead agency elects to prepare an EIR or SEIR (CEQA Guidelines Section 15060[d]), the County has prepared an Environmental Checklist Form / CEQA Initial Study to substantiate its scoping process in evaluating the potential significance of the project regarding the Appendix G criteria discussed above. The evaluation regarding the significance of those issues that are not discussed in detail in the SEIR is provided in the Initial Study (included as Appendix A-1, "Initial Study," of the SEIR) and discussed further in Chapter 1, "Introduction," of the SEIR.

As an initial step in the environmental review process, issues identified in the Environmental Checklist of Appendix G of the CEQA Guidelines were considered to determine whether the project would have the potential to result in significant impacts associated with each issue. The initial review determined that the project may result in potentially significant adverse impacts associated with the following Appendix G Environmental Checklist resource topics:

- Aesthetics
- Air Quality
- Biological Resources
- Greenhouse Gas Emissions
- Geology and Soils
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Mandatory Findings of Significance

The initial review determined that the project would not result in significant adverse impacts associated with the following resource topics and eliminated these issues from further consideration in the SEIR:

- Agricultural and Forestry Resources
- Cultural Resources
- Energy
- Hazards and Hazardous Materials
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Services Systems
- Wildfire

Alternatives

The CEQA Guidelines specify that an SEIR must describe a reasonable range of alternatives to the project, or to the location of the project, which could feasibly attain the basic project objectives (Guidelines Section 15126.6). The "no project" alternative, which considers what impacts would occur if conditions continue, must be considered (Guidelines Section 15126.6[e]), and the SEIR must also identify the environmentally superior alternative. If the "no project" alternative is the environmentally superior alternative, the SEIR must identify an environmentally superior alternative from among the other alternatives (Guidelines Section 15126.6[e][2]).

Summary of Alternatives

The alternatives evaluation considered several potential alternatives. Some were eliminated as they were determined to either not have the potential to feasibly achieve the basic project objectives and/or reduce significant project impacts. The following alternatives were selected and analyzed/compared to the project and are evaluated in the SEIR:

Alternative 1: No Project—Reclamation of Existing Conditions Alternative

Under Alternative 1, "No Project – Reclamation of Existing Conditions Alternative," the County would have to approve an alternative Reclamation Plan Amendment that would allow for the reclamation and closure of the Eliot site consistent with the requirements of SMARA and the Alameda County Surface Mining Ordinance (SMO). Under this alternative, mining would cease and the site's water bodies and slope would be reclaimed to meet the minimum requirements of SMARA and the SMO (e.g., ensuring stable slopes, no adverse impacts associated with the reclaimed water bodies at the site, and appropriate post-reclamation vegetation). The end use would remain water management, open space, and agriculture consistent with the underlying LAVQAR requirements.

Alternative 2: Prohibited Nighttime Reclamation Alternative

With Alternative 2, "Prohibited Nighttime Reclamation Alternative," all project-related operations including ADV realignment, construction of the Lake A diversion structure, berm construction, and grading for final reclamation to end use would only be permitted to take place during operating hours of 7:00 a.m. to 7:00 p.m. All reclamation activities would be prohibited between 7:00 p.m. and 7:00 a.m., except for the low-flow diversion pump, which must operate at all hours during the two-year construction period for the ADV realignment. Some nighttime lighting of project facilities would still be required for security and safety purposes under this alternative; however, lighting for the project between 7 p.m. and 7 a.m. would be avoided. Project-related traffic departing and arriving at the site between 7 p.m. and 7 a.m. would also be avoided. The current operational mining activities would not be subject to this restriction. With the exception of prohibited nighttime reclamation operations, this alternative would have the same impacts as the proposed projects with mitigation incorporated (see Mitigation Measure 4.1-1, "Daily Limitation of Construction Hours," in Section 4.1, "Aesthetics and Visual Resources") and would reclaim the site and realign the ADV similarly to the proposed project. This alternative would not affect the operating hours for mining and processing uses at the site.

Alternative 3: Revised ADV Construction Phasing Alternative

Alternative 3, "Revised ADV Construction Phasing Alternative," would alter the reclamation schedule of the realignment and restoration of an approximately 5,800-linear-foot reach of the ADV to flow around, rather than through, Lake B. The altered schedule would extend ADV realignment activities into 2024 or 2025, rather than 2022 or 2023 as currently anticipated under the proposed project. This would slightly delay the implementation of ADV realignment and restoration components of the project. However, delaying the implementation of the realignment until after reclamation activities in Lake A are complete would avoid concurrent reclamation activities of Lake A reclamation and ADV realignment and restoration activities. While this would reduce daily NOx emissions, NOx emissions associated with Alternative 3 would still be significant and unavoidable.

Alternative 4: Reduced Capacity of Lake A Diversion Structure Alternative

Under Alternative 4, "Reduced Capacity of Lake A Diversion Structure Alternative," the diversion structure capacity would be reduced to allow diversion of only the first 200 cfs (as compared to the

500 cfs as required by the existing reclamation plan) of water from the ADV into Lake A. This would allow for significantly more water to be retained in the ADV, which would be beneficial to biological resources in the restored ADV. While the proposed project has a low flow channel to ensure that at least 9 cfs are retained, Alternative 4 would allow for an additional 300 cfs of water during higher water events to be retained in the ADV than envisioned in the proposed project. The current version of the LAVQAR Specific Plan, the approved reclamation plan, and contract between the Applicant and Zone 7 call for a diversion structure of 500 cfs. As a result, consistency of Alternative 4 with Project Objective 6 would require contractual changes to the agreement between Zone 7, the Applicant and the Community Development Agency of Alameda County. Therefore, it is unclear whether Alternative 4 would be able to achieve Objective 6.

Environmentally Superior Alternative

CEQA §15126.6(e)(2) requires that an EIR identify the environmentally superior alternative. CEQA also requires that if the environmentally superior alternative is the No Project Alternative, the EIR must also identify an environmentally superior alternative from the remaining alternatives. In consideration of the alternatives evaluation presented in Chapter 6, the Alternative 1: No Project—Reclamation of Existing Conditions Alternative would result in fewer impacts as compared to the project and the other alternatives considered. As such, the County must identify the environmentally superior alternative from the remaining alternatives.

Based on the analysis above and excluding the No Project Alternative Reclamation of Existing Conditions Alternative, the County concludes that Alternative 3, Revised ADV Construction Phasing Alternative, is the environmentally superior alternative due to reduced impacts to daily NOx emissions and daily noise impacts.

The alternatives analysis and conclusions reached regarding the environmentally superior alternative do not evaluate whether Alternative 4 is a viable option for the Applicant. Nonetheless, for the purposes of the County's CEQA review of the proposed project, Alternative 3 is considered the environmentally superior alternative for the reasons discussed above.

Summary of Impacts and Mitigation Measures

Table ES-2, "Summary of Project Impacts and Mitigation Measures," provides a summary of the project impacts identified and evaluated in the SEIR, presents mitigation measures identified in the SEIR, and lists the impact significance both without and with mitigation applied. As shown in the table, several impacts are found to be less than significant and do not require mitigation. Only two impacts, Impact 4.2-1 and 4.2-2a relating to conflict with the Clean Air Plan and NO_x emissions, are found to be significant and unavoidable. All remaining impacts would be significant or potentially significant prior to the implementation of mitigation measures but would be reduced to less than significant with mitigation applied. The mitigation measures (e.g., Mitigation Measure 4.1-1, "Daily Limitation of Construction Hours") do not apply to the existing, vested mine and processing plant operations which are not part of this project.

The following impacts were found to be significant and unavoidable, as feasible mitigation is either unavailable or would not effectively reduce the severity of the impact to less than significant:

- Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (significant and unavoidable);

- Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_X (significant and unavoidable);

In addition to evaluating project-specific impacts, an SEIR must also evaluate cumulative impacts. Cumulative impacts are those that would result from project impacts when combined with impacts of other past, present, or reasonably foreseeable projects. The analysis also determined that the project significant and unavoidable impacts would result in the following significant cumulative impacts. (see Chapter 5, "Cumulative Impacts").

- Impact 7-2a: Impacts that are Individually Limited but Cumulatively Considerable: Conflict with Air Quality Plan (significant and unavoidable); and
- Impact 7-2b: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutant NOx (significant and unavoidable).

TABLE ES-2
SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
AESTHETICS/VISUAL RESOURCES			
Impact 4.1-1: Substantial Degradation of the Approved Visual Character or Quality of the Site and Its Surroundings	LS	None required.	LS
Impact 4.1-2: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area	PS	**Mitigation Measure 4.1-1:** Daily Limitation of Construction Hours. All construction activities shall be limited to the hours of 7 am – 7 pm Monday through Friday, and 8 am – 5 pm on Saturday and Sunday.[2]	LS
AIR QUALITY			
Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	S	**Mitigation Measure 4.2-1**: Off-road Equipment Plan. The Applicant shall implement the following to reduce project NOx emissions: a) Develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in Lake A reclamation and the Lake B realignment of the Arroyo del Valle would achieve a fleet-average 20 percent NOx reduction compared to the most recent ARB fleet average for the duration of these reclamation activities. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as such become available. The Alameda County Community Development Agency would be responsible for ensuring compliance.	SU
Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_X	S	**Implement Mitigation Measure 4.2-1** (see Impact 4.2-1).	SU

[2] Applies to reclamation activities; does not apply to vested mining and processing activities.

LS = Less than Significant; **PS** = Potentially Significant; **S** = Significant; **SU** = Significant and Unavoidable

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impact 4.2-2b: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$	LS	None required.	LS
Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LS	None required.	LS
Impact 4.2-4: Result in Other Emissions Adversely Affecting a Substantial Number of People	LS	None required.	LS
BIOLOGICAL RESOURCES			
Impact 4.3-1a: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Lake A Reclamation and Diversion Structure Construction	PS	**Mitigation Measure 4.3-1a:** Obtain Regulatory Entitlements and Authorizations. The Applicant shall obtain regulatory entitlements and authorizations from the US Army Corps of Engineers ("USACE"), U.S. Fish and Wildlife Service ("USFWS"), National Marine Fisheries Service ("NMFS"), California Regional Water Quality Control Board ("RWQCB"), and California Department of Fish and Wildlife ("CDFW"). **Mitigation Measure 4.3-1b:** Special Status Amphibian and Reptile Species To avoid and minimize impacts to special status amphibian and reptile species, including western pond turtle, Alameda whipsnake (striped racer), California red-legged frog, California tiger salamander, coast horned lizard, San Joaquin whipsnake, and western spadefoot, the following shall apply: 1. No more than 48 hours prior to the commencement of reclamation-related ground disturbing activity (i.e. clearing, grubbing, or grading) associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or other areas, a qualified biologist shall conduct a pre-construction survey of suitable habitat in the project reclamation area. The survey shall include aquatic habitat and adjacent uplands surrounding aquatic habitat within the project reclamation area. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. 3. Construction personnel shall receive worker environmental awareness training prior to the commencement of ground disturbing activity. This training instructs workers how to recognize special status amphibian and reptiles species and their habitat. 4. If a special status amphibian or reptile species is encountered during construction, then all construction shall cease until the animal has moved out of the construction area on its own or has been relocated by a qualified biologist in coordination with the California Department of Fish and Wildlife (CDFW). If the animal is injured or trapped, a qualified biologist shall move the animal out of the construction area and into a suitable habitat area. CDFW shall be notified within 24-hours that a special status amphibian or reptile species was encountered. 5. Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to amphibian and reptile species. If there is a conflict between the terms of mitigation items 1 through 4 above and the Agreement, then the Applicant shall abide by the terms of the Agreement. **Mitigation Measure 4.3-1c:** Nesting Raptors To avoid and minimize impacts to nesting raptors, including bald eagle, golden eagle, American peregrine falcon, prairie falcon, white-tailed kite, Cooper's hawk, ferruginous hawk, and northern harrier, the following shall apply: 1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable nesting habitat during the nesting season (e.g., March 1-Sept. 15), then a qualified biologist shall conduct a pre-construction survey for raptor nests. The survey shall cover all potential tree and ground nesting habitat on-site and off-site up to a distance of 500 feet from the construction activity. The survey shall occur within 30 days of the date that reclamation/construction	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		would encroach within 500 feet of suitable habitat. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. 2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no active nests are found during the survey, then no further mitigation would be required. 3. If any active nests are found, then the Planning Department and the California Department of Fish and Wildlife (CDFW) shall be contacted to determine appropriate avoidance and minimization measures. The avoidance and minimization measures shall be implemented prior to the commencement of construction within 500 feet of an identified nest. 4. Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to nesting raptors. If there is a conflict between the terms of mitigation items 1, 2, or 3 above and the Agreement, then the Applicant shall abide by the terms of the Agreement. **Mitigation Measure 4.3-1d:** Nesting Birds To avoid and minimize impacts to migratory nesting birds, the following shall apply: 1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of nesting habitat between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for active migratory nests within 14 days prior to the commencement of ground disturbing activity. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. 2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no active nests are found during the survey, then no further mitigation would be required. 3. If active nests are found in the survey area, then a non-disturbance buffer	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		of a size determined by a qualified biologist shall be established and maintained around the nest to prevent nest failure. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged, or until September 1, unless otherwise approved by the Planning Department and CDFW. **Mitigation Measure 4.3-1e**: Loggerhead Shrike To avoid and minimize potential impacts to loggerhead shrike, the following shall apply: 1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 200 feet of suitable nesting habitat during the nesting season (February 15-August 31), then a qualified biologist shall conduct a pre-construction survey for loggerhead shrike nests in all suitable shrubs and trees that are within 200 feet from the construction activities. The survey shall occur within 3 days prior to the commencement of ground disturbing activities. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. 2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no active nests are found during the survey, then no further mitigation would be required. 3. If nesting individuals are found, then an exclusion zone shall be established within 200 feet of the active nest(s) until a qualified biologist determines that the young of the year are no longer reliant upon the nest. 4. Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with the California Department of Fish and Wildlife for project reclamation activities, as applicable to the loggerhead shrike. If there is a conflict between the terms of mitigation items 1, 2, or 3 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		Mitigation Measure 4.3-1f: Tricolored Blackbird To avoid and minimize potential impacts to tricolored blackbird, the following shall apply: 1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable nesting habitat during the nesting season (March 1-July 31), then a qualified biologist shall conduct a pre-construction survey for nesting tricolored blackbirds in suitable habitats that are within 300 feet from the project activities. The survey shall occur within 30 days prior to the commencement of ground disturbing activities. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. 2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no tricolored blackbirds are found during the survey, then no further mitigation would be required. 3. If an active tricolored blackbird colony is found within 300 feet of reclamation activity, the applicant may avoid impacts to tricolored blackbird by establishing a 300-foot temporary setback, with fencing that prevents any project activity within 300 feet of the colony. A qualified biologist shall verify that setbacks and fencing are adequate and will determine when the colonies are no longer dependent on the nesting habitat (i.e. nestling have fledged and are no longer using habitat). The breeding season typically ends in July. 4. Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to tricolored blackbird. If there is a conflict between the terms of mitigation items 1, 2, or 3 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		Mitigation Measure 4.3-1g: Burrowing Owl To avoid and minimize potential impacts to western burrowing owl, the following shall apply: 1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable owl burrow habitat, then a qualified biologist shall conduct a pre-construction survey for burrowing owl. The survey shall occur within 30 days prior to the date that reclamation activities will encroach within 500 feet of suitable habitat. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Surveys shall be conducted in accordance with the following: a. A survey for burrows and owls shall be conducted by walking through suitable habitat over the entire reclamation construction site and in areas within 500 feet of the project disturbance area. b. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters, and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. Surveyors should maintain a minimum distance of 50 meters from any owls or occupied burrows. c. If no occupied burrows or burrowing owls are found in the survey area, then the biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department and no further mitigation is necessary. d. If occupied burrows or burrowing owls are found, then a complete burrowing owl survey is required. This consists of a minimum of four site visits conducted on four separate days, which must also be consistent with the Survey Method, Weather Conditions, and Time of Day sections of Appendix D of the California Department of Fish and Wildlife (CDFW) "Staff Report on Burrowing Owl Mitigation" (March 2012). The applicant shall then submit a survey report to the Planning Department which is consistent with the CDFW 2012 Report. e. If occupied burrows or burrowing owls are found during the	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		complete burrowing owl survey, then the applicant shall contact the Planning Department and consult with CDFW prior to construction and will be required to submit a Burrowing Owl Mitigation Plan (subject to the approval of the Planning Department and CDFW). This plan must document all proposed measures, including avoidance, minimization, exclusion, relocation, or other measures, and include a plan to monitor mitigation success. The CDFW "Staff Report on Burrowing Owl Mitigation" (March 2012) should be used in the development of the mitigation plan. 2. Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to burrowing owl. If there is a conflict between the terms of mitigation item 1 above and the Agreement, then the Applicant shall abide by the terms of the Agreement. **Mitigation Measure 4.3-1h:** Special Status Bats To avoid and minimize potential impacts to special status bats, including hoary bat, pallid bat, and Yuma myotis, the following shall apply: 1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable bat habitat during the winter hibernaculum season (e.g., November 1 through March 31), then a qualified biologist shall conduct a pre-construction survey within 300 feet of the reclamation project footprint on the CEMEX property to determine if a potential winter hibernaculum is present, and to identify and map potential hibernaculum sites. 2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no winter hibernaculum sites are found during the survey, then no further mitigation would be required. 3. If potential hibernaculum sites are found, then the applicant shall avoid all areas within a 300-foot buffer around the potential hibernaculum sites until bats have vacated the hibernaculum. Winter hibernaculum habitat shall be considered fully avoided if reclamation-related activities do not impinge on a 300-foot buffer established by the qualified biologist around	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		an existing or potential winter hibernaculum site. The qualified biologist will determine if non-maternity and nonhibernaculum day and night roosts are present on the project site. If necessary, a qualified biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, then reclamation activities shall not occur until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to CDFW.	
Impact 4.3-1b: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: ADV Realignment	PS	**Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, and 4.3-1h** (see Impact 4.3-1a).	LS
Impact 4.3-1c: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Berms and Outflow Between ADV and Lake B	PS	**Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, and 4.3-1h** (see Impact 4.3-1a).	LS
Impact 4.3-1d: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Northern Reclamation Area	LS	None required.	LS
Impact 4.3-2a: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Lake A Reclamation and Diversion Structure Construction	PS	**Implement Mitigation Measure 4.3-1a** (see Impact 4.3-1a). **Mitigation Measure 4.3-2a:** Special Status Plants To avoid and minimize potential impacts to special status plants, including Congdon's tarplant, Mt. Diablo buckwheat, and Mt. Diablo fairy-lantern, the following shall apply: 1. Prior to the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) in areas identified as having potential special status plant species in the project biological resources assessment report, a qualified botanist or biologist shall conduct a pre-construction survey for special status rare plant occurrences. The survey shall occur within 30 days prior to commencement of ground-disturbing activity. 2. If rare plant occurrences that are listed under the ESA or CESA are found and avoidance is not feasible, then the applicant shall notify the California Department of Fish and Wildlife (CDFW) and/or (as applicable) the U.S.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		Fish and Wildlife Service (USFWS) for any federally-listed species and comply with any permit or mitigation requirements stipulated by those agencies. 3. Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to rare plant occurrences. If there is a conflict between the terms of mitigation items 1 and 2 above and the Agreement, then the Applicant shall abide by the terms of the Agreement. **Mitigation Measure 4.3-2b**: Riparian Habitat Within one year of the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or other areas identified as riparian habitat in the project biological resources assessment report, the applicant shall mitigate for any permanent riparian impacts at a minimum 1:1 ratio. The implementation of mitigation for the loss of riparian habitat may be addressed separately for each phase of reclamation (e.g., Lake A diversion structure or realigned Arroyo del Valle). Exact acreage per phase shall be determined in consultation with CDFW. Mitigation shall be accomplished by complying with the following: 1. Enter into and comply with the mitigation requirements and conditions of a Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW. 2. If the Agreement results in less than a 1:1 mitigation ratio for loss of riparian habitat, then the applicant shall demonstrate that the riparian habitat which went unmitigated/uncompensated as a result of permitting has been mitigated through other means. Acceptable methods include purchase of credits from a mitigation bank or creation/preservation of on-site or off-site riparian habitats through the establishment of a permanent conservation easement, subject to the approval of the Planning Department.	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impact 4.3-2b: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: ADV Realignment	PS	**Implement Mitigation Measures 4.3-1a, 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-2a, and 4.3-2b** (see Impacts 4.3-1a and 4.3-2a)**.**	LS
Impact 4.3-2c: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Berms and Outflow Between ADV and Lake B	PS	**Implement Mitigation Measures 4.3-1a, 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-2a, and 4.3-2b** (see Impacts 4.3-1a and 4.3-2a)**.**	LS
Impact 4.3-2d: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Northern Reclamation Area	LS	None required.	LS
Impact 4.3-3a: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Lake A Reclamation and Diversion Structure Construction	PS	**Mitigation Measure 4.3-3:** 1:1 Wetland Compensation Ratio Prior to the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or in other areas identified as containing wetlands in the project aquatic resource delineation report, the applicant shall mitigate for direct and indirect wetland impacts at a 1:1 ratio. The implementation of mitigation for the loss of wetlands may be addressed separately for each phase of reclamation (e.g., Lake A diversion structure or realigned Arroyo del Valle). Exact acreage per phase shall be determined prior to initiating that phase based on the verification of the preliminary jurisdictional determination by the USACE. Mitigation shall be accomplished by complying with the following: 1. Obtain and comply with the mitigation requirements and conditions of a Section 404 Permit(s) and Section 401 Water Quality Certification(s) for reclamation activities, as applicable. 2. If regulatory permitting processes result in less than a 1:1 compensation ratio for loss of wetlands, then the applicant shall demonstrate that the wetlands which went unmitigated/uncompensated as a result of permitting have been mitigated through other means. Acceptable methods include purchase of credits from a mitigation bank or creation/preservation of on-site or off-site wetlands through the establishment of a permanent conservation easement, subject to the approval of the Planning Department.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impact 4.3-3b: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: ADV Realignment and the Construction of Berms and Overflow Outlet Between ADV and Lake B	LS	None required.	LS
Impact 4.3-3c: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Northern Reclamation Ares	LS	None required.	LS
Impact 4.3-4: The Project Could Interfere Substantially with The Movement Of Any Native Resident Or Migratory Fish Or Wildlife Species Or With Established Native Resident Or Migratory Wildlife Corridors, Or Impede The Use Of Native Wildlife Nursery Sites	PS	**Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, and 4.3-1d** (see Impact 4.3-1a).	LS
Impact 4.3-5: The Project Could Conflict with Local Policies or Ordinances Protecting Biological Resources	LS	None required.	LS
GEOLOGY AND SOILS			
Impact 4.4-1: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Rupture of a Known Fault	LS	None required.	LS
Impact 4.4-2: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Strong Seismic Ground Shaking	LS	None required.	LS
Impact 4.4-3: Exposure of People or Structures to Seismic-Related Ground Failure, Including Liquefaction, or Landslides	LS	None required.	LS
Impact 4.4-4: Result in Substantial Soil Erosion or the Loss of Topsoil	PS	**Mitigation Measure 4.4-1:** Erosion Control Plan. The Applicant, and its contractors shall adhere to the Erosion Control Plan for the ADV realignment prepared by Brown and Caldwell in 2019, which shall be incorporated by reference into the conditions of approval for the project.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		Mitigation Measure 4.4-2: Berm and Embankment Grading. The Applicant shall implement the following measures to control erosion related to berm and embankment grading before ground disturbing activities: a) All earthwork operations shall be observed, and all fills tested for recommended compaction and moisture content by a representative from a County-approved geotechnical specialist. b) Prior to commencing grading, a pre-construction conference with representatives from the Permittee, its grading contractor, if applicable, and County-approved geotechnical specialist shall be held at the site. Site preparation, soil handling and/or the grading plans shall be discussed at the pre-construction conference. c) Prior to commencing grading within embankment and slope areas, surface vegetation shall be removed by stripping to a sufficient depth (2 to 4 inches) to remove roots and organic-rich topsoil. Material generated during stripping that is not suitable for use as embankment or reclamation slope fill shall be stockpiled for future use as topsoil. Any existing trees and associated root systems shall be removed. Roots larger than 1 inch in diameter shall be completely removed. Smaller roots may be left in-place as conditions warrant and at the discretion of on-site field monitor. d) To increase stability and to provide a stable foundation for the berm embankments, the full length of the embankments shall be provided with embankment-width keyways. The keyways shall have a minimum embedment depth of 3 feet into firm, competent, undisturbed soil. The actual depth of the keyway shall be evaluated during construction by a County-approved geotechnical specialist. Keyway back-slopes shall be no flatter than 1 horizontal (H):1 vertical (V). e) Where fill is placed on sloping ground steeper than 5H:1V, the fill shall be benched into the adjacent native materials as the fill is placed. Benches shall roughly parallel slope contours and extend at least 2 feet into competent material. In addition, a keyway shall be cut into the slope at the base of the fill. Keyways shall be at least 15 feet wide and extend at least 2 feet into competent material. Bench and keyway criteria may need revision during construction based on the actual materials encountered	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		and grading performed in the field. f) Pipe penetrations through the planned berms and embankments shall be avoided, if feasible. If pipe penetrations are unavoidable, the Permittee shall provide concrete cut-off collars at the penetration point to reduce potential for seepage. Reinforced concrete cut-off collars shall completely encircle the pipe and should be sized such that they are 12 to 18 inches larger than the nominal outside diameter of the pipe. Thickness shall be at least 6 inches. Water-tight filler shall be used between collars and pipes. g) Bottoms of keyways and areas to receive fill shall be scarified 12 inches, uniformly moisture conditioned at or above optimum moisture content and compacted to at least 90% relative compaction. Scarification and recompaction operations shall be performed in the presence of a County-approved geotechnical specialist to evaluate performance of the subgrade under compaction equipment loading. h) Engineered fill consisting of onsite or approved import materials shall be compacted in horizontal lifts not exceeding 8 inches (loose thickness) and brought to final subgrade elevations. Each lift shall be moisture-conditioned at or above optimum and compacted to at least 90% relative compaction at least 2% above optimum moisture content. Fills for the eastern Lake B fill embankments and Pond C/D separation shall be compacted to at least 95% relative compaction above optimum moisture content. i) Fill slopes shall be built such that soils are uniformly compacted to at least 90% relative compaction at least 2% above optimum moisture content to the finished face of the completed slope. Fill slopes for the eastern Lake B fill embankments and Pond C/D separation shall be compacted to at least 95% relative compaction above optimum moisture content. The Alameda County Community Development Agency shall be responsible for ensuring compliance. **Mitigation Measure 4.4-3:** Embankment Fill Slope Geometry. Fill slopes for the proposed embankment between Silt Pond C and Silt Pond D, the embankment for overburden and silt storage at the east end of Lake B, and the "shark's fin" embankment of Lake B should be constructed at an inclination of 2:1 or flatter. Mid-height bench(es) should be considered for fill slopes	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		exceeding 50 feet in height to provide access for slope maintenance. **Mitigation Measure 4.4-4:** Cut Slope of Lake B Adjacent to Realigned ADV. The Permittee, or its contractor, shall implement one of the following two configurations for the cut slope of Lake B below and adjacent to the realigned ADV: 1. 2 ¼:1 slope 2. 40-foot horizontal bench at elevation 260 feet msl within a 2:1 slope.	
Impact 4.4-5: Be Located on a Geologic Unit or Soil That Is Unstable, or That Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse	LS	None required.	LS
Impact 4.4-6: Be Located on Expansive Soil, as Defined in Table 18-1-B of the Uniform Building Code (1994), Creating Substantial Risks to Life or Property	LS	None required.	LS
Impact 4.4-7: Directly or indirectly destroy a unique paleontological resource or site or unique geological feature	LS	None required.	LS
GREENHOUSE GAS EMISSIONS			
Impact 4.5-1: Greenhouse Gas emissions generated by reclamation activities could have a significant impact on global climate change.	PS	**Mitigation Measure 4.5-1a:** Idling Times. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all project access points. [Measure applies to idling times for all equipment]. **Mitigation Measure 4.5-1b:** Idling Times for Diesel-powered Equipment. Minimize the idling time of diesel-powered construction equipment to two minutes. [Measure applies to idling times for diesel-powered equipment only]. **Mitigation Measure 4.5-1c:** Equipment Maintenance. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		Mitigation Measure 4.5-1d: Alternative Fuel Plan. Prior to construction, develop a plan demonstrating that alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment will represent at least 15 percent of the construction fleet if commercially available. **Mitigation Measure 4.5-1e:** Local Building Materials. Use at least 10 percent local building materials in construction (e.g., construction aggregates, concrete pipe). **Mitigation Measure 4.5-1f:** Recycle or Reuse Construction and Demolition Materials**.** Recycle or reuse at least 50 percent of construction waste or demolition materials (e.g., during decommissioning and removal of processing plant facilities). **Mitigation Measure 4.5-1g:** On-site Material Hauling. Perform on-site material hauling with trucks equipped with on-road engines (if less emissive of GHG emissions than off-road engines), if commercially available. **Mitigation Measure 4.5-1h:** Generator Alternative Fuel. Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power, as feasible for each construction site	
Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations.	LS	None Required	LS
HYDROLOGY AND WATER QUALITY			
Impact 4.6-1a: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Lake A Reclamation and Diversion Structure Construction	PS	**Mitigation Measure 4.6-1:** Development of SWPPP. The Permittee, and its contractors, shall conduct activities consistent with the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, which would require development of a stormwater pollution prevention plan (SWPPP) for the reclamation construction activities. The SWPPP and Notice of Intent to comply with the General Permit shall be prepared and filed with the RWQCB before commencement of construction activities. **Implement Mitigation Measure 4.4-1** (see Impact 4.4-4).	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impact 4.6-1b: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding the ADV Realignment	PS	**Implement Mitigation Measure 4.6-1** (see Impact 4.6-1a). **Implement Mitigation Measure 4.4-1** (see Impact 4.4-4).	LS
Impact 4.6-1c: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality at the Northern Reclamation Area	LS	None required.	LS
Impact 4.6-1d: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Reclamation of Lake B	PS	**Mitigation Measure 4.6-2:** Implementation of Adaptive Management Program for Iron. The Permittee shall implement the Adaptive Management Program for Iron (see Appendix F-6 to the SEIR), which will be incorporated into conditions of approval. **Mitigation Measure 4.6-3:** Install Lake B Groundwater Monitoring Wells. The Permittee shall install two or three groundwater monitoring wells on Lake B perimeter after consultation on locations with Zone 7 to inform MM 4.6-3 actions.	LS
Impact 4.6-2a: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding Lake A Reclamation and Diversion Structure Construction	LS	None required.	LS
Impact 4.6-2b: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding the ADV Realignment	LS	None required.	LS
Impact 4.6-2c: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge at the Northern Reclamation Area	LS	None required.	LS
Impact 4.6-2d: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding Reclamation of Lake B	LS	None required.	LS
Impact 4.6-3a: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or	LS	None required.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impede or Redirect Flood Flows Regarding Lake A Reclamation and Diversion Structure Construction, Construction of the Infiltration Gallery, and Construction of Conduit from Lake A to Lake C with a Turnout to Lake B			
Impact 4.6-3b: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding ADV Realignment	PS	**Implement Mitigation Measure 4.6-1** (see Impact 4.6-1a).	LS
Impact 4.6-3c: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding the Northern Reclamation Area	PS	**Implement Mitigation Measure 4.6-1** (see Impact 4.6-1a).	LS
Impact 4.6-3d: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding Reclamation of Lake B	PS	**Mitigation Measure 4.6-4:** Conveyance to Avoid Lake B Silt Storage Area. The Permittee, or its contractor, shall implement one of the following two water conveyance options from the end of Lake A to Lake B: 1. Install a high-density polyethylene (HDPE) pipe, connected to the Lake B pipeline turnout, that will be capable of conveying the flow from the end of the Lake A to Lake B pipeline around the silt storage area located in the eastern end of Lake B. 2. Compact the backfill surface of the silt storage facility in the eastern end of Lake B and construct a lined channel across the top of the Lake B fill that will be capable of conveying the flow from the end of Lake A to Lake B pipeline around the silt storage area. This channel shall be lined with gravel or cobbles to minimize the potential for erosion or sediment transport.	LS
Impact 4.6-4a: Release of Pollutants In Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding Lake A Reclamation and Diversion Structure Construction, Construction of the Infiltration Gallery, and Construction of Conduit from Lake A to Lake C with a Turnout to Lake B	LS	None required.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impact 4.6-4b: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding the ADV Realignment	LS	None required.	LS
Impact 4.6-4c: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation at the Northern Reclamation Area	LS	None required.	LS
Impact 4.6-4d: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding Reclamation of Lake B	LS	None required.	LS
Impact 4.6-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	PS	**Implement Mitigation Measure 4.6-1** (see Impact 4.6-1a).	LS
LAND USE AND PLANNING			
Impact 4.7-1: Physically Divide an Established Community	LS	None required.	LS
Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations	LS	None required.	LS
NOISE			
Impact 4.8-1: Construction Noise Impacts Relative to Locally Adopted Noise Standards	PS	**Implement Mitigation Measure 4.1-1** (see Impact 4.1-2).	LS
Impact 4.8-2: Construction Noise Impacts Relative to Existing Ambient Conditions	PS	**Implement Mitigation Measure 4.1-1** (see Impact 4.1-2). **Mitigation Measure 4.8-1a:** Notice of Activities. All residences within 500 feet of the conduit and pipeline installation components of the proposed project should be provided notice of the pipeline installation schedule and informed that short-term periods of elevated daytime ambient noise levels could occur during that period. **Mitigation Measure 4.8-1b:** Mufflers. All mobile equipment shall be fitted with mufflers consistent with manufacturers recommendations & shall be well maintained.	LS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
Impact 4.8-3: Construction Vibration Impacts Relative to Existing Ambient Conditions	LS	None required.	LS
OTHER CEQA TOPICS			
Impact 7-1: Substantially Degrade the Quality of the Environment, Reduce Habitat of a Fish or Wildlife Species, Cause a Fish or Wildlife Population to Drop Below Self-Sustaining Levels, Threaten to Eliminate a Plant or Animal Community, Substantially Reduce the Number or Restrict the Range of a Rare or Endangered Plant or Animal or Eliminate Important Examples of the Major Periods of California History or Prehistory	PS	**Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, and 4.3-1h** (see Impact 4.3-1a), **4.3-2a**, **4.3-2b** (see Impact 4.3-2a), **4.3-3** (see Impact 4.3-3a).	LS
Impact 7-2a: Impacts that are Individually Limited but Cumulatively Considerable: Conflict with Air Quality Plan	S	**Implement Mitigation Measure 4.2-1** (see Impact 4.2-1**).**	SU
Impact 7-2b: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutants ROG, CO, SO_x, PM_{10}, and $PM_{2.5}$	LS	None required.	LS
Impact 7-2c: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutant NOx	S	**Implement Mitigation Measure 4.2-1** (see Impact 4.2-1).	SU
Impact 7-3: Environmental Effects which will Cause Substantial Adverse Effects on Human Beings	PS	**Implement Mitigation Measures 4.1-1, 4.2-1** (see Impact 4.2-1), **4.4-1, 4.4-2, 4.4-3, 4.4-4** (see Impact 4.4-1)**, 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, 4.5-1e, 4.5-1f, 4.5-1g, 4.5-1h** (see Impact 4.5-1), **4.6-1** (see Impact 4.6-1a)**, 4.6-2** (see Impact 4.6-1d)**, 4.6-3** (see Impact 4.6-3d), **4.8-1a, and 4.8-1b** (see Impact 4.8-2).	LS

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1—INTRODUCTION

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This draft subsequent environmental impact report (SEIR) has been prepared by Alameda County (County), the lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], Section 21000 et seq.; California Code of Regulations [CCR] Title 14 Section 15000 et seq. [CEQA Guidelines]) pursuant to 14 CCR section 15162, to evaluate the potentially significant environmental effects associated with an amendment to RMC Pacific Materials, LLC's ("CEMEX's" or "the applicant's") approved 1987 reclamation plan for the Eliot Quarry (the "approved reclamation plan") (Lone Star Industries, Inc. 1986), which is the proposed project. Under CEQA, the County must identify and consider the potentially significant environmental effects of the actions proposed before making a final decision to approve the proposed project. This SEIR will be used in the planning and decision-making process by the lead agency (the County) and other responsible and trustee agencies.

This introductory chapter provides a background and summary of the proposed project; an overview of the environmental review process required under CEQA; agency roles and responsibilities; and the organization used in this SEIR. A detailed description of the proposed project that is the subject of this SEIR can be found in Chapter 2, "Project Description."

1.1 PURPOSE OF A SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

An EIR is an informational document that informs public agency decision makers and the public of significant environmental effects that could occur as a result of implementing a proposed project. EIRs also provide mitigation measures to reduce those environmental effects and an evaluation of alternatives to the proposed project. The Eliot Quarry site was evaluated in the *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) (Alameda County 1980), which was certified by the County in 1981. The County has determined that it will prepare an SEIR, as provided for in CEQA Guidelines Section 15162, which states:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or ND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or ND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or;

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the ND was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or ND;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

(b) If changes to a project or its circumstances occur, or new information becomes available after adoption of a ND, the lead agency shall prepare a subsequent EIR if required under [14 CCR Section 15162(a)]. Otherwise, the lead agency shall determine whether to prepare a subsequent negative declaration or an addendum, or no further documentation.

(c) A subsequent EIR or subsequent ND shall be given the same notice and public review as required under CEQA Guidelines Section 15072 or Section 15087. A subsequent EIR or ND shall state where the previous documents are available and may be reviewed.

In addition, California Public Resources Code section 21166 provides:

> When an [EIR] has been prepared for a project…, no subsequent or supplemental [EIR] shall be required by the lead agency…unless one or more of the following events occurs:
>
> (a) Substantial changes are proposed in the project which will require major revisions of the [EIR].
>
> (b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the [EIR].
>
> (c) New information, which was not known and could not have been known at the time the [EIR] was certified as complete, becomes available.

The County has determined that factors exist which warrant preparation of an SEIR in this case, including project changes and changes in the project's circumstances. An SEIR is not intended to recommend either approval or denial of a project. Rather, an SEIR is a document whose primary purpose is to disclose all new potential environmental impacts associated with a revised action or "project."

The SEIR process and the information it generates is used for purposes that include:

- informing governmental decision makers, agencies, and the public about potential, significant environmental effects of proposed activities;
- identifying ways that environmental damage can be avoided or significantly reduced; and
- preventing significant, avoidable damage to the environment by requiring changes to the project by using alternatives or mitigation measures if the governmental agency finds the changes to be feasible.

As noted above, this SEIR would be subsequent to the LAVQAR EIR prepared and certified in 1981. The purpose of this SEIR is to provide an opportunity for agency representatives and the public to review and comment on the adequacy of the SEIR before it is prepared as a final document and certified. This SEIR has been prepared by the County, acting in its capacity as lead agency, pursuant to CEQA and the CEQA Guidelines. The County has independently reviewed and analyzed this SEIR in accordance with PRC Section 21082.1(c)(1).

The mitigation measures from the LAVQAR EIR have been carried forward from the original certified EIR for the proposed project. In addition, new mitigation measures have been recommended to address new significant impacts. Mitigation measures to be imposed, if the project is approved, will be included in a Mitigation Monitoring and Reporting Program (MMRP) that documents the mitigation measures, specifies the parties responsible for implementing and funding each measure, and identifies the agency or other party responsible for monitoring, verifying, and documenting that measures have been or are being implemented. These measures may also be included in the conditions of project approval. The SEIR is intended to update only that portion of the LAVQAR EIR encompassed by the project area.

1.2 SUMMARY OF THE PROPOSED PROJECT

CEMEX has applied to the County for an amendment to their approved reclamation plan (Lone Star Industries, Inc. 1986), the proposed project under CEQA. The project is a modification of an approved reclamation plan and a modification to Surface Mining Permit 23 (SMP-23) for a vested mining operation. Except as outlined below, the applicant proposes no change to any fundamental element of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, hours of operation).

Eliot Quarry is an approximately 920-acre sand and gravel mining operation located within the unincorporated area of Alameda County, between the cities of Livermore and Pleasanton, south of Stanley Boulevard and north of Vineyard Avenue (as shown in Figure 1-1, "Regional Location," and Figure 1-2, "Site Location"). The applicant's mining operation at the Eliot Quarry site is vested due to pre-1957 mining and the issuance of various County mining permits, as documented in the County Quarry Permits Q-1 (1957), Q-4 (1957), and Q-76 (1969). Changes in circumstances at the site and in applicable regulatory requirements necessitate preparation of an amended reclamation plan that addresses these changes and provides reclamation objectives that can be feasibly accomplished and permitted by regulatory agencies. In considering the application and the discretionary action of approving the proposed reclamation plan amendment, the County is required to conduct environmental review pursuant to CEQA.

The 1987 reclamation plan envisions mining the Lakes A and B areas to create two large waterbodies for future operation and management by the Alameda County Flood Control and Water Conservation District, Zone 7 (hereafter referred to as "Zone 7"). Lakes A and B are to be part of a larger "Chain of Lakes" that consist of a series of reclaimed gravel quarry pits converted into nine lakes (Lakes A through I), linked in a series, and used to store and convey seasonal and flood water and recharge groundwater. Under the approved 1987 reclamation plan, the natural channel of the Arroyo del Valle (ADV) would be mined out and flow through Lakes A and B via tall concrete spillways at Vallecitos Road and Isabel Avenue and via a concrete and riprap apron at the downstream end of Lake B. The approved 1987 reclamation plan also includes an optional lake (Lake J) near the current processing plant site.

The applicant seeks to amend the approved reclamation plan to include changes that are more sensitive to the environment and surrounding community while fulfilling the intent of the *Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR Specific Plan) (Alameda County 1981). The LAVQAR Specific Plan comprises the 3,820 acres designated for "Sand and Gravel Quarry" use between Pleasanton and Livermore in the Livermore-Amador Valley. The key concept of the LAVQAR Specific Plan is the shaping of pit areas, which will eventually contain water, into a "Chain of Lakes" during the course of mining over the 50- to 60-year period that sand and gravel reserves are expected to last in the quarry area. The Chain of Lakes is intended to provide a surface water storage and conveyance system to

replace a portion of the preexisting subsurface water storage and conveyance system feeding the groundwater basin. Connecting conduits between the lakes and structures necessary to capture and carry local runoff waters will be provided by the mine operators at no cost to the public through Zone 7. At the conclusion of mining, water from ADV will be capable of being diverted into the Chain of Lakes, and a bypass channel for that watercourse will also be provided to maintain downstream flows necessary to Zone 7 and Alameda County Water District.

The proposed project serves to adjust reclamation boundaries and contours, enhance drainage and water conveyance facilities, incorporate a pedestrian and bike trail, and achieve current surface mining reclamation standards. The planned postmining end uses are water management, open space, and agriculture (nonprime).

Consistent with prior approvals, the project would develop Lakes A and B, which are the first two lakes in the Chain of Lakes pursuant to the LAVQAR Specific Plan. Upon reclamation, Lakes A and B, along with their appurtenant water conveyance facilities, would be dedicated to Zone 7 to store and convey surface water and manage the recharge of groundwater.

Unlike the 1987 Reclamation Plan approval, under the proposed project the ADV would remain separate from the Chain of Lakes. Lake A reclamation would include installation of a surface water diversion from the ADV to Lake A. No further mining would occur in Lake A. A water pipeline conduit would connect water from Lake A to both Lakes B and C. (Lake C is being developed on a neighboring property by Vulcan Materials Company and is not within the project site.) A conduit would also connect Lake C to Lake B. Lake B would include an overflow outlet to allow water to flow back into the ADV when Lake B water levels are high.

To facilitate the southerly progression of mining within Lake B, the project includes realigning and restoring an approximately 5,800-linear-foot reach of the ADV. The proposed ADV realignment would result in an enhanced riparian corridor that flows around, rather than through Lake B (as currently anticipated under the approved reclamation plan for SMP-23). The ADV realignment to the south of the Lakes was contemplated as a possibility in the LAVQAR Specific Plan and was subject to environmental review in the prior EIR in 1981.

Outside of Lakes A and B, reclamation treatment for other disturbed areas, including the excavation of a Lake J (not part of the Chain of Lakes), processing plant sites, and process water ponds, would involve backfilling and/or grading to return those areas to open space and/or agriculture. Lake J would be backfilled before final reclamation as part of ongoing mining and processing operations. Post-reclamation, the applicant would continue to own the areas of the property used for open space and/or agriculture.

1.3 APPLICATION PROCESS

1.3.1 Previous Applications

The project is a modification of an approved reclamation plan project (i.e., SMP-23) for a vested mining operation. On December 17, 2012, the Alameda County Planning Commission completed a scheduled periodic review of the Eliot Quarry as prescribed by the Alameda County Surface Mining Ordinance and a condition of approval of SMP-23 and adopted Resolution 2012-10. As previously stated, the County determined that changes in circumstances at the site and in applicable regulatory requirements necessitated the preparation of an amended reclamation plan that addresses these changes and provides reclamation objectives that can be feasibly accomplished and permitted by regulatory agencies.



SOURCES: ESRI World Shaded Relief accessed Jan. 2020, ESRI World Topographic Map accessed Jan. 2020; ESRI World Streetmap, 2009; compiled by Benchmark Resources in 2020

Project Location
City Boundary
County Boundary
Major Highway
Major Road

BENCHMARK RESOURCES

N

0 2.5 5 10 Miles

Regional Location
ELIOT QUARRY SMP-23 SEIR
Figure 1-1

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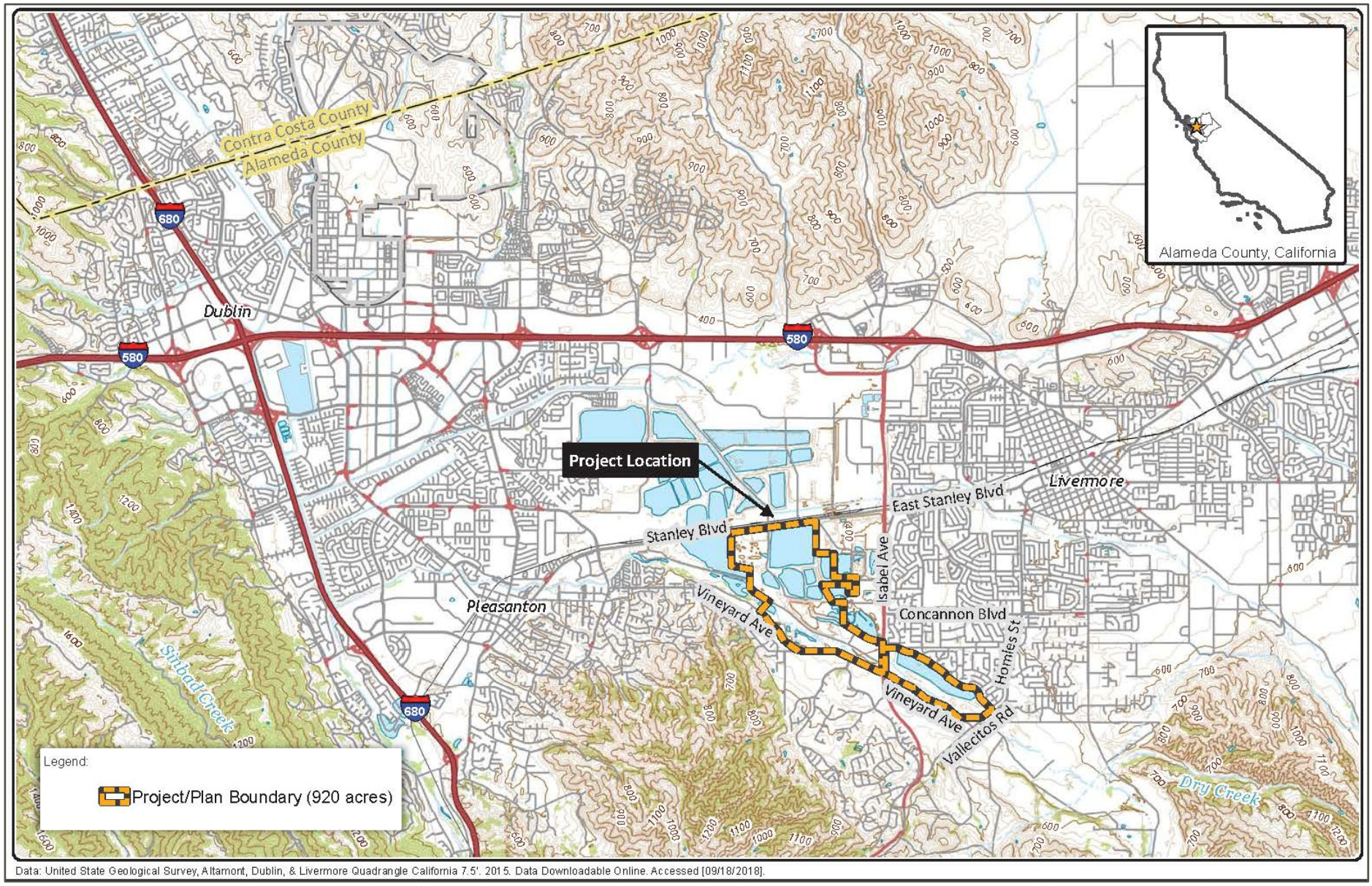

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Site Location

ELIOT QUARRY SMP-23 SEIR

Figure 1-2

BENCHMARK RESOURCES

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Resolution 2012-10 imposed new conditions of approval on SMP-23. Condition 7 required CEMEX to file a reclamation plan amendment application within 6 months of the adoption date of the resolution that addressed the key issues outlined in the periodic review. Condition 10 prohibited the resumption of mining at Lake A (which was suspended in 2003 as further described below) until it is demonstrated to the satisfaction of the County Community Development Agency Director (CDA Director) that mining can occur without resulting in slope or geologic instability resulting in harm to persons or property and would not conflict with the LAVQAR Specific Plan.

In addition to consistency with the LAVQAR Specific Plan, Condition 10 also requires the CDA Director to conduct at least one community meeting prior to rendering a decision regarding the resumption of mining in Lake A. Under the proposed project, CEMEX is not proposing to resume mining at Lake A. In response to the events described above, CEMEX has prepared a series of applications that have undergone several revisions. The proposed project is the fourth application. All applications for the reclamation plan amendment are described below.

Application #1

On June 13, 2013, CEMEX timely filed the first application (Application #1) for the CEMEX Eliot Facility (CA Mine ID No. 91-01-0009) SMP-23 Reclamation Plan Amendment (project), which included a proposal to resume mining at Lake A. On July 8, 2013, NPS staff deemed the application incomplete with comments and requests for information.

Application #2

On August 22, 2014, CEMEX submitted a revised application (Application #2), which, in addition to addressing County comments and requests, eliminated the request to resume mining at Lake A. The County accepted this Application #2 as complete in January 2015. In response to Application #2, the County prepared an initial study that led to preparation of a NOP for an EIR (Original NOP), followed by a public scoping meeting on July 30, 2015. Following the scoping meeting, the County then began work on an administrative draft EIR, which, due to a subsequent application revision initiated by CEMEX, was not completed.

Application #3

On December 22, 2016, CEMEX submitted a revised application (Application #3), with the primary substantive change to reintroduce a request to resume mining in Lake A, but in limited areas. The County deemed Application #3 complete in February 2017, but notified CEMEX that certain additional information and clarifications would be required for the County to complete the necessary CEQA analysis. Between 2017 and 2018, CEMEX coordinated with the County and conducted further outreach with the public and government stakeholders related to Application #3. In parallel, CEMEX performed additional internal analysis of the merits of mining in Lake A and subsequently informed the County that it planned to resubmit a revised project application that would eliminate the request to resume mining at Lake A. CEMEX communicated its intent to revise its application to detail plans to complete reclamation at Lake A and to prepare Lake A, and associated water management facilities, for a transfer to Zone 7.

Application #4 (Current Application)

On March 4, 2019, CEMEX submitted the current application for the proposed project (Application #4), which supersedes and replaces all prior applications and application materials. As described in more detail below, the primary changes presented in Application #4 are the elimination of further

mining in Lake A and the backfill of Lake J with a combination of overburden and process wash fines. Application #4 also includes more detailed plans for the proposed realignment of the ADV, as further described below. On April 1, 2019, the County deemed Application #4 complete and proceeded to prepare a Revised NOP for this SEIR. The key reasons for project revisions that led to Application #4 are described below.

1.3.2 Reasons for Project Revision

According to CEMEX, the following are the key reasons for revising the prior Application #3 with this Application #4:

To Eliminate Further Mining in Lake A

Based on a management decision and input from stakeholders, the applicant revised the project to eliminate further mining in Lake A. The County believes the elimination of mining in Lake A is likely to reduce the project's controversy and potential environmental impacts in the areas of aesthetics, biological resources, cultural and tribal resources, noise, and geology and soils (as relates to slope stability).

To Incorporate Additional Site-Specific Geologic Analysis to Support Increased Mining Depths at Lake B

In collaboration with Zone 7, the applicant completed a site-specific joint drilling program in 2018. Using the data from this drilling program, Jeff Light Geologic Consulting (JLGC) evaluated and modeled the distribution of clay beds at the CEMEX Eliot Quarry to establish whether or not potential aquitards are present in the project area. CEMEX representatives believe that the JLGC's study indicates that all modeled clay beds across the study area are discontinuous. This study amplifies the substantial evidence presented in support of the applicant's proposal to modify the final elevation of Lake B from 250 feet msl to 150 feet msl.

To Reexamine Slope Stability and Incorporate Geotechnical Recommendations as Part of Project Design.

Geocon Consultants, Inc. (Geocon) conducted a geotechnical analysis for the Project that supplements previous explorations at the site, evaluates the stability of proposed mining and reclamation slopes, and provides geotechnical recommendations for project design and construction. Geocon also conducted a geotechnical analysis of the proposed realignment of the ADV in the Lake B area. The study evaluated subsurface conditions at the site and evaluated the stability of slopes, including slopes along the proposed realigned ADV channel, Lake A, and Lake B. Geocon's analysis and recommendations have been incorporated in the revised reclamation plan and improvement plans for the realigned ADV (Brown and Caldwell 2018).

To Incorporate an Enhanced Design for the Realigned Arroyo del Valle.

Brown and Caldwell (B&C) performed additional hydrologic and hydraulic analyses to evaluate water diversion, conveyance, and flood potential associated with the revised reclamation plan, including the realigned ADV. The B&C study demonstrates that the realigned ADV will remain stable, and that neither the channel modifications nor the ADV to Lake A diversion structure will increase flood risk to neighboring properties or infrastructure. The revised Application #4 also now includes proposed 95% design construction drawings for the realigned ADV, which incorporates additional channel design complexity with a greater variety of biological communities. The realigned

ADV is expected to result in an uplift in the ecological functions and values in the existing, highly disturbed portions of the ADV in the project Lake B reach. Additional channel complexity was in part included based on feedback the applicant received from the San Francisco Bay Regional Water Quality Control Board following the circulation of the Original NOP.

To Update the Analysis of Hydrology and Water Quality as Compared to an Existing Conditions Baseline

EMKO Environmental, Inc. (EMKO) conducted an updated analysis of hydrology and water quality conditions for the project with more information than previously submitted. The technical report provides a description of baseline conditions, as well as a discussion of conditions that will exist at the site once reclamation is completed under the revised reclamation plan. The analysis also informs water surface, berm, and overflow spillway elevations incorporated into the revised reclamation plan as well as the effects of project silt storage in the groundwater aquifer.

1.4 ENVIRONMENTAL REVIEW PROCESS

1.4.1 Scope of This Environmental Impact Report

The County prepared an initial study that included a preliminary evaluation of the potential scope of the SEIR. (See Appendix A-1, "Initial Study"). The County then circulated a notice of preparation (NOP) that indicated those topic areas that would require evaluation in the SEIR (see Appendix A-2, "NOC/NOP"). Also included in Appendix A is Appendix A-3, which includes written comments received from the scoping hearing and the NOP). The NOP was published on June 17, 2019, and the public comment period for commenting on the scope of the SEIR lasted through July 16, 2019. The NOP was sent to property owners within 1,000 feet of the project site, trustee agencies, interested organizations and individuals, and the State Clearinghouse.

A public scoping session was held on June 26, 2019, at the Martinelli Event Center. All comments received by the County at the scoping session and in writing or via e-mail on the NOP were accounted for during preparation of the SEIR. The written comments received are included as Appendix A-3, as address above.

The following environmental topics are addressed in this SEIR:

- Aesthetics
- Air Quality
- Biological Resources
- Greenhouse Gas Emissions
- Geology and Soils
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Mandatory Findings of Significance

The NOP identified cultural resources and mineral resources as topics to be addressed in this SEIR; however, the initial study that was prepared by the County after the NOP circulation determined that environmental impacts related to these topics would be less than significant. The initial study is attached to this SEIR and included in Appendix A, as noted above. Therefore, cultural resources and mineral resources are not evaluated in this SEIR. The initial study also determined that the project would not result in significant adverse impacts associated with the following resource topics and eliminated these issues from further consideration in the SEIR:

- Agricultural and Forestry Resources
- Cultural Resources
- Energy
- Hazards and Hazardous Materials
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Services Systems
- Wildfire

1.4.2 Public Review

This SEIR is available for public review and comment during the 45-day period identified on the notice of availability/notice of completion (NOA/NOC) of an SEIR accompanying this document. This SEIR and all supporting technical documents and reference documents are available for public review on the Alameda County website at:

http://nps.acgov.org/Eliot.page

Requests for hard copies of the SEIR may be submitted to bruce.jensen@acgov.org.

During the 45-day public comment period, written comments on the SEIR may be submitted to:

Mr. Bruce Jensen
Alameda County Community Development Agency
224 West Winton Avenue, Suite 111
Hayward, California 94544

Written comments on the SEIR may alternately be submitted via e-mail with the subject line "SMP-23 Reclamation Plan Amendment SEIR" to bruce.jensen@acgov.org.

Following the public review and comment period, the County will respond to all written and oral comments received on the environmental analysis in this SEIR. The responses and any other revisions to the SEIR will be prepared as a response-to-comments document. The SEIR and its appendices, together with the response-to-comments document, will constitute the final SEIR for the proposed project.

1.4.3 Use of the SEIR

Pursuant to CEQA, this is a public information document for use by governmental agencies and the public. The information contained in this SEIR is subject to review and consideration by the County (as the lead agency) and any other responsible agencies before the County decides to approve, reject, or modify the proposed project.

The Alameda County Planning Commission must ultimately certify that it has reviewed and considered the information in the SEIR and that the SEIR has been completed in conformity with the requirements of CEQA before making any decision on the proposed project. Certification of the SEIR does not constitute approval of the project.

1.5 DISCRETIONARY ACTIONS

It is anticipated that this SEIR will provide environmental review for all discretionary approvals and actions necessary for this project. A number of permits and approvals would be required before the changes in reclamation activities at the project site could proceed, although quarrying operations

pursuant to the currently effective SMP-23 permit are anticipated to continue throughout the environmental review process period.

As lead agency for the proposed project, the County is primarily responsible for the approvals required. The primary approval being sought is a revision to the currently approved reclamation plan to enable those changes and/or revisions to the approved reclamation plan described above. As part of any approval action for the project, the County would be required to certify the final EIR, adopt findings of fact and overriding considerations (if necessary), and adopt a mitigation monitoring plan. In Alameda County, the County Planning Commission is the approval authority for surface mining permits and reclamation plans, which action is appealable to the County Board of Supervisors.

1.6 RESPONSIBLE AND TRUSTEE AGENCIES

Projects or actions undertaken by the lead agency (i.e., the County) may require subsequent oversight, approvals, or permits from other public agencies in order to be implemented. Other such agencies are referred to as "responsible agencies" and "trustee agencies." Pursuant to Sections 15381 and 15386 of the CEQA Guidelines, as amended, responsible agencies and trustee agencies are defined as follows:

- A "responsible agency" is a public agency that proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term "responsible agency" includes all public agencies other than the lead agency that have discretionary approval power over the project (Section 15381).
- A "trustee agency" is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California (Section 15386).

A number of agencies may have a particular interest in the project. These agencies include those listed below:

Federal Agencies

- U.S. Army Corps of Engineers (CWA Section 404 permit)
- U.S. Fish and Wildlife Service (ESA Section 7 consultation; incidental take statement)
- U.S. (National) Marine Fisheries Service (ESA Section 7 consultation; incidental take statement)

State Agencies

- California Department of Conservation, Division of Mine Reclamation (SMARA reclamation plan amendment review and review and release of financial assurance)
- California Department of Fish and Wildlife (streambed alteration agreement and possibly a California Endangered Species Act permit)

Regional and Local Agencies

- San Francisco Bay Regional Water Quality Control Board (Section 401 certification and waste discharge requirements, as may be applicable)
- Zone 7 (Concurrence on the design of the diversion structure and pipelines)

1.7 REPORT ORGANIZATION

This SEIR is organized into the following chapters and sections:

Executive Summary

This chapter provides a summary of the project and a summary of new significant environmental impacts not covered in the original EIR that would result from implementation of the proposed project, and describes new conditions of approval and mitigation measures, also not covered in the original EIR, recommended to avoid or reduce significant impacts.

Chapter 1, "Introduction"

This chapter discusses the overall SEIR purpose; provides a summary of the proposed project; describes the SEIR scope; and summarizes the organization of the SEIR.

Chapter 2, "Project Description"

This chapter provides a description of the project's objectives, the project site and context, and a detailed description of the proposed project and its required local (County) approval process.

Chapter 3, "Terminology, Approach, and Assumptions"

This chapter describes key terminology, approaches, and assumptions used in the SEIR analysis, including definitions of existing conditions versus baseline conditions, descriptions of the increment of net new changes at the site attributable to the project, and assumptions regarding other cumulative development and approaches used to define cumulative scenarios.

Chapter 4, "Environmental Analysis"

This chapter provides the environmental setting, impacts, and required mitigation measures for the project organized by issue area corresponding to topics in the CEQA Environmental Checklist (CEQA Guidelines Appendix G, as amended). Sections 4.1 through 4.8 address the environmental topics of this SEIR: aesthetics, air quality, biological resources, climate change and greenhouse gas emissions, geology and soils, hydrology and water quality, land use and planning, and noise, respectively.

Each resource section follows the same format and includes the following primary subsections:

- The **"Environmental Setting"** subsections provide an overview of the existing physical environmental conditions at the time this analysis was prepared, which establishes a baseline used during analysis of potential impacts created by the project. When relevant to the analysis, the "Environmental Setting" subsection also provides predicted future environmental conditions under circumstances without the project to provide a benchmark for the impact analysis of future conditions with the project.
- The **"Regulatory Setting"** subsections identify the plans, policies, laws, regulations, and ordinances that are relevant to each resource subject. This subsection describes required permits and other approvals necessary to implement the project.
- The **"Impact Analysis Methodology"** subsections provide criteria that define when an impact would be considered significant. Criteria are based on CEQA Guidelines, scientific and factual data, views of the public in affected area(s), the policy/regulatory environment of affected jurisdictions, or other factors.

- The **"Impacts and Mitigation Measures"** subsections provide an assessment of the potential impacts of the project and specify why impacts are found to be either significant and unavoidable, significant, or potentially significant but mitigable, less than significant, or why no environmental impact would result. Feasible mitigation measures to avoid or reduce the severity of identified impacts follow the impact discussions. Where feasible mitigation cannot reduce impacts to a less-than-significant level, the impacts are identified as significant and unavoidable. The analysis of cumulative impacts is provided in Chapter 5, "Cumulative Impacts."

Chapter 5, "Cumulative Impacts"

This section provides an evaluation of the cumulative impacts, which is based on the past, present, and reasonably foreseeable conditions, together with the effects of the project.

Chapter 6, "Alternatives"

This section provides a comparative evaluation of alternatives to the proposed project. The alternatives include:

- No Project—Reclamation of Existing Conditions Alternative,
- Prohibited Nighttime Reclamation Alternative,
- Revised ADV Construction Phasing Alternative, and
- Reduced Capacity of Lake A Diversion Structure Alternative.

Chapter 7, "Other CEQA Topics"

This section provides the required analysis of growth-inducing impacts; significant irreversible changes; effects found not to be significant; and significant unavoidable impacts.

Chapter 8, "List of Preparers"

This section identifies the preparers of the SEIR and the persons and organizations contacted.

Chapter 9, "References and Resources"

This section identifies the references and resources cited within the text of this SEIR.

Chapter 10, "Acronyms"

This section provides an alphabetical list of the acronyms and initialisms used throughout the SEIR.

Appendices

The appendices contain the initial study, the NOP, written comments submitted on the NOP, and technical studies and reports used to prepare the SEIR.

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2—PROJECT DESCRIPTION

2—PROJECT DESCRIPTION

2.1 INTRODUCTION

RMC Pacific Materials, LLC. (CEMEX) operates Eliot Quarry, an approximately 920-acre sand and gravel mining operation within the unincorporated area of Alameda County, between the cities of Livermore and Pleasanton, south of Stanley Boulevard and north of Vineyard Avenue (see Figure 1-1, "Regional Location" and Figure 1-2, "Site Location"). CEMEX and its predecessors-in-interest have been continuously mining for sand and gravel at the Eliot Quarry since at least 1906. CEMEX acquired the quarry in 2005. In addition to mining and reclamation, existing permitted and accessory uses at the Eliot Quarry include aggregate, asphalt, and ready-mix concrete processing, as well as ancillary uses such as aggregate stockpiling, load-out, sales, construction materials recycling, and equipment storage and maintenance.

CEMEX's mining operation at Eliot Quarry is vested under pre-1957 mining and as documented in County Quarry Permit Q-1 (1957), Q-4 (1957), and Q-76 (1969), as well as subsequent County documents (see Figure 2-1, "Vested Mining Permits"). Therefore, mining and processing at the site are not subject to the discretionary decisions that the County will make regarding the proposed reclamation plan amendment (the project). In 1987, the County approved Surface Mining Permit 23 (SMP-23) for a reclamation plan covering the Eliot facility (see Figure 2-2, "Approved 1987 Reclamation Plan"), and that plan is the "approved reclamation plan" currently applicable to the site. Surface mine operators in California are required by State law to have an approved reclamation plan if they operate after January 1, 1976.

Changes in circumstances at the site and in applicable regulatory requirements necessitate the preparation of an amended reclamation plan that addresses these changes and provides reclamation objectives that can be feasibly accomplished and permitted by regulatory agencies. CEMEX has therefore applied to the County for a reclamation plan amendment. In considering the application and the discretionary action of approving the project, the County is required to conduct environmental review pursuant to the California Environmental Quality Act (CEQA).

The proposed project (see Figure 2-3, "Reclamation Plan Overview" and Appendix B, "Proposed Reclamation Plan Amendment") would:

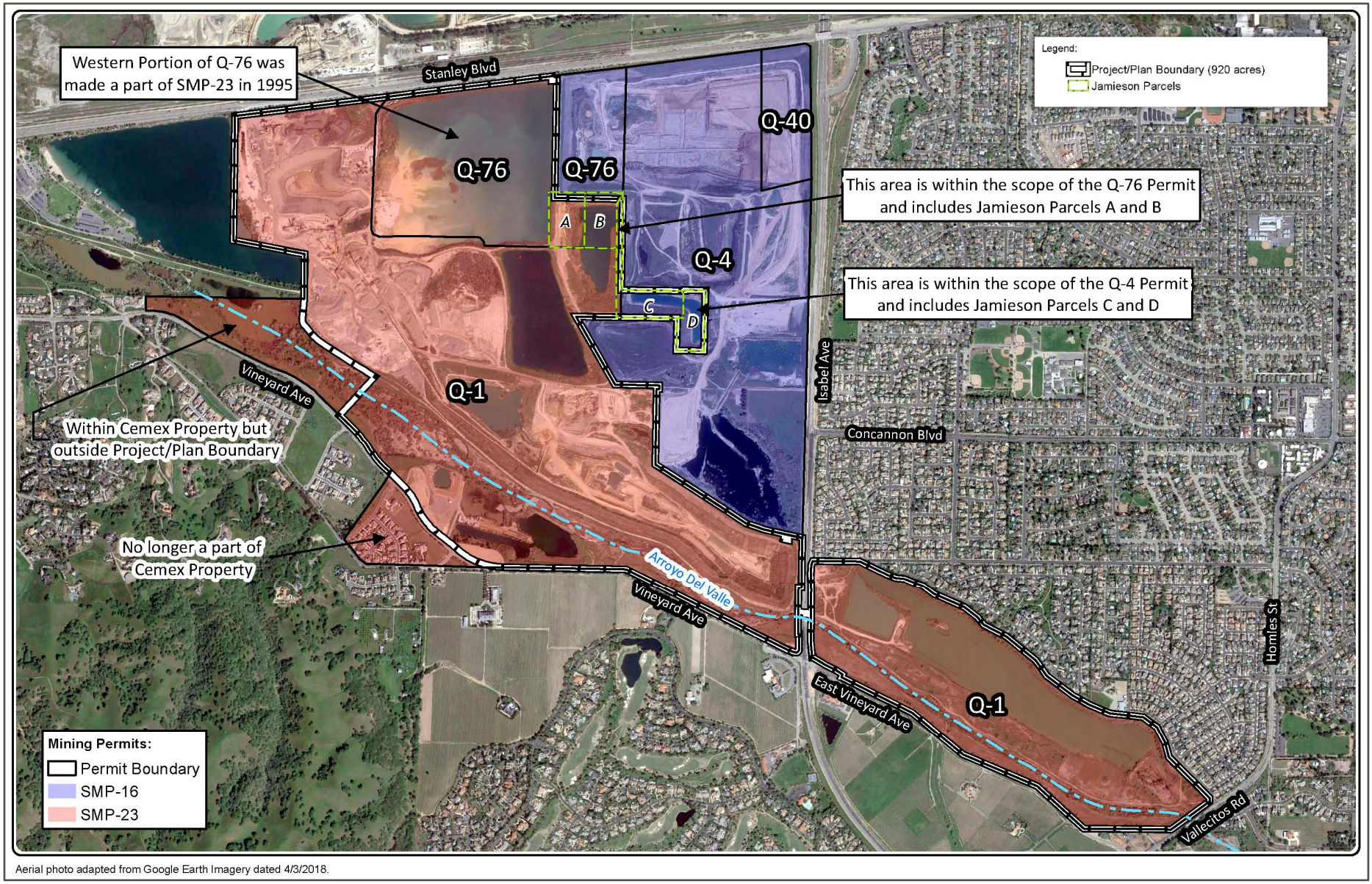
- adjust reclamation boundaries and contours;
- enhance drainage and water conveyance facilities;
- incorporate a public use pedestrian and bike trail, consistent with the *Specific Plan for Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR) (Alameda County 1981), along the southern boundary of Lakes A and B near Vineyard Avenue;
- achieve current surface mining reclamation standards;
- realign and restore an approximately 5,800-linear-foot reach of the Arroyo del Valle (ADV) to flow around, rather than through (as currently anticipated in SMP-23), Lake B (see Figure 2-4, "Realigned Arroyo del Valle Concept");
- reclaim Lake A with limited earthmoving, which shall include:
  - installation of a surface water diversion from the ADV to Lake A,

  - conversion of a berm currently located in Lake A into a small island to allow water to flow across the lake,
  - installation of a water conveyance pipeline from Lake A to future Lake C (located off-site to the northwest),
  - installation of an overflow outlet to allow water to flow back into ADV when Lake A water levels are high to prevent flooding in the localized area,
  - a final surface area of 81 acres as compared to 208 acres in SMP-23, and
  - no further mining of Lake A;
- reclaim Lake B, which shall include:
  - installation of a pipeline turn-out from Lake A,
  - installation of a water pipeline conduit to future Lake C,
  - installation of an overflow outlet to allow water to flow back into ADV when Lake B water levels are high;
  - a final bottom elevation at 150 feet mean sea level (msl), which is 100 feet deeper than the final bottom elevation of 250 feet msl approved in SMP-23; and
  - a final surface area of 208 acres as compared to 243 acres in SMP-23; and
- reclaim the Lake J excavation (not part of the Chain of Lakes), processing plant sites, process water ponds, and Ponds C and D, referenced as the "North Reclamation Area," which shall include:
  - backfilling with overburden and process wash fines during the course of mining elsewhere at the site,
  - revegetation,
  - a return to open space and/or agriculture.

Upon reclamation, Lake A, Lake B, Pond C, and Pond D, along with their appurtenant water conveyance facilities, will be dedicated to the County Flood Control and Water Conservation District, Zone 7 (hereafter referred to as "Zone 7") for water storage, conveyance, and recharge management (Zone 7 Agreement). The approximate areas to be dedicated to Zone 7 are shown in Figure 2-5, "Anticipated Zone 7 Land Dedications." The proposed reclamation plan amendment would still achieve prior commitments to provide for water storage and water conveyance under reclaimed conditions. Except as outlined above, CEMEX proposes no change to any fundamental element of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, or hours of operation).

2.2 PROJECT PURPOSE

The project purpose is to revise the approved reclamation plan to accommodate changed circumstances and to reflect regulatory changes. Significant changes have occurred in both the regulatory setting that applies to the project site and physical conditions near the project site (e.g., new regulations related to biological resources, residential development in neighboring areas, widening of Isabel Avenue/State Route 84 [SR 84]), and sale of portions of the property. The changed circumstances prompted County staff to recommend revising the approved reclamation plan to reflect the changed physical and regulatory conditions and to ensure that reclamation is feasible and carried out in harmony with all controlling regulatory requirements. In addition, CEMEX would like to eliminate the two previously approved but not yet built concrete spillways because they are no longer necessary for the project and are not environmentally sensitive.



SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Vested Mining Permits

ELIOT QUARRY SMP-23 SEIR

Figure 2-1

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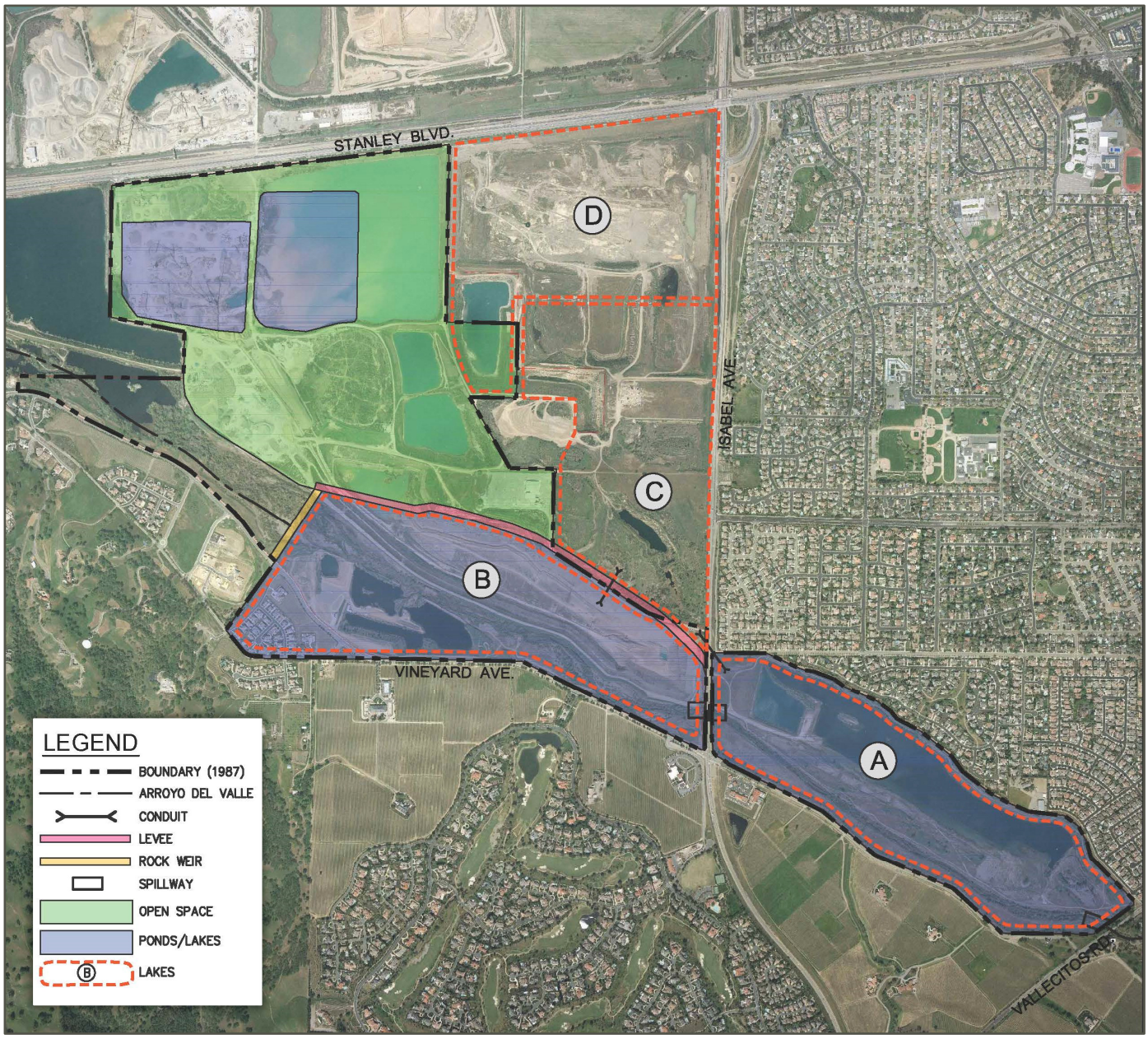

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.
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Approved 1987 Reclamation Plan
ELIOT QUARRY SMP-23 SEIR
Figure 2-2

BENCHMARK RESOURCES

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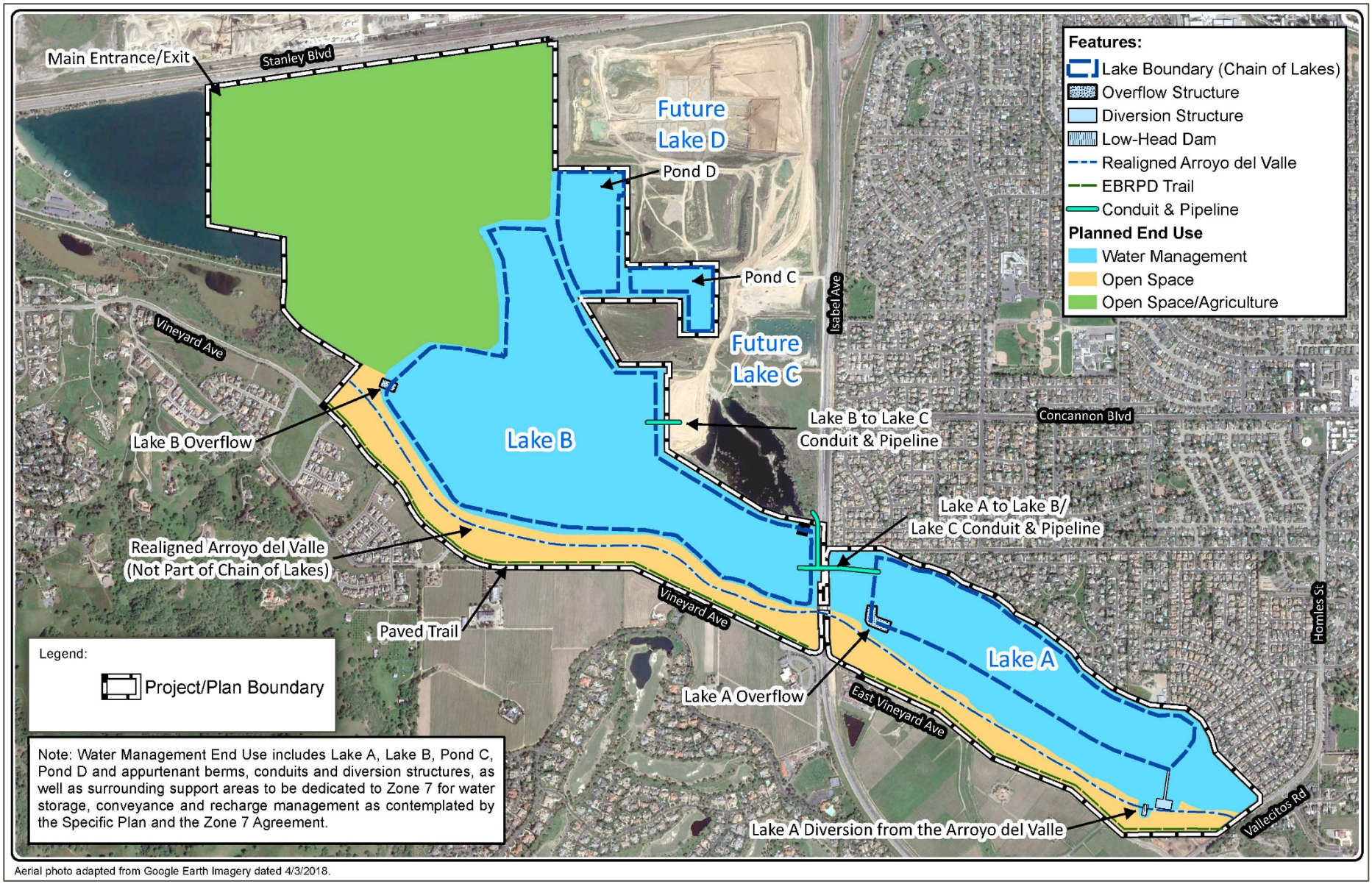

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

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Reclamation Plan Overview

ELIOT QUARRY SMP-23 SEIR

Figure 2-3

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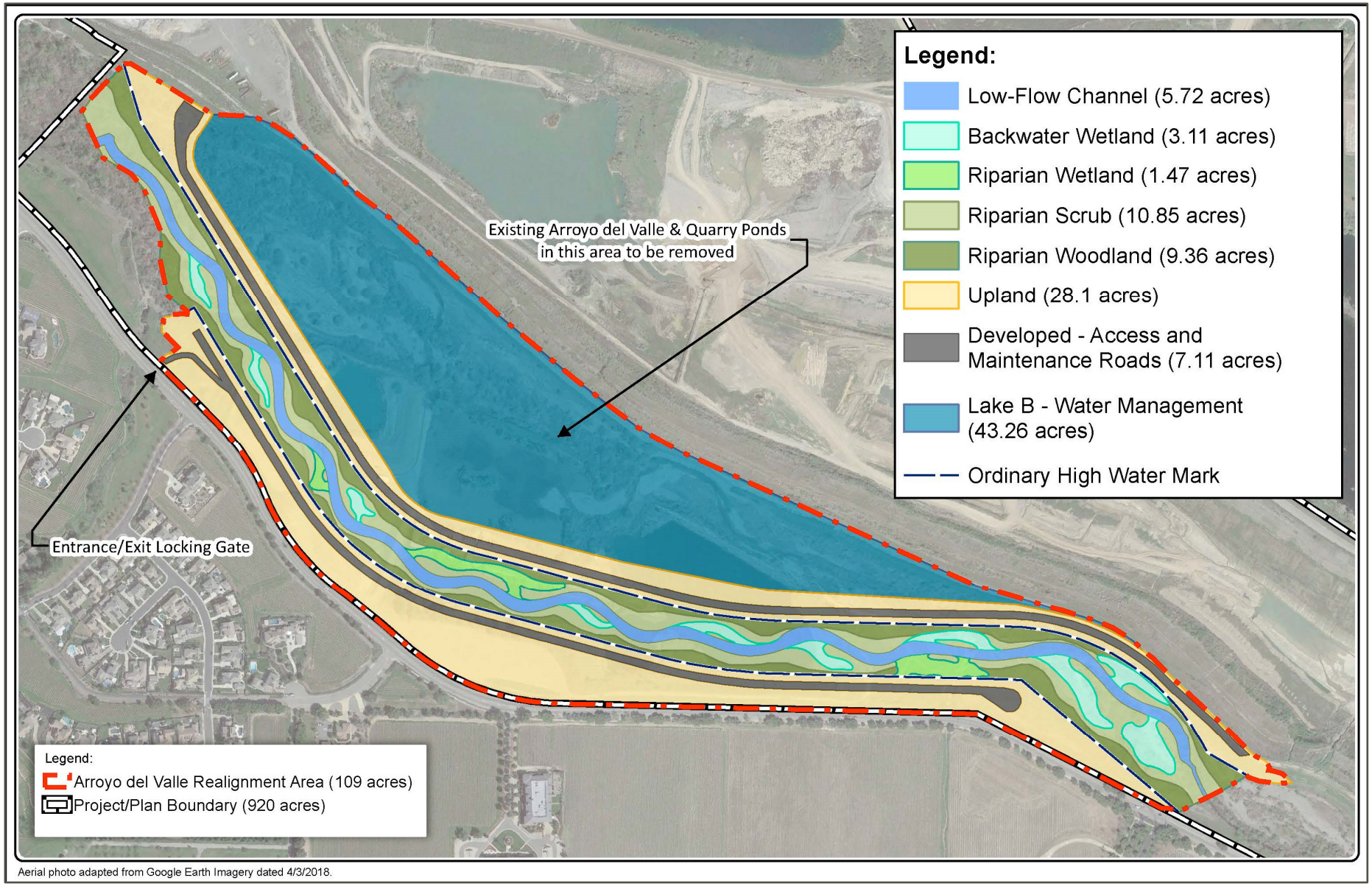

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

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Realigned Arroyo del Valle Concept

ELIOT QUARRY SMP-23 SEIR

Figure 2-4

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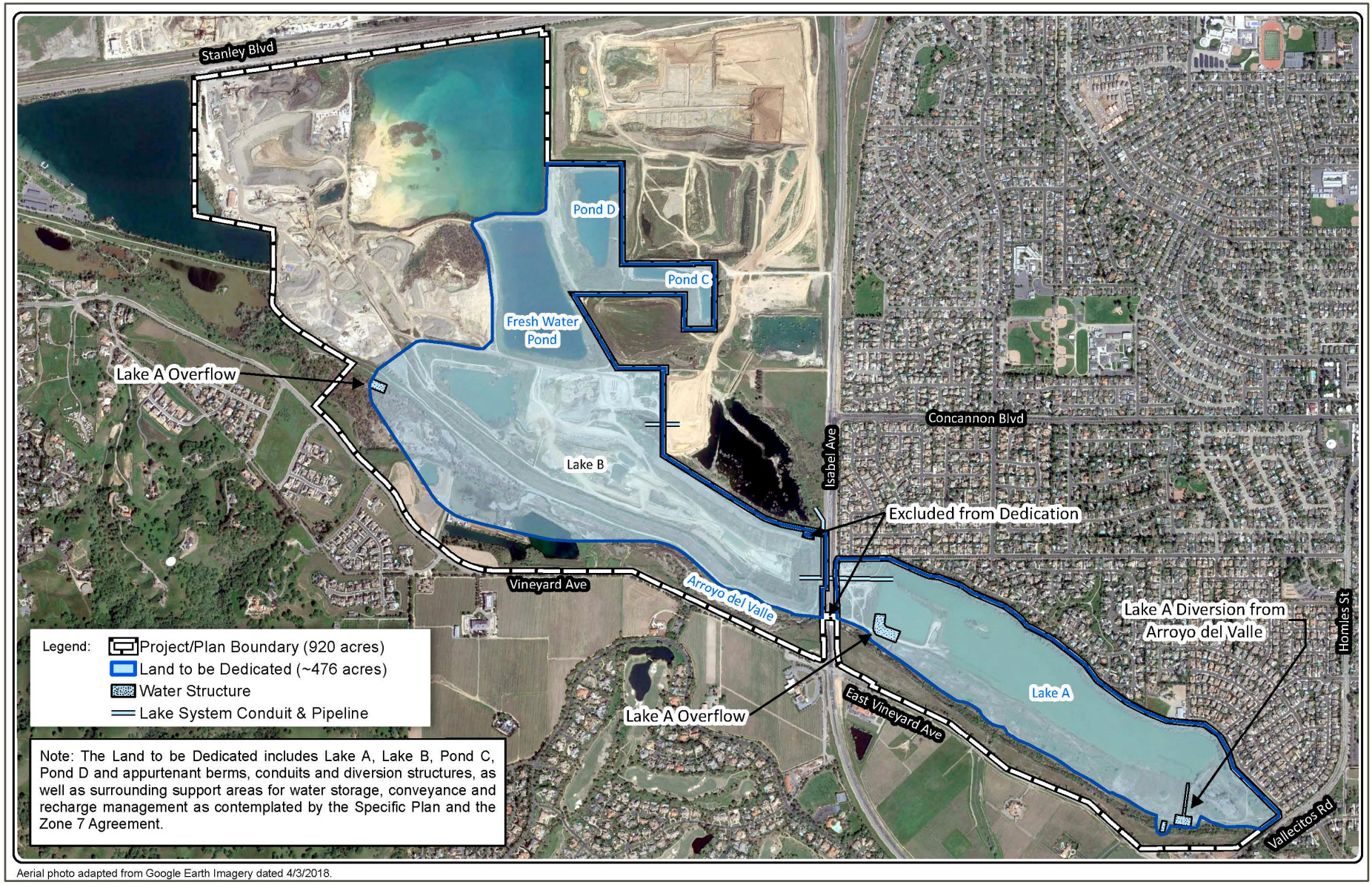

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

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Anticipated Zone 7 Land Dedications

ELIOT QUARRY SMP-23 SEIR

Figure 2-5

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The project is also proposed in response to the requirements of Condition 7 of SMP-23 (adopted under County Planning Commission Resolution 12-20 on December 17, 2012), quoted below:

> Permittee shall file an application to amend SMP-23, for review in accordance with ACSMO, Article II (Application Procedure), within six months of this action and which addresses the following issues and provides for their resolution, as well as any other issues applicant desires to address:
>
> a) The need for mining and reclamation plans and corresponding documents to reflect the current boundaries of SMP-23 as referenced lands both presently owned by Permittee and previously authorized for mining operations and reclamation activities.
> b) As to Lake A, the need for long-term mining and reclamation plans to address geologic hazards associated with and remedied by the Lakeside Circle Corrective Action Plan.
> c) As to Lake B, the need for long-term mining and reclamation plans to address a depth and configuration which, due to recent and ongoing mining activities, are inconsistent with the approved reclamation plans.
> d) The need for SMP-23 to include provisions for the management of water flows, during both the pre- and post-reclamation conditions, between the groundwater basins, the Arroyo del Valle, and Lakes A, B and C of the Specific Plan for Livermore-Amador Valley Area Reclamation.
> e) The need for revised plans for all water conveyance facilities that: (i) reflect existing topographic conditions and desired future topographic conditions of the Permittee; (ii) fulfill the requirements and intent of the water management objectives of the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation; and (iii) may be constructed in conformance with all laws and regulations.
> f) The need to coordinate the planning, design, and construction of all water conveyance structures between Lakes A, B and C with adjacent mine operator, property owners and the Zone 7 Water Agency.
> g) The geographic locations of approved end uses over the entire site once reclaimed.
> h) Relative to public roadways, the need to specify, in plan and text format, authorized vehicular access points and haul routes.
> i) The need to establish an estimated schedule which correlates the timing of completion for the reclamation components to specific stages in the mining plan.
> j) The need to establish reclamation plans that accommodate a trail, as depicted in the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation, along the entire southern boundary of SMP-23 in the vicinity of Vineyard Avenue.
>
> In addition to addressing the issues and topics identified above, the application shall be accompanied by the forms promulgated under ACSMO §6.80.090, as well as the information required under SMARA §§2772 and 2773.

2.3 PROJECT OBJECTIVES

The reclamation plan amendment provides site-specific actions designed to meet the applicable statutory and regulatory requirements. An overview of the end uses of the reclamation plan amendment is provided in Figure 2-3. The proposed project includes the following objectives:

1) Address the requirements of Condition 7 of Resolution No. 12-20.

2) Realign and restore an approximately 5,800-foot reach of the ADV resulting in an enhanced riparian corridor that flows south of, rather than through (as currently anticipated in SMP-23), Lake B.
3) Maximize the extraction of the remaining available on-site sand and gravel resources through the anticipated reclamation end date of 2056, including a change in the final bottom elevation of excavation in Lake B to 150 feet msl.
4) Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate.
5) Reduce Vehicle Miles Traveled (VMT) and the related air emissions by retaining a local source of aggregate.
6) Carry out the objectives of the LAVQAR and Zone 7 Agreement for implementation of the Chain of Lakes on the portions of land controlled by CEMEX.
7) Implement a public use pedestrian and bike trail on the southern perimeter of the CEMEX property.
8) Implement the proposed reclamation plan amendment to establish end uses of water management, open space, and nonprime agriculture in accordance with the California Surface Mining and Reclamation Act (SMARA) (Public Resources Code 2710, et seq.).

2.4 ENVIRONMENTAL SETTING

2.4.1 Project Location and Access

The project site consists of approximately 920 acres situated between the cities of Pleasanton and Livermore, south of Interstate 580 and Stanley Boulevard in the Livermore-Amador Valley, north of Vineyard Avenue, and both east and west of Isabel Avenue (SR 84), as shown in Figure 1-2.

2.4.2 Assessor Parcel Numbers

The project site's assessor parcels are listed in Table 2-1, "Assessor's Parcel Numbers."

TABLE 2-1
ASSESSOR'S PARCEL NUMBERS

Assessor's Parcel Numbers	Acres (Approximate)	Recordation
904-6-1-18	84.8	87-036266
904-6-2 (part)	57.4	87-036266
904-8-1-3 (part)	90.2	87-036266
904-8-1-2	66.0	87-036266
904-8-2-5	6.6	87-036266
946-1350-9-12	29.3	87-036266
946-1350-9-19	209.7	87-036266
946-1350-10-5	23.7	87-036266
946-4598-19	6.9	2007290105
950-6-3-9	48.6	2007290105
950-6-1-5	129.0	87-036266
99-290-11-7	209.7	2000116048
TOTAL:	**961.9**	

Source: Alameda County Assessor 2020
Note: The assessor's parcel acreages are taken from Alameda County Assessor data and are not as precise as the areas calculated on reclamation

Assessor's Parcel Numbers	Acres (Approximate)	Recordation

plan sheets and figures using the Geographic Information System (GIS) and AutoCAD (based on the property boundary survey performed by Kier and Wright, a licensed survey firm, in 2013). The overall CEMEX property is approximately 966 acres (based on property survey) of which approximately 920 acres are within the proposed reclamation plan boundary.

2.4.3 Site and Entitlement History

CEMEX and its predecessors-in-interest (e.g., Pacific Cement and Aggregates, Inc. and Lonestar Industries) have been continuously mining for sand and gravel at the project site since 1906 or earlier. In September 2005, CEMEX acquired RMC Pacific, including all land, leases, and permits.

After decades of operations, CEMEX's predecessor obtained Quarry Permit Q-1 from the County in January of 1957, following the County's 1956 passage of Ordinance 181 N.S. governing quarries and gravel pits. In 1969, CEMEX's predecessor obtained Q-76 from the County via Resolution 129465, which authorized sand and gravel pit operations on an additional 165 acres of the site, 110 acres of which CEMEX owned. Figure 2-1 shows the vested mining areas (e.g., the pre 1956 mining areas, Q-1 and Q-76).

In compliance with SMARA, which became effective on January 1, 1976, the County adopted the Alameda County Surface Mining Ordinance (SMO) in July 1977. In 1981, the County adopted the LAVQAR. As part of the LAVQAR, quarry operators in the Livermore-Amador Valley, including CEMEX, would excavate basins for Zone 7's future operation of water storage, conveyance, and recharge facilities, known as the "Chain of Lakes." The potential environmental impacts of the LAVQAR and Chain of Lakes were analyzed in the LAVQAR EIR (Alameda County 1980), certified by the County in 1981.

On April 6, 1987, via County Resolution 87-18, CEMEX's predecessors obtained SMP-23, a reclamation plan for the project site located on the areas of CEMEX's existing permitted rights under Q-1 and Q-76. SMP-23 is not a conditional use permit for mining; rather, it is the reclamation plan for the site as required by SMARA and the SMO. The County prepared and approved a negative declaration for the SMP-23 reclamation plan on the basis that SMP-23 was consistent with the LAVQAR. The SMP-23 reclamation plan has been modified several times since its initial approval. See Figure 2-2 for a map of approved site boundaries.

In 1989–1992, CEMEX's predecessor purchased four parcels of land from Pleasanton Gravel Co. and Jamieson Co., which parcels are herein collectively referred to as the Jamieson Parcels (Figure 2-1). Jamieson Parcels 1 and 2 were within the scope of Q-76, while Jamieson Parcels 3 and 4 were within the scope of Q-4 initially granted to California Rock and Gravel Company in 1957. The Jamieson Parcels also have vested mining rights. The Jamieson Parcels were acquired by CEMEX's predecessors after the County had approved SMP-23 in 1987; therefore, those parcels were not included within the currently approved SMP-23 reclamation plan boundary. Instead, CEMEX conducted surface mining operations at the Jamieson Parcels in accordance with Surface Mining Permit and Reclamation Plan No. 16 (SMP-16), which applies to the surface mining operation adjoining the project site's eastern and northern boundary (operated by Vulcan Materials Company).

The following list is a chronological summary of approved permits and other relevant regulatory actions for the project site:

1957 Q-1 and Q-4 mining permits

1969 Q-76 mining permit, Resolution 129465

1975 Q-76 reclamation plan approval and EIR certification, Resolution 11145

1987 SMP-23 reclamation plan and negative declaration, Resolution 87-18

1988 Agreement between Zone 7 and RMC Lonestar

1992 SMP-23 periodic review, Resolution 92-29 (20 conditions)

1995 Q-76 permit time extension and incorporation into SMP-23, Resolution 95-34

1996 SMP-23 amendment to add signage to Lake A (five new conditions)

2006 *Lakeside Circle Corrective Action Plan for Lake A* (Cotton, Shires & Associates 2007))

2010 SMP-23 amendment to Condition 29 (Stanley Boulevard landscaping conditions), Resolution 10-09

2012 SMP-23 periodic review, Resolution 12-20 (35 conditions)

2013 *Lake B Corrective Action Plan* (Alameda County 2013), administrative approval pursuant to SMO Section 6.80.120; initial application for SMP-23 amendment

2014 Notice of reclamation plan approval recorded with the County recorder's office pursuant to California Public Resources Code Section 2772.7

In addition, in 2016 (superseded) and then in 2019 CEMEX submitted applications to revise the SMP-23 Reclamation Plan. CEMEX continues to operate the Eliot Quarry pursuant to vested rights and the Q-1, Q-4, Q-76, and SMP-23 (as amended) entitlements. The project does not include modifying the existing Q-1, Q-4, or Q-76 entitlements.

2.4.4 Project Requirements Related to the LAVQAR

As noted in the previous section, the project site is subject to the LAVQAR (Alameda County 1981). The LAVQAR was adopted as a master reclamation plan for three different but contiguous mine sites that would shape mined pit areas into a Chain of Lakes and return the remaining mined lands to productive uses after the removal of sand and gravel reserves (Figures 2-3 and 2-5).

The general objectives of the LAVQAR are listed below:

- To enable the competing resources of land, water, and sand and gravel to be utilized with a minimum of conflict and disruption.
- To plan for reclamation, productive reuse, and rehabilitation of the Quarry Area.
- To mitigate adverse effects of mining.
- To satisfy requirements of SMARA and the Alameda County Surface Mining Ordinance.
- To provide a coordinated plan for arrangement of mining-produced land and water masses into a coherent, flexible form, reflecting interrelatedness of geology, hydrology, land use, and other factors throughout the Quarry Area.

The relevant specific objectives of the LAVQAR are listed below:

- To mitigate alteration/impedance of groundwater movement and storage due to mining operations.
- To mitigate exposure of groundwater to evaporative losses due to mining operations.

- To mitigate exposure of groundwater to increased risk of quality degradation due to surface exposure as a result of mining operations.
- To provide uninterrupted and undiminished satisfactory water quantity and quality in the upper aquifer of the mined area for beneficial uses.
- To provide a surface water storage and transmission system to replace a portion of the existing subsurface system to mitigate mining impacts and enhance the ability to utilize, develop, and manage the water resources of the Livermore-Amador Valley for public benefit.
- To provide land areas capable of productive use and with minimum residual hazards.

Approved reclamation plans within the LAVQAR boundary provide each water body in the Chain of Lakes with an intended end use for water management. The LAVQAR requires the operators to dedicate to Zone 7, at no cost, all excavated Chain of Lakes basins within the LAVQAR, related exterior perimeter areas, interior perimeter areas sufficient to provide a minimum 25-foot-wide access, and appurtenant levees, conduits, and diversion structures. Areas not intended for water management in the LAVQAR area are designated, within approved reclamation plans, for agriculture, recreation, and open space land uses, consistent with the *East County Area Plan* (ECAP) of the *Alameda County General Plan* (County General Plan) (Alameda County 2002) and are retained by the mining companies.

While each approved surface mining permit and reclamation plan in the LAVQAR area (i.e., SMP-23, SMP-16) includes requirements providing for fulfillment of the Chain of Lakes, each mine operator also has a separate contract with Zone 7. Those contracts describe the details of property transfer, construction of facilities, monitoring and maintenance requirements for constructed facilities, and use of groundwater. CEMEX's predecessor entered into an agreement with Zone 7 (Zone 7 Agreement) on March 29, 1988.

Pursuant to Section III of the Zone 7 Agreement, CEMEX's predecessor undertook to "conduct its sand and gravel operations in such a manner as to create, at no cost to Zone 7, Lakes A and B and that portion of Lake C which is within the boundaries of CEMEX properties, the appurtenant levees and conduits, a diversion structure from Lake A into Lake C, and a conduit structure from Lake B to Lake C, all as shown on the Specific Plan." The Zone 7 Agreement contains the following provisions with respect to the contemplated diversion and conveyance facilities to be constructed at the project site and CEMEX's corresponding rights and obligations:

- The diversion structure shall have a capacity of diverting the first 500 cubic feet per second [cfs] of water into the Chain of Lakes.
- The conduit between Lake B and Lake C shall have a 30-inch inside diameter and be equipped with the appurtenances necessary for controlling the transfer of water from one lake to another.
- If modifications to the previously approved plans and specifications for the construction of levees, lakes, conduits and diversion structures are necessary, CEMEX should submit revised plans and specifications to Zone 7 for review and approval prior to construction. Such approval shall not be unreasonably withheld.
- Upon construction of the diversion and conveyance facilities contemplated by the Zone 7 Agreement, CEMEX shall grant to Zone 7 the real property containing all areas of the lakes, levees, conduits and diversion structures. Additionally, CEMEX shall grant to Zone 7 a perimeter strip of land at least 25 feet wide. However, the perimeter strip shall be 12.5 feet wide where CEMEX's properties abut those of Pleasanton Gravel Company (now operated by Vulcan).

The Zone 7 Agreement also requires CEMEX to take reasonable measures and actions to repercolate, store, and reuse waters produced during its mining and processing operations. However, Sections VIII–IX of the Zone 7 Agreement authorizes CEMEX to discharge excess groundwater from its mining operations upon payment of a fee to Zone 7, even though such water may subsequently flow out of the Livermore-Amador Valley. These requirements relate to the vested, ongoing mining operations and not to the scope of reclamation covered by the project.

2.4.5 Project Site Land Uses

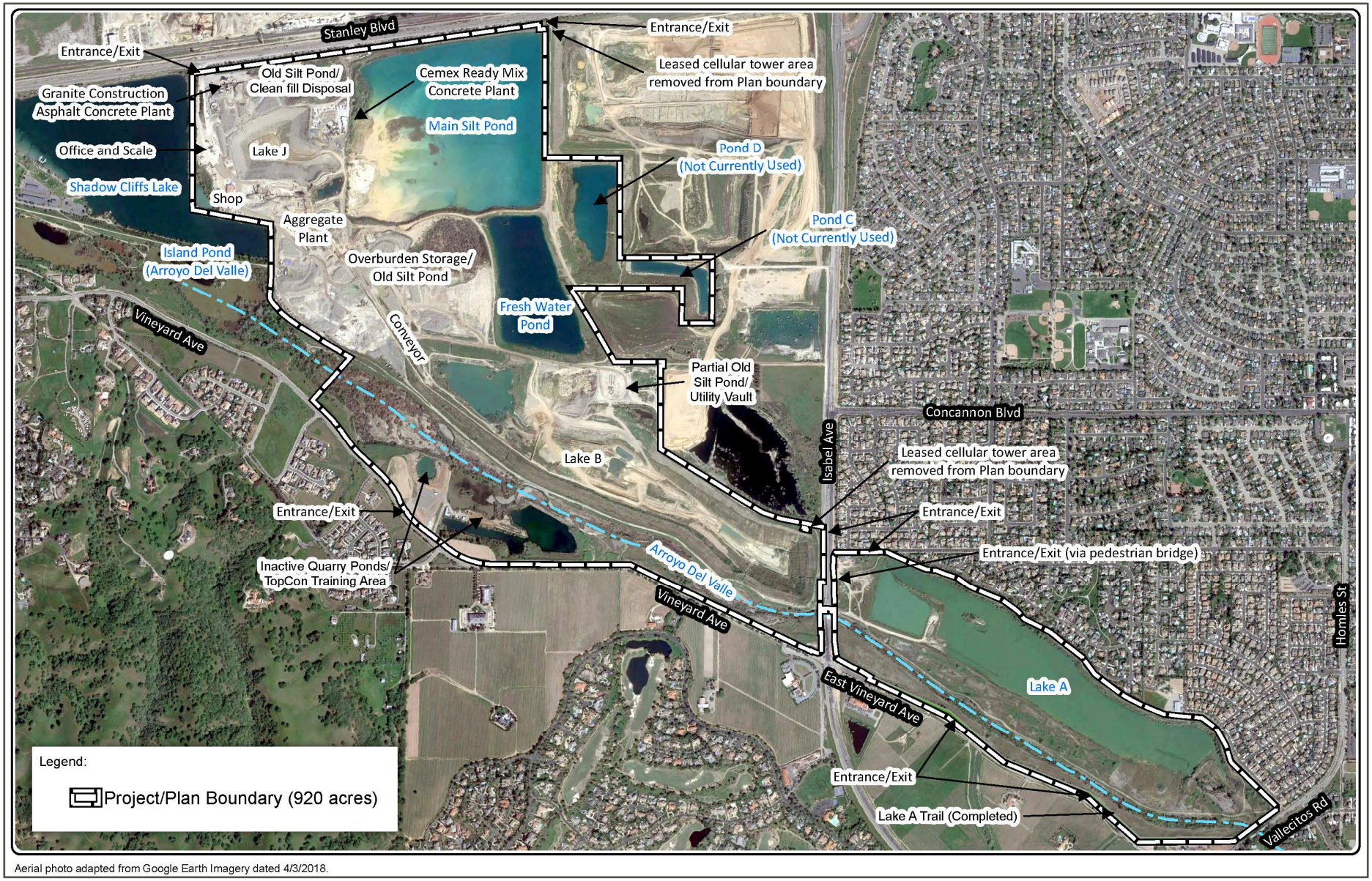
The project site is predominated by mining and processing facilities associated with CEMEX's operation (see Figure 2-6, "Existing Facilities" and Figure 2-7, "Plant Site Area Utilities"). The eastern portion of the site (east of Isabel Avenue) contains Lake A, a formerly mined area that contains water primarily from groundwater infiltration. South of Lake A is the eastern portion of the ADV at the project site, which is a perennial drainage channel that runs east-west along the southern portion of the site. The portion of the site west of Isabel Avenue contains Lake B, which is a portion of the active mining area with a mine pit approximately 100 to 130 feet deep. The ADV continues east-west along the southern portion of this area of the site before merging with Alameda Creek near Interstate 680. North of Lake B are CEMEX's currently operating materials processing facility, processing ponds, freshwater ponds, and stockpile areas. CEMEX's current mining operations are also being conducted in an area referred to as Lake J. Additional uses include processing activities, stockpiles, administrative offices, a truck scale, and other facilities related to mining and processing. Topcon Positioning Systems, Inc. (a lessee) currently operates a heavy equipment geopositioning training facility within a southern portion of the project boundary. This use is temporary and it must be moved elsewhere to accommodate the ADV realignment (anticipated to occur in 2023).

2.4.6 Surrounding Land Uses

Land uses adjacent to the project site include other mining operations, open space areas, agricultural uses, recreational facilities, transportation corridors, and residential development (Figure 2-6). A separate mining operation subject to SMP-16, currently operated by Vulcan Materials Company, abuts the project site's eastern and northern border of Lake B. The East Bay Regional Park District (EBRPD) Shadow Cliffs Recreation Area, a reclaimed surface mine that now includes a lake and shoreline facilities available for public use, abuts the project site's northwestern border. The Ruby Hills residential subdivision in the city of Pleasanton is located across Vineyard Avenue to the south of the Lake B portion of the project site. Vineyards for two wineries (Ruby Hill Winery and Rubino Estates Winery) and two event centers (Casa Real at Ruby Hill Winery and Palm Event Center in the Vineyard) are also located along the south side of Vineyard Avenue. Residential uses are also located in the city of Livermore north of Lake A. The nearest residential developments are contiguous to the northern boundary of the Lake A area, with the nearest home approximately 35 feet from the northwest corner of the Lake A property.

2.4.7 General Plan Land Use Designations

The project is located within the ECAP. The ECAP designates the site as "Large Parcel Agriculture" and "Water Management" (see Figure 2-8, "General Plan Land Use Designations"). The Water Management land use designation provides for sand and gravel quarries, reclaimed quarry lakes, watershed lands, arroyos, and similar and compatible uses. Sand and gravel quarries allow a range of uses, including sand and gravel processing, associated manufacturing and recycling uses requiring proximity to quarries, reclamation pits, and public use areas.



SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Existing Facilities

ELIOT QUARRY SMP-23 SEIR

Figure 2-6

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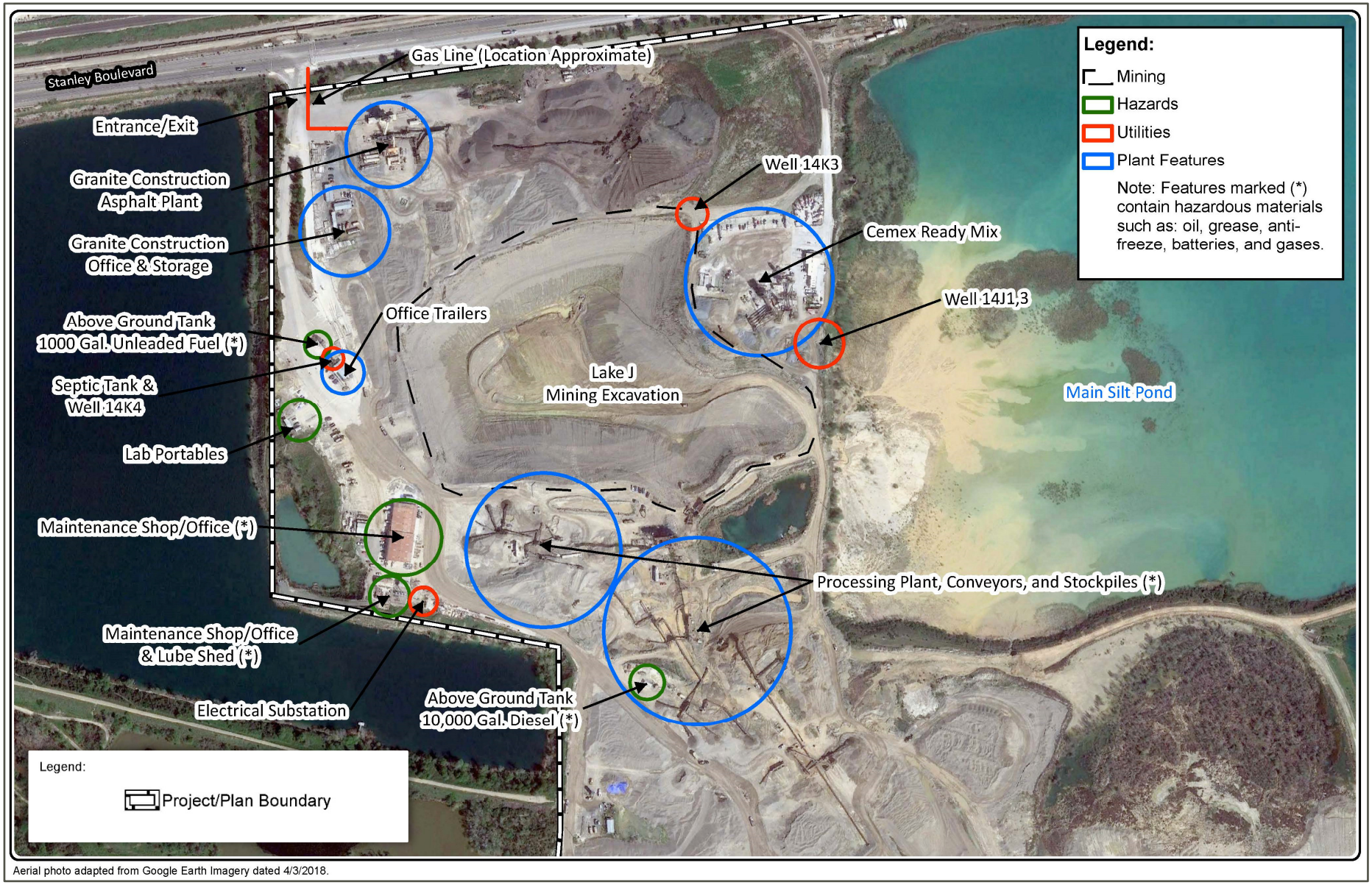

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

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Plant Site Area Utilities

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Figure 2-7

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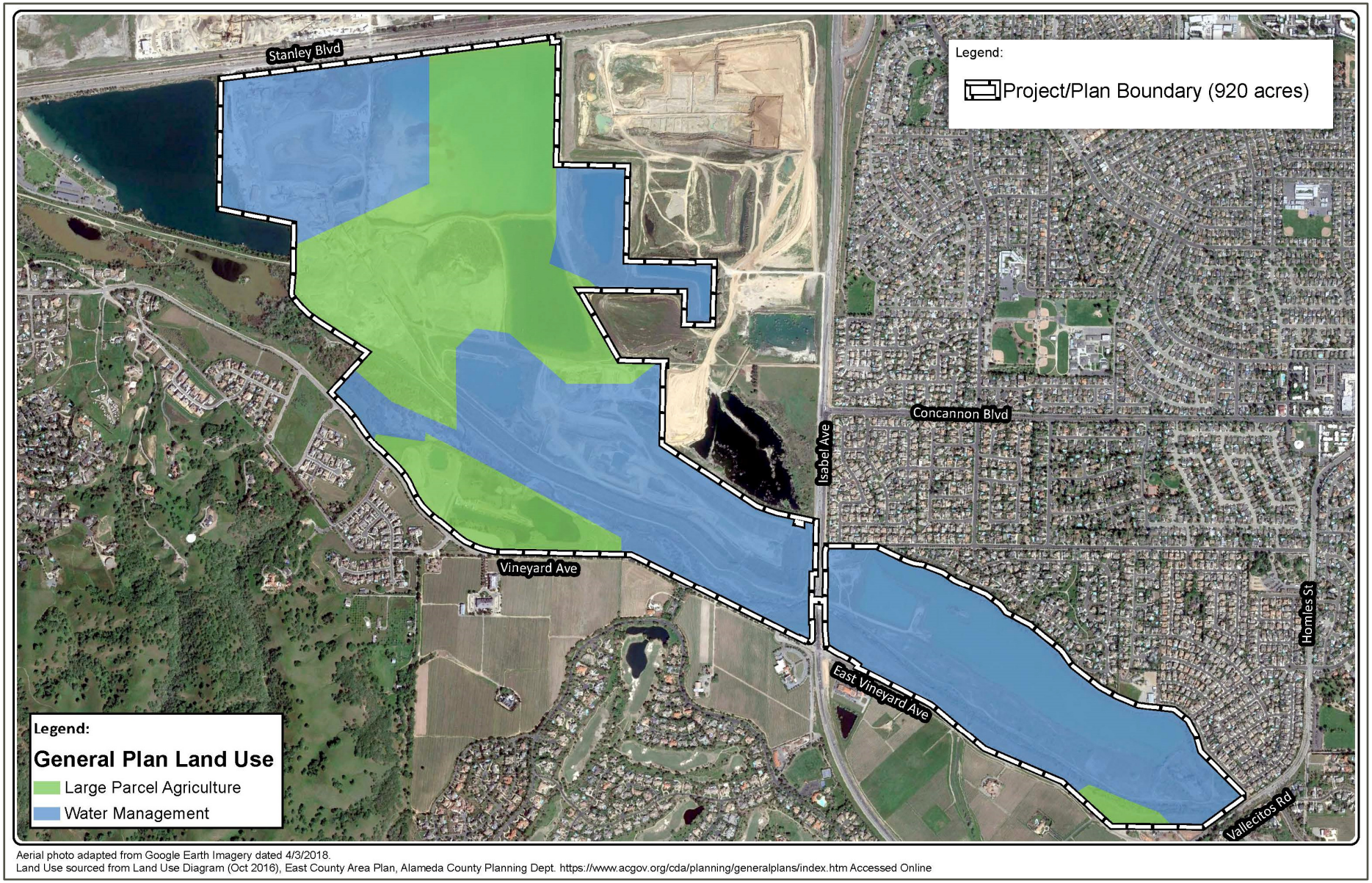

SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

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General Plan Land Use Designations

ELIOT QUARRY SMP-23 SEIR

Figure 2-8

BENCHMARK RESOURCES

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2.4.8 Zoning Classifications

As the local land use authority, the County authorizes mining activities on unincorporated lands through the issuance of surface mining permits and approval of reclamation plans pursuant to County Code of Ordinances Title 6, Health and Safety, Section 6.80, Surface Mining and Reclamation. The provisions of the County SMO apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted within any County zoning designation, including lands designated as Agricultural, upon County approval of a surface mining permit (or existence of vested rights), reclamation plan, and financial assurances for reclamation.

The site's current zoning classifications are Agriculture (A), Unclassified (U), and Planned Development (PD) (see Figure 2-9, "Zoning Designations"). County Code Section 17.50.010 prescribes that every use in the Unclassified zoning district not otherwise prohibited by law is a conditional use and shall be permitted only if approved by the board of zoning adjustments as provided in Section 17.54.130. Existing uses are permitted to continue as provided in Section 17.54.180. The Planned Development district allows those uses allowed in the Agriculture district, as well as precast concrete manufacture (Andrade, pers. comm., 2019). The portions of the property subject to the Planned Development district are reflected on Figure 2-9, which is based on the County's parcel-specific zoning information

2.4.9 Mineral Resource Designations

An objective of SMARA is to create a mineral lands inventory by designating certain areas of California as being important for the production and conservation of existing and future supplies of mineral resources. Pursuant to Section 2790 of SMARA, the State Mining and Geology Board has designated certain mineral resource areas to be of regional significance. The project site and much of the surrounding areas, which are currently in active quarrying operations, have been designated as a "Regionally Significant Construction Aggregate Resource Area." The California Department of Conservation designated the project site Mineral Resource Zone (MRZ) 2(a). This designation indicates that a high likelihood exists that significant aggregate deposits are present.

2.4.10 Utilities

The following utilities currently serve the site (see Figure 2-7):

- a water well equipped with a purification system that supplies domestic water, located between the aggregate processing plant and ready-mix concrete plant in the North Reclamation Area;
- a septic tank to collect sewage, located near the office trailers near the processing plant site in the North Reclamation Area;
- a natural gas line from Stanley Boulevard that supplies gas to the asphalt batch plant operated by Granite Construction Company in the North Reclamation Area; and
- an electrical substation located near the maintenance shop in the North Reclamation Area.

2.4.11 Equipment

Mining equipment employed at the site includes conventional scrapers, excavators, front-end loaders, motor graders, and bulldozers. Other specialty mining equipment, such as dredges or draglines, have been mobilized and used as needed, though much less frequently. Haul trucks and conveyors are used to transport materials from mining areas to the on-site processing plants. Aggregate processing operations employ conventional sand and gravel processing equipment, such as scrubbers (to wash aggregates), screens (to wash and sort aggregates), crushers (to resize and reshape materials), conveyors (to move

material to and between processing plant components and stockpiles), bins (for storage), mixers, and dryers. Specialized processing equipment is used in the production of asphaltic concrete and ready-mix concrete. Portable processing equipment (similar to that used at the main aggregate processing plant) is also used to process aggregates and recycled materials. Support equipment includes water trucks (for dust control), truck scales, portable and submersible water pumps, service/maintenance vehicles, trucks, cranes, loaders, and forklifts.

2.4.12 Approved Reclamation Plan Components

2.4.12.1 Lake A Area

Lake A is a mined area located north of Vineyard Avenue, between Isabel Avenue/SR 84 and Vallecitos Road. It was approved in SMP-23 (1987) for a 208-acre lake. Lake A has not been mined to the full extent anticipated in the approved reclamation plan. No further mining is planned in Lake A.

Mining in the Lake A area, north of the ADV, began in the late 1990s. The approved reclamation plan was originally approved when the property to the north of Lake A was zoned agricultural and within the jurisdiction of Alameda County. Over the years, the zoning was changed to residential, the property was annexed to the City of Livermore, and houses were built adjacent to Lake A.

To accommodate mining, the ADV along the southern boundary of Lake A was relocated to the south in the mid-1990s with the authorization of a Section 1602 lake and streambed alteration agreement from the California Department of Fish and Wildlife (CDFW) (Notification 1600-2004-0214-3). Once the ADV was moved, that agreement expired on December 31, 2009.

Mining in the Lake A area continued until approximately 2003, when CEMEX discontinued mining to address neighborhood concerns caused by a potential subsurface slide. In November 2001, cracks were noticed in the pavement on Lakeside Circle, which led to initiating a geological investigation.

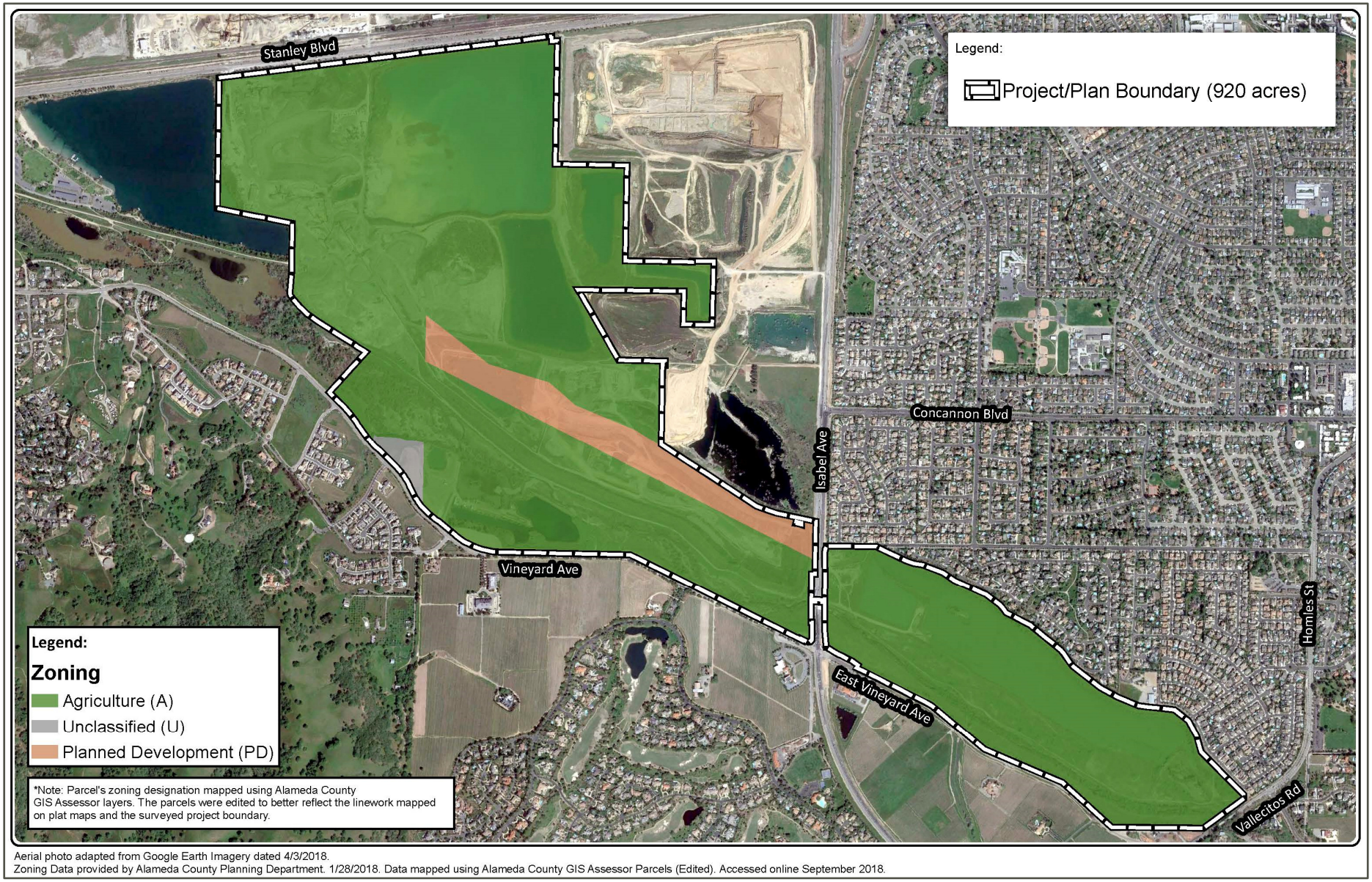
All Lake A slopes are currently 2:1 (horizontal to vertical) (2H:1V) or flatter with maximum depths of 100 feet below ground surface.

2.4.12.2 Lake B Area

Lake B is a mined area located north of Vineyard Avenue, west of Isabel Avenue/SR 84. It was approved in SMP-23 (1987) for a 243-acre lake. Mining is ongoing in this area. Lake B has not been mined to the full extent anticipated in the approved reclamation plan. Portions of Lake B as identified in the approved reclamation plan now include a segment of Vineyard Avenue and residential development to the south of Vineyard Avenue, which will no longer be subject to mining (Figure 2-2).

2.4.12.3 Lake J Area

The Lake J area is located in the northwestern portion of the site, to the south of Stanley Boulevard and to the east of the Shadow Cliffs Regional Recreation Area. Mining is ongoing in this area, and processing facilities previously located here were relocated to areas south of the Lake J mining area. Lake J has never been a part of the Chain of Lakes (LAVQAR). When reclaimed, Lake J would not be part of the Chain of Lakes and would not be granted to Zone 7. Lake J was specified as Option 2 in the approved reclamation plan. As part of the proposed project, Lake J would be backfilled with overburden and process wash fines during the course of mining elsewhere at the site and returned to open space and/or agriculture.



SOURCE: CEMEX 2019, Project Description; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Zoning Designations
ELIOT QUARRY SMP-23 SEIR
Figure 2-9

BENCHMARK RESOURCES

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2.4.12.4 Arroyo del Valle

The LAVQAR and related 1981 EIR depict, as an option, the rerouting of the ADV along the southern boundaries of Lake A and Lake B. However, the SMP-23 reclamation plan approved in 1987 provides for the ADV to be eliminated in the project reach and diverted into the eastern end of Lake A and then into Lake B over 40-foot tall concrete spillways. The 1987 reclamation plan concept for the diversion/elimination of the ADV, which would be subject to federal and state regulatory agency authorizations, has not been implemented by CEMEX.

2.4.12.5 Water Conveyance Facilities

After the 1987 reclamation plan was approved, CEMEX's predecessor prepared plans for water conveyance facilities. Those plans, which the County subsequently approved, have not been implemented. Those water conveyance facilities included:

- a 40-foot concrete spillway collecting flows from the ADV (under Vallecitos Road) before those flows descend 50 feet, at a slope of 2H:1V, into Lake A;
- an earth- and rock-lined structure to collect overflows within Lake A before conveying them under Isabel Avenue/SR 84 in a 40-foot concrete spillway to Lake B;
- an underground concrete pipe between Lake A and Lake C, which terminates at a spillway dropping water up to 70 feet down a 2H:1V slope;
- an underground 30-inch concrete pipe between Lake C and Lake B; and
- a concrete and riprap apron along the western boundary of Lake B allowing overflow to continue down the ADV channel.

2.5 PROPOSED PROJECT ELEMENTS

2.5.1 Final Reclamation Overview

CEMEX seeks to amend the approved reclamation plan, summarized above in Section 2.4. Under the proposed reclamation plan amendment, the ADV would remain separate from Lake A and Lake B, providing for passage of sensitive biological resources and eliminating the need for the two 40-foot-high concrete spillways and the concrete and riprap apron, while complying with the LAVQAR to create pits to provide surface water storage, water conveyance, and groundwater recharge. Lakes A, B, and C would be connected by underground conduits. The ADV would be connected to Lake A via a diversion structure and a downstream overflow. Lake B would be connected to the ADV with a downstream overflow. These features are described in more detail below. Note that while the infrastructure connecting Lake A to Lake C would be constructed, water would not be transferred to Lake C until after Lake C is constructed.

After final reclamation, CEMEX will grant to Zone 7, in accordance with the Zone 7 Agreement, Lake A, Lake B, Pond C, Pond D and related levees, conduits, diversion structures, and a 25-foot-wide perimeter strip, except where Lake B abuts Lake C, where the perimeter strip will be 12.5 feet wide. CEMEX will own and reclaim the remaining areas not to be dedicated to Zone 7 to open space or agriculture. Note that while CEMEX will continue to own the remaining property post-reclamation, CEMEX possesses no post-reclamation obligation once the County approves final reclamation and the County and DMR have deemed the site closed and released the Financial Assurance Mechanism for the site.

2.5.2 Reclamation Plan Boundary

The reclamation plan boundary and the property boundary are the same except for the southwestern most portion of the property, located south of Shadow Cliffs Recreation Area (Figure 2-1). Although the westernmost portion of the property was mined by CEMEX's predecessors at some point prior to 1970s, no mining has been conducted there since 1976, when SMARA became effective. Pursuant to Section 2776(c) of SMARA, no reclamation plan or reclamation activities are required for mined lands on which surface mining operations were conducted prior to January 1, 1976. Accordingly, the westernmost portion of the project site is not included within the reclamation plan boundary. This area is naturally vegetated and will not be mined or disturbed by CEMEX's surface mining operations.

This reclamation plan amendment makes the following changes to the existing reclamation plan boundary (compare Figures 2-2 and 2-3):

- Includes the Jamieson Parcels, which are within the scope of the Q-4 and Q-76 permits but were acquired by CEMEX's predecessors from Jamieson and Company after SMP-23 was approved in 1987.
- Remove an approximately 20-acre triangular-shaped property bound by Old Vineyard Avenue, Safreno Way, and Vineyard Road, which was included within the scope of SMP-23 as approved in 1987 but later sold by CEMEX's predecessors.
- Address the widening of Isabel Avenue/SR 84.

2.5.3 Reclamation of the Lake A Area

Table 2-2, "Comparison of Approved and Proposed Reclamation for Lake A Area," provides a comparison of the proposed reclamation elements discussed above with reclamation under the existing approved reclamation plan for the Lake A area.

TABLE 2-2
COMPARISON OF APPROVED AND PROPOSED RECLAMATION FOR LAKE A AREA

Approved Reclamation Plan	Proposed Reclamation Plan Amendment
Entire lake mined to 100 feet bgs (330 feet msl)	No further mining; additional excavation is required as part of the final reclamation for operation of the Chain of Lakes: • Install berms between the ADV and Lake A. • Convert berm at the western end of the lake to an island to promote water flow across the lake, includes excavating an area 12 feet deep (i.e., 405 feet msl) by 80 feet wide.
208-acre lake (25-foot setback with open space)	81-acre lake, 137 acres of open space (including the 25-foot setback)
ADV to flow directly through Lake A.	ADV remains separate from Lake A and Lake B
Conduct necessary grading/excavation to install the water pipeline under Isabel Avenue to connect Lake A to Lake C.	Similar, except that the smaller lake requires a longer pipeline (see Figures 2-2 and 2-3.)
Water would flow from Lake A to Lake C and then Lake B.	Lake A would continue to convey water from ADV to Lake A to Lake C, and include a turn-out to Lake B at the request of Zone 7.
Lake A would extend to the property boundary that encloses the southeastern area (with 25-foot setback).	Lake A would not extend to the property boundary. The remaining area surrounding the lake would be revegetated and left in open space.

Note: ADV = Arroyo del Valle; bgs = below ground surface; cfs = cubic feet per second; msl = mean sea level.

No further mining would occur in Lake A; however, numerous reclamation features, including water conveyance facilities, would be installed as part of reclamation. In addition, some material would need to be excavated as part of the final reclamation for operation of the Chain of Lakes, and Lake A would be used to store excess water from the Lake B mining operations and to convey water from the ADV to Lake C (after Lake C is completed). The final surface area of Lake A would be 81 acres, with a bottom elevation of 360 feet msl and projected water surface elevation of 420 feet msl.

As part of the project, a small overflow channel would be installed at the top of the berm along the southwest corner of Lake A, near the western end of the berm. If a flooding event on ADV or a mechanical failure were to affect the shut-off ability of the upstream diversion structure into Lake A, and Lake A began to overfill, the overflow channel would allow the excess water into the ADV before flooding adjacent properties or eroding the berm. The overflow channel would be rock lined to prevent erosion and siltation.

2.5.4 Mining and Reclamation of the Lake B Area

Table 2-3, "Comparison of Approved and Proposed Reclamation for Lake B Area," provides a comparison of the proposed reclamation elements discussed above against reclamation under the existing approved reclamation plan for the Lake B area.

TABLE 2-3
COMPARISON OF APPROVED AND PROPOSED RECLAMATION FOR LAKE B AREA

Approved Reclamation Plan	Proposed Reclamation Plan Amendment
Bottom elevation of 250 feet msl (approximately 150 feet bgs) (under 2013 Lake B corrective action plan) and projected water surface elevation of 355 feet msl based on the design spillway at the downstream end of Lake B	Bottom elevation of 150 feet msl (approximately 250 feet bgs) and projected water surface elevation of 369 feet msl, with less water spilling over the design overflow at the downstream end of Lake B
The ADV to flow through Lake B, conveyed from a spillway between Lake A and Lake B	Realignment and restoration of an approximately 5,800-linear-foot reach of the ADV (Figure 2-4) that would go around to the south, rather than through, Lake B
243-acre lake (25-foot setback)	208-acre lake (25-foot setback from edge of lake)
Lake B will be excavated to a depth of 250 feet msl (approximately 150 feet bgs) with no backfill material being deposited in Lake B	The eastern end of Lake B will be excavated to an elevation of 220 ft msl at the lowest elevation and subsequently backfilled to 340 ft msl at the top elevation with approximately 2.1 million cubic yards of overburden and sediment material that was previously stored in other areas on the site. The central and western portion of Lake B will be excavated to a depth of 150 feet bgs, as discussed above.

Note: ADV = Arroyo del Valle; bgs = below ground surface; cfs = cubic feet per second; msl = mean sea level.

As part of the r1987eclamation plan amendment, CEMEX would continue mining in the Lake B area, including the ADV realignment area, located west of Isabel Avenue. Mining at this location is expected to be complete in 2056. The final surface area of Lake B would be 208 acres, with a bottom elevation of 150 feet msl. The eastern panhandle of Lake B will be mined to a bottom elevation of 220 feet msl. The post-reclamation water surface elevation is projected to be 369 feet msl. If the reclamation amendment is approved, implementation of mining at the Lake B area would require no additional County approvals and/or entitlements.

To facilitate the southerly progression of mining of Lake B, the proposed project includes realignment and restoration of an approximately 5,800-linear-foot reach of the ADV (Figure 2-4). CEMEX plans to move the ADV closer to Vineyard Avenue in a realigned stream channel and floodplain, creating an enhanced riparian and aquatic habitat. The planned ADV realignment would result in a riparian corridor that flows around, rather than through (as originally anticipated in SMP-23), Lake B, providing a significant uplift in biological functions and values.

After the planned realignment of ADV, the southern cut slope of Lake B will progress southward to be generally parallel to Vineyard Avenue. An embankment fill at the northern portion of Lake B (referred to as the "shark's fin" area) will separate Lake B from an existing freshwater pond to the north (See Figure 2-6). Fills on the order of 120 feet thick will be required for the embankment. The embankment prism will increase storage capacity in the freshwater pond and may allow the freshwater pond to be repurposed as a silt storage cell and filled to 370 feet MSL during mining operations. The embankment prism will ultimately be breached with a drainage slot to merge the freshwater pond with Lake B in the reclaimed condition. In addition, an approximately 120-foot-thick embankment fill is planned near the eastern end of Lake B. The embankment will create an overburden and silt storage cell for future mining activities. West of this embankment, the southern slope of Lake B will be constructed with a 40-foot horizontal bench at approximately elevation 260 feet MSL, or the slope will be cut at an inclination of 2.25H:1V, at applicant's option.

In addition, berms would be installed between Lake B and the ADV to reduce the potential for ADV to overtop and for flood waters to flow into Lake B during reclamation operations and in future reclaimed conditions. The grade along the existing berm alignments would be raised where necessary to prevent overtopping of the ADV into the lake during a 100-year flood.

A conduit would be constructed between Lake B and the future Lake C, consistent with the original SMP-23. The Lake B to Lake C conduit would be a 30-inch-diameter pipe placed at an invert elevation of 349 feet msl. The conduit would allow a gravity-feed flow of water between the two lakes. The conduit to and from Lake C would be stubbed and capped at CEMEX's property line until the future Lake C is developed (by others).

An overflow outlet would be created in the crest of the berm installed along the west end of Lake B to allow water to flow back into ADV through a controlled and stable pathway. The outlet would consist of an armored trapezoidal weir and chute with an armored outlet apron. The outlet crest would be 60 feet wide perpendicular to the flow with 4H:1V side slopes, and the trapezoid would be at least 5 feet deep, resulting in a top width of 60 feet for the trapezoidal section. The outlet crest would be 120 feet wide in the direction of the flow. The outlet flow path would be lined with riprap to mitigate the potential for erosion. Sheet 6 of Appendix B-1, "Proposed Reclamation Plan Amendment," provides a detailed cross section of the overflow outlet.

In addition, silt and fined-grained materials that are washed from the aggregate would be deposited in several areas of the site, including Lake J and the east end of Lake B. Approximately 2.1 million cubic yards of dry silt and overburden may be placed in the east end of Lake B, as shown on Sheets R-2 and R-3 of Appendix B-1. The lowest elevation of silt would be at approximately 230 ft msl, whereas the top elevation would be 340 ft msl, which is 29 feet below the anticipated water surface elevation in Lake B of 369 ft msl. The width of the top silt elevation would be approximately 630 feet.

Furthermore, approximately 6.4 million cubic yards of backfill materials (silts and overburden) be placed in Lake J, to an elevation of 360 ft msl to 380 ft msl, and be contoured in to the final reclaimed ground

surface, as shown on Sheets R-1 and R-3. Silts and overburden may be blended as backfill occurs. The lowest elevation of silt would be at approximately 130 ft msl while the anticipated post-mining groundwater elevation at Lake J is anticipated to be 330 ft msl, coincident with the water level in the Shadow Cliffs Lake to the west. Thus, the silt backfill would extend 30 feet to 50 feet above the groundwater surface after reclamation. The width of the top of the silt backfill at the groundwater surface elevation would be approximately 1,450 feet, in the direction perpendicular to groundwater flow. The width of the silt at the bottom of Lake J, at 130 ft msl, would be about 200 feet.

In coordination with the EBRPD, CEMEX would develop a public-use trail parallel to Vineyard Avenue on the south side of the ADV, which is within the reclamation plan boundary. The trail would be developed in a 20-foot corridor (typical) and feature a 10-foot-wide paved section with 2-foot shoulders on each side. Consistent with the existing trail on the south side of Lake A, trail development would include landscape improvements that feature California native, drought-tolerant plantings (see Appendix B-2, "Lake A Landscape Plan," and Appendix B-3, "Lake A Landscape Plan Functions and Value Memorandum").

Following reclamation, the Lake B areas north of the realigned ADV would be dedicated to Zone 7, and the pedestrian and bike trail would be granted through an easement or license to the EBRPD. CEMEX would own the remaining areas, including the realigned ADV and the areas south of ADV.

2.5.5 Mining and Reclamation of the North Reclamation Area—Lake J, Plant Site, Silt Ponds, and Ponds C and D

Table 2-4, "Comparison of Approved and Proposed Reclamation for the North Reclamation Area," provides a comparison of the proposed reclamation elements discussed above with reclamation under the existing approved reclamation plan for the North Reclamation Area, including Lake J, the plant site, silt ponds, and Ponds C and D.

TABLE 2-4
COMPARISON OF APPROVED AND PROPOSED RECLAMATION FOR NORTH RECLAMATION AREA

Approved Reclamation Plan	Proposed Reclamation Plan Amendment
Option 1: Keep the plant in its original location and mine north of this area. Option 2: Move the plant and mine this area.	Option 2 is being implemented. After mining is complete, the Lake J area would be backfilled for a return to open space and/or agriculture.
Mine Lake J to bottom of aggregate deposit.	Continue to mine Lake J to 130 feet msl then repurpose Lake J as a silt pond with backfill with overburden and silt to approximately 360 to 380 msl.
Pond C and northern portion of Pond D are not included in approved reclamation plan boundary.	Repurpose Ponds C and D as silt ponds, with a silt deposit allowance of up to 330 feet msl. Prior to converting Pond D to a silt pond, mining could continue to 200 feet msl. Reclaim as either independent open water bodies or merge with larger future Lakes C and D.

Note: bgs = below ground surface; cfs = cubic feet per second; msl = mean sea level.

Reclamation treatment for the North Reclamation Area, which includes the Lake J excavation (not part of the Chain of Lakes), processing plant sites, and process water ponds, would generally involve backfills and/or grading for a return to open space and/or agriculture.

The final bottom mining elevation of Lake J would be 130 feet msl (i.e., approximately 260 feet bgs). However, upon the completion of mining, Lake J would be repurposed as a silt pond and would be backfilled with overburden and silt to approximately 360 to 380 feet msl.

Ponds C and D in the North Reclamation Area may also be repurposed as silt ponds. For these ponds, silts may be deposited up to elevation 330 feet msl. These ponds would either be reclaimed as independent open water bodies with a projected water surface elevation of 370 feet msl or merged with the larger future Lakes C and D to be developed by Vulcan.

Following reclamation, the North Reclamation Area would be owned by CEMEX, with the exception of Pond A that would be dedicated to Zone 7 because it would be encompassed within the ultimate footprint of Lake B after the design drainage notch is installed and water surface elevations rise in Lake B to the projected water surface elevation of 369 feet msl (see the Pond A drainage notch at 350 feet msl in Sheet R-1, "North Area Reclamation," of Appendix B-1.).

2.5.6 Equipment

Equipment employed at the site for reclamation activities would be similar to that employed under existing conditions. Equipment related to mining operations, processing plant operations, and mobile sources used for mining are not part of the proposed project. Equipment used for reclamation would include motor graders, dozers, excavators, compactors, loaders, scrapers, forklifts, cranes, haul trucks, a boring machine, and a pad drum roller.

2.5.7 Maximum Mining Depth

Sheet M-1, "North Area Mining Plan," and Sheet M-2, "Lake B Mining Plan," of Appendix B-1 and Tables 2-2, 2-3, and 2-4 depict the proposed maximum mining depths at the project site. CEMEX has a vested right to mine to these depths but must update their reclamation plan amendment. Mining depth may be adjusted during mining operations, for example, as clay lenses or silts are encountered, or as market demand for certain products varies for reasons such as sand availability. Mining to the maximum permitted depths may prove infeasible and/or uneconomical for CEMEX. The mining depth may also vary throughout the project site based on the actual geology.

Development of the mine excavations may vary due to geologic, engineering, economic and/or market conditions. Thus, mining operations may or may not reach the maximum depths and mining depth may vary throughout the site. Reclamation would, in any case, be completed according to the standards described in the reclamation plan amendment and would be consistent with the objectives identified in the LAVQAR.

2.5.8 Slope Design

Future finish slope excavations would adhere to the final design slope angles of 2H:1V or flatter. Final reclamation fill slopes would not exceed 2H:1V. Reclamation fill slopes would be constructed consistent with the recommendations found in Section 2.6.2 of the proposed reclamation plan amendment, based on input from Geocon Consultants, Inc. (the project geotechnical engineer).

2.5.9 Mining and Reclamation Sequence and Schedule

The mining sequence and schedule depends on many factors, such as securing entitlements, fluctuations in market demands, and need for specific aggregate product. Total saleable sand and gravel reserves are estimated at 38 million tons. At an anticipated average production (matching sales) rate of 1,000,000 tons

per year, the anticipated end date for the surface mining operation is December 31, 2056. This anticipated schedule and sequence is subject to change. The reclamation finish dates listed represent the anticipated date by which physical reclamation activity is complete. In addition to market conditions, monitoring periods for specific aspects of reclamation (e.g., revegetation monitoring) may extend the final date of reclamation signoff beyond these dates.

Mining would continue to progress in a manner that would allow for reclamation to be initiated at the earliest possible time on those portions of the mined lands that would not be subject to further surface mining disturbances. Final reclamation, consisting of finish slope contouring, revegetation, and equipment removal would generally begin in each pit as soon as final excavation grades are achieved.

Table 2-5, "Anticipated Mining and Reclamation Sequence and Schedule," lists the approximate beginning and ending dates for each phase of mining and reclamation activities at the project site and provides a description of those activities. After mining is completed in Lake B and/or the North Reclamation Area, reclamation will begin and be finished within approximately 3 years.

TABLE 2-5
ANTICIPATED MINING AND RECLAMATION SEQUENCE AND SCHEDULE[1]

Mining (End)	Description	Reclamation (Start)	Reclamation[2] (Finish)
LAKE A			
Complete	Berm converted to island	2022	2022
	Berm between ADV and Lake A	2022	2022
	Overflow outlet to ADV	2022	2022
	Pipeline from Lake A to Lake C	2022	2022
	Diversion structure—ADV*	2023	2023
	Fill of percolation ponds	2023	2023
	Revegetation	2023	2023
LAKE B			
2056	Realigned ADV*	2022	2023
	Berm between ADV and Lake B	2022	2022
	Pedestrian and bike trail[4]	2028	2028
	Conduit from Lake B to C[5]	2031	2031
	Overflow outlet to ADV	2056	2056
	Excavate shark's fin drainage notch	2056	2056
	Revegetation	2056	2056
NORTH RECLAMATION AREA—SILT PONDS			
2050	Resoiling cap—main silt pond	2030	2030
	Revegetation—main silt pond	2030	2030
	Pond D excavation	2050	2050
NORTH RECLAMATION AREA—PLANT SITE AND LAKE J AREA[6]			
2030 (Lake J)	Plant site removal	2056	2056
	Contour grading/resoiling	2056	2056
	Retention ponds	2056	2056
	Revegetation	2056	2056

Notes: ADV = Arroyo del Valle

* Timing for these reclamation items contingent on obtaining regulatory agency authorizations (e.g. Permits 404 and 401 and Section 1600 authorizations). The realigned ADV may be constructed in as little as 1 year.

[1] This schedule assumes project approval in 2021.

Mining (End)	Description	Reclamation (Start)	Reclamation[2] (Finish)

1. Anticipated progression is approximate only. Actual timelines will vary depending on market and geologic conditions. Schedule assumes anticipated average production of 1,000,000 tons per year.
2. To demonstrate that performance standards for reclamation have been met (e.g., revegetation monitoring), final reclamation for specific reclamation features may not occur for at least 3 years following anticipated progression of mining and reclamation. For the realigned ADV, it is currently anticipated that regulatory agencies will require a minimum monitoring period of 5 years following the completion of construction for all restored habitats and biological features.
3. Pipeline from Lake A to Lake C includes turnout into Lake B.
4. Pedestrian and bike trail south of the realigned ADV is assumed to be developed after an estimated 5-year revegetation monitoring period for the realigned ADV.
5. The 30-inch Lake B to Lake C conduit is anticipated to be installed after completion of mining in the Lake J area, and generally concurrent with mining activity in the Lake B utility vault area.
6. The Lake J excavation will be repurposed as a silt pond after mining is complete (anticipated year 2030).

The County has requested that CEMEX finish reclamation of the Lake A area, including construction of the ADV diversion structure, and grant Lake A and associated water conveyance facilities to Zone 7 by 2023. However, due to the anticipated duration of reclamation activity, this would only be possible if the project is approved prior to the start of the 2022 construction season and regulatory entitlements (to be issued by the US Army Corps of Engineers, Regional Water Quality Control Board, and California Department of Fish and Wildlife, as applicable) for the Lake A diversion from the ADV are approved prior to the start of the 2023 construction season. Section VI of the Zone 7 Agreement provides that CEMEX shall grant Lakes A and B, levees, conduits, and diversion structures to Zone 7 at the same time and similarly provides for Zone 7's acceptance of both lakes and all water conveyance facilities constructed by CEMEX pursuant to the LAVQAR and the Zone 7 Agreement. Section VI of the Zone 7 Agreement allows CEMEX to grant a portion of the real property containing the lakes and water conveyance facilities to Zone 7 if Zone 7 agrees to such a partial conveyance. Accordingly, the proposed reclamation schedule is contingent upon Zone 7's willingness to accept Lake A and the associated water conveyance facilities within the time frame the County requested.

2.5.10 Drainage, Diversion Structures, Waterways, and Erosion Control

This section provides a general overview of the proposed plan to realign and enhance the ADV corridor and of the proposed water diversion and conveyance structures that would be installed as part of the reclamation conducted under the amended reclamation plan. Final engineered plans and specifications for those structures and facilities would be submitted to Zone 7 for review and approval before construction begins.

2.5.10.1 Arroyo del Valle Realignment and Enhancement

The reclamation plan amendment includes plans for the ADV to be separate from Lakes A and B while enabling Zone 7 to manage water flows for water storage, water conveyance, and groundwater recharge. Flows from the ADV would be unobstructed except for an environmentally sensitive in-channel structure covered with rocks and designed to control grade for the Lake A diversion structure. This structure would be constructed near the southeast corner of Lake A and would support diversion of surface flows into Lake A.

The reclamation plan amendment does not involve constructing structures that would impede flood flows. CEMEX retained Brown and Caldwell to perform hydrologic and hydraulic analyses (see Appendix F-1, "Hydraulic Design Study") to evaluate water diversion, conveyance, and flood potential associated with this reclamation plan amendment. The study demonstrates that the diversion and

conveyance into the Chain of Lakes can be feasibly constructed in compliance with known regulatory requirements. The study also demonstrates that the realigned ADV would remain stable and neither the channel modifications nor the ADV to Lake A diversion structure would increase flood risk to neighboring properties or infrastructure. The study includes conceptual designs for the realigned ADV and the ADV to Lake A diversion structure.

CEMEX is proposing to enhance the ADV streambed and riparian corridor along Lake B to create a complex, varied streambed to feature a complex mosaic of riparian wetlands within a wide floodplain with adjacent native upland restoration (see Appendix B-4, "Improvement Plans for Arroyo del Valle Realignment"). The realignment would remove artificial quarry impoundments and restore an approximately 6,200 linear foot enhanced ADV riparian corridor that would flow south of the Eliot Facility Lake B mining area. Following the realignment of ADV, CEMEX's Lake B mining excavation would progress south into the current alignment of the ADV. Plantings in the realigned ADV would feature a combination of California native riparian wetland, riparian scrub, riparian woodland, and upland species, such as western sycamore, valley oak, red and arroyo willow, mulefat, California buckeye, Fremont cottonwood, shrubs, and native grasses.

2.5.10.2 Diversion from Arroyo del Valle to Lake A

CEMEX retained Brown & Caldwell to develop a design concept and demonstrate that the elements of the reclamation plan designed to address diversion and conveyance into the Chain of Lakes can be feasibly constructed in compliance with the known regulatory requirements. The following subsections provide a summary of the design (see Appendix F-1).

Diversion Criteria

The LAVQAR states that the "diversion structure from ADV within Lake A into Lake C will be capable of diverting at least the first 500 cfs of flow from the Arroyo." The LAVQAR does not explicitly discuss water diversion from the ADV to Lake A. This lack of clarity was not an issue for the approved reclamation plan because the ADV was to continue flowing directly into Lake A after the project site was reclaimed. Because the project calls for the ADV channel to remain intact south of Lakes A and B, direct transfer from the ADV to the Chain of Lakes would require a diversion structure.

Fish Passage and Exclusion

This portion of the watershed does not currently support anadromous fish. Although some uncertainties exist regarding the future ability of the watershed to support anadromous fish, it is assumed that a diversion structure on the ADV would need to meet requirements for anadromous fish passage and screening. Specific criteria are described as follows:

- **Fish passage:** Cross-channel structures should include a passable flow bypass structure, and off-channel flow diversions should include return flow channels to avoid trapping.
- **Bypass flows:** Zone 7 requested that the ADV diversion allow for controlled diversion bypass flows of up to 40 cfs in winter/spring and 15 cfs in summer/fall (CEMEX 2019).
- **Fish screening:** CDFW criteria require fish screens to be sized such that the approach velocity entering the screen does not exceed 0.33 feet per second (ft/s) for all self-cleaning screens located in on-stream installations. For screens without automatic cleaning, the approach velocity is limited to one-fourth of the self-cleaning screens. Fish screens are typically sized

by dividing the desired diversion flow (e.g., 500 cfs) and the limiting approach velocity (e.g., 0.33 ft/s), which results in the minimum area of fish screen required.

These criteria will be revisited during detailed design as part of consultation with CDFW and, if necessary, the National Marine Fisheries Service. It may be feasible to request a variance from CDFW for the approach velocity restrictions during certain times of year when fish fry are not present. For example, with such a variance, a diversion structure designed to screen 210 cfs at 0.33 ft/s approach velocity during periods when fry may be present could also be used to screen 500 cfs at 0.8 ft/s (maximum velocity allowed by CDFW) during periods of the year when anadromous fish fry are not present (likely during summer and fall).

Diversion Structure Design

Key components of the diversion include the type and height of grade control structure (i.e., diversion dam) needed and providing for fish screening and bypass in accordance with CDFW criteria. Based on the detailed engineering analysis, Brown & Caldwell identified an infiltration bed as the best alternative to divert up to 500 cfs and meet the Zone 7 and CDFW design criteria. The diversion structure would consist of a 100- by 200- by 4-foot-deep gravel infiltration bed adjacent to the stream channel. A rock-covered, concrete, grade-control structure with fish bypass would provide the necessary head to inundate the gravel infiltration bed. The grade-control structure would be placed to a top elevation that is 3.2 feet above the creek bed and would not increase the area inundated by a 100-year flood event. Forty 100-foot-long, perforated, horizontal drainpipes would be buried near the base of the gravel bed. The horizontal drainpipes would join along a manifold pipe connected to a flow control gate. When the flow-control gate is opened, water from the ADV would infiltrate through the gravel, be collected in the drainpipes through the manifold, and pass through the flow-control gate. The connection to Lake A would be completed with an 84-inch pipe with a riprap outfall extending into Lake A (see Figure 2-10, "Proposed Lake A Diversion Plan").

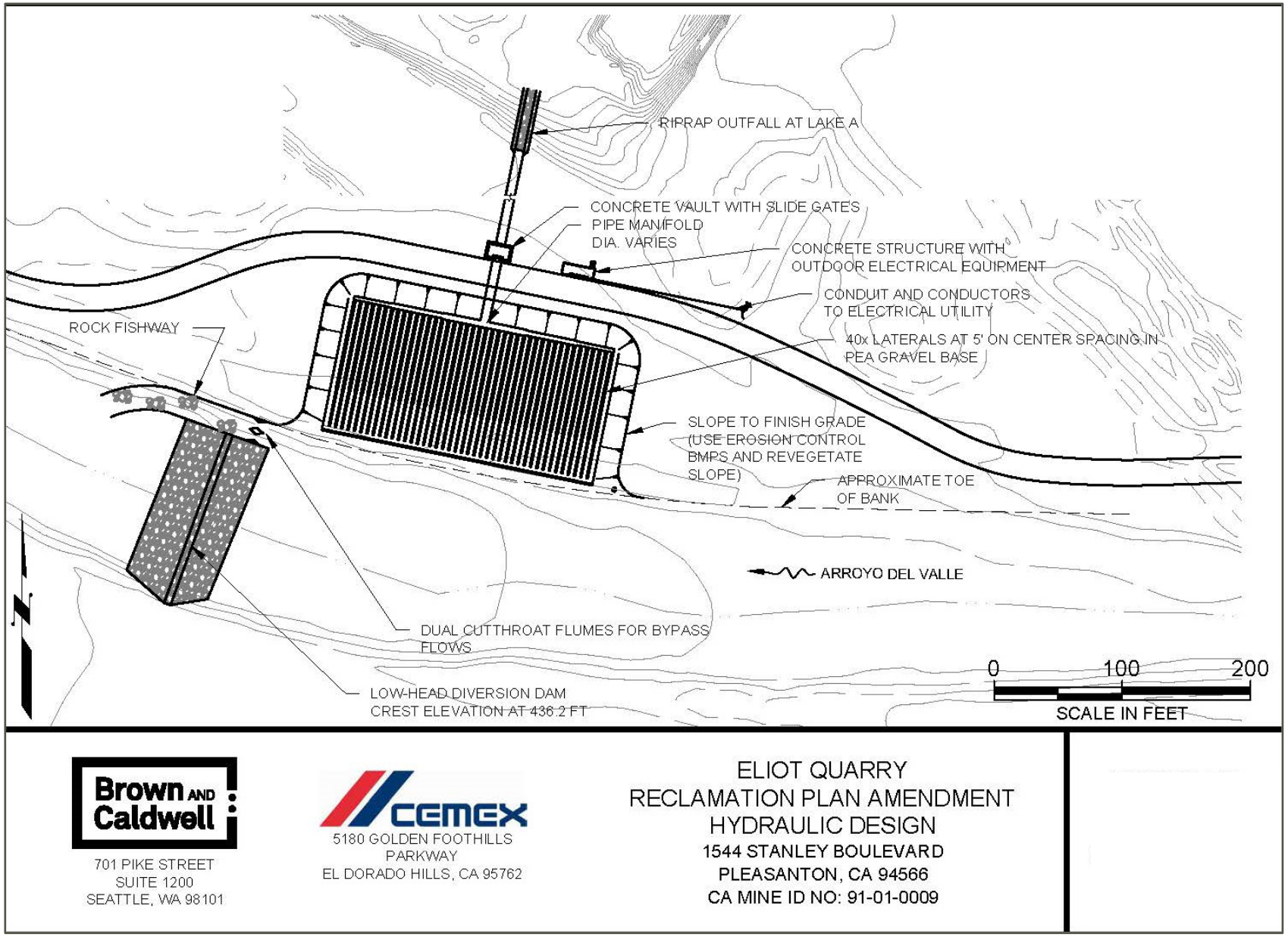
A conceptual site layout for the proposed diversion system with locations of major features is provided in the "Biological Resources" section of this subsequent EIR (SEIR).

Diversion Location

The ADV diversion structure would be located near the southeast corner of Lake A, as shown in Figure 2-3. This location would provide the most flexibility with respect to elevations and hydraulic head. At CEMEX's direction, Brown & Caldwell investigated the possibility of moving the diversion structure downstream toward Isabel Avenue. Brown & Caldwell concluded that diversion locations closer than about 2,970 feet upstream of Isabel Avenue would not provide enough elevation difference to meet the hydraulic head requirements.

2.5.10.3 Conveyance from Lake A to Lake C

A pipe structure capable of conveying 500 cfs is approved to be constructed under Isabel Avenue from Lake A to Lake C; however, the placement and design of the pipe has changed from a direct, diagonal route to the configuration shown in Figure 2-3. This structure would allow water diverted from the ADV into Lake A to flow into the rest of the Chain of Lakes system, meeting the objectives of the LAVQAR and the requirements of the Zone 7 Agreement.



SOURCE: B&C 2020, Hydraulic Design Study Figure E-2; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Proposed Lake A Diversion Plan

ELIOT QUARRY SMP-23 SEIR

Figure 2-10

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The pipeline would be buried, 84 inches in diameter, corrugated, and made of high-density polyethylene. The pipeline would be placed at an invert elevation of 390 feet msl at Lake A and would pass under Isabel Avenue within a steel, 108-inch-diameter bore and jacked casing that conforms to California Department of Transportation standards. The pipeline would then turn 90 degrees north into Lake C, exiting at an invert elevation of 380 feet msl. The control valve would be at the Lake A end of the pipeline. The pipeline would be stubbed and capped at CEMEX's property line until such time as future Lake C is developed by Vulcan.

2.5.11 Regional Trail

In coordination with EBRPD, CEMEX would develop a public-use trail near Vineyard Avenue on the south side of the ADV, which is within the reclamation plan boundary and would remain as part of reclamation. The trail would be developed in a 20-foot corridor (typical) and feature a 10-foot-wide paved section with 2-foot-wide shoulders on each side. Consistent with the existing trail on the south side of Lake A, trail development would include landscape improvements that feature California native, drought-tolerant plantings (see Appendix B-2 and B-3).

Following reclamation, the pedestrian and bike trail is expected to be granted through an easement or license to the EBRPD.

The proposed timing of reclamation activities related to the construction of the regional trail is discussed in Section 5.6.2 of the reclamation plan amendment (see Appendix B-1) and summarized in Table 2-5 above.

2.5.12 Revegetation

Experience by the mine operator at the project site and surrounding mine operators has shown that the mined slopes revegetate naturally over time. All final slopes and disturbed areas where natural revegetation of grasses has not already occurred to the required standard of coverage density would be hydroseeded consistent with applicable regulatory requirements. Section 4.3, "Biological Resources," of this subsequent environmental impact report (SEIR) evaluates the vegetation component of the project in detail. The reclamation plan amendment application package, on file with the County, also specifies revegetation requirements.

CEMEX is also planning to enhance the realigned ADV streambed to create a complex, varied streambed habitat. Subject to regulatory agency approvals, plantings in the realigned ADV would feature a combination of riparian wetland, riparian scrub, riparian woodland, and upland. Plantings would include native vegetation such as California sycamore, valley oak, red and arroyo willow, mulefat, California buckeye, Fremont cottonwood, shrubs, and native grasses.

2.6 INTENDED USES OF THE SEIR

2.6.1 County

It is anticipated that this SEIR will provide environmental review for all discretionary approvals and actions necessary for this project. Permits and approvals would be required before the changes in operation at the project site could proceed, although quarrying operations pursuant to the currently effective SMP-23 permit are anticipated to continue throughout the environmental review process period.

As lead agency for the proposed project, the County is primarily responsible for the approvals required. The primary approval being sought is a revision to the current approved reclamation plan to enable those

changes and/or revisions to the approved reclamation plan described above. As part of any approval action for the project, the County would be required to certify the final SEIR, adopt findings of fact and overriding considerations (if necessary), and adopt a mitigation monitoring and reporting program. In Alameda County, the County Planning Commission is the approval authority for the surface mining permit and reclamation plan amendment, which action is appealable to the County Board of Supervisors.

2.6.2 Other Agencies Whose Approval May Be Required

In addition to County approval, other permits and approvals would be required before the changes in operation at the project site could proceed. The other agencies whose approval may be required include:

- California Department of Conservation, Division of Mine Reclamation (reclamation plan advisory review and release of financial assurance);
- San Francisco Bay Regional Water Quality Control Board (Section 401 certification and Waste Discharge Requirements, as applicable);
- CDFW (a lake or streambed alteration agreement and possibly a California Endangered Species Act permit);
- National Marine Fisheries Service (Section 7 consultation; incidental take statement);
- U.S. Fish and Wildlife Service (Section 7 consultation; incidental take statement); and
- U.S. Army Corps of Engineers (Section 404 permit and NEPA compliance).
- Zone 7 Water Agency (provides drinking water to community and will be end owner and operator of water management facilities)

3—TERMINOLOGY, APPROACH, AND ASSUMPTIONS

This section provides an overview of the terminology, approaches, and assumptions underlying the topic-specific sections of this subsequent environmental impact report (SEIR) that follow. Included in this section is an overview of the terminology used, project analysis, organization of the sections, and methods for determining what impacts are significant.

3.1 TERMINOLOGY

To assist reviewers in understanding this SEIR, the following terms are defined:

- *Project* means the whole of an action that has the potential for resulting in a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.
- *Environment* means the physical conditions that exist in the area and that will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is where significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and human-made (artificial) conditions.
- *Impacts* analyzed under the California Environmental Quality Act (CEQA) must be related to a physical change. Impacts are:
  - direct or primary impacts that would be caused by a proposed project and would occur at the same time and place; or
  - indirect or secondary impacts that would be caused by a proposed project and would be later in time or farther removed in distance but would still be reasonably foreseeable. Indirect or secondary impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems.
- *Significant impact on the environment* means a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.
- *Mitigation* consists of measures that avoid or substantially reduce a proposed project's significant environmental impacts by:
  - avoiding the impact altogether by not taking a certain action or parts of an action;
  - minimizing impacts by limiting the degree or magnitude of the action and its implementation;
  - rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
  - reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
  - compensating for the impact by replacing or providing substitute resources or environments.
- *Cumulative impacts* are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts:

  - The individual impacts may be changes resulting from a single project or separate projects.
  - The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.
- *Threshold of significance* is a criterion established by the lead agency to identify at what level an impact would be considered significant. A criterion is defined by a lead agency based on examples found in CEQA or the CEQA Guidelines, scientific and factual data relative to the lead agency jurisdiction, views of the public in affected areas, the policy/regulatory environment of affected jurisdictions, and other factors.

This SEIR uses a variety of terms to describe the level of significance of adverse impacts. These terms are defined as follows:

- *No impact.* The project would have no direct or indirect effects on the environmental resource issue.
- *Less than significant*. An impact that is adverse but that does not exceed the defined thresholds of significance. Less than significant impacts do not require mitigation.
- *Potentially significant.* An impact that would be considered a significant impact as described above; however, the occurrence of the impact cannot be immediately determined with certainty. For CEQA purposes, a potentially significant impact is treated in this SEIR as if it were a significant impact and mitigation measures are recommended, when feasible, to avoid or reduce potentially significant impacts.
- *Significant*. An impact that exceeds the defined thresholds of significance and would or could cause a substantial adverse change in the environment. When available, mitigation measures are recommended to avoid the impact or reduce it to a less-than-significant level.
- *Significant and unavoidable*. An impact that exceeds the defined thresholds of significance and cannot be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures.

3.2 APPROACH TO THE ENVIRONMENTAL ANALYSIS

CEQA Guidelines require analysis of environmental impacts caused by a proposed project. All phases of a proposed project, including planning, development, and implementation, are evaluated in the analysis. CEQA Guidelines Section 15126.2 states that:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the Lead Agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, and the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic

quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected.

According to CEQA Guidelines Section 15126.4, an EIR should describe feasible measures that could minimize significant adverse impacts (Section 15126.4[a][[1]) and measures that are fully enforceable through permit conditions, agreements, or other legally binding process (Section 15126.4[a][2]). Mitigation measures are not required for effects that are found to be less than significant.

As discussed in Chapter 1, "Introduction," and Appendix A, "Initial Study and NOC/NOP," the County determined, through preliminary analysis of the project and public and agency comments received on the notice of preparation (NOP) and initial study (IS), that the project would have no impact on agricultural resources, cultural resources, energy, hazards and hazardous materials, mineral resources, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and service systems, or wildfire. Therefore, these issues are not addressed further in this SEIR.

3.3 APPROACH TO SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

3.3.1 Scope of Environmental Review

CEQA only applies to discretionary approvals by public agencies. (14 California Code of Regulations Section 15352[a].) CEMEX's mining activities at the project site are subject to vested rights and do not require any new permits or other approvals from the County. Accordingly, no discretionary approval would trigger CEQA review of the mining component of the applicant's operations at the project site.

In contrast, pursuant to SMARA and County Code, an amendment to the applicant's reclamation plan and surface mining permit (together referenced as Surface Mining Permit 23 [SMP-23]) requires the County's discretionary approval, which subjects the proposed reclamation plan amendment to CEQA compliance. (Public Resources Code [PRC] Section 2776[a].) Therefore, this SEIR limits environmental review to potential environmental impacts associated with the proposed changes to the reclamation plan only. Other aspects of the applicant's existing surface mining operations at the project site are not part of the discretionary approval and thus, are not part of the project subject to CEQA review. (See, e.g., *City of Ukiah v. County of Mendocino* (1987) 196 Cal.App.3d 47; *El Dorado County Taxpayers for Quality Growth v. County of El Dorado* (2004) 122 Cal.App.4th 1591.)

3.3.2 Use of an SEIR to Evaluate Environmental Impacts

The applicant and its predecessors-in-interest have been continuously mining for sand and gravel at the project site since 1906 or earlier. The County published a EIR for a master reclamation plan covering the Livermore-Amador Valley quarry area (Quarry Area) in 1979, followed by an addendum to this master reclamation plan in 1980 (*Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* [LAVQAR EIR] [Alameda County 1980]). The project site is included within the boundaries of the Quarry Area. The County Planning Commission certified the EIR in 1981. In November 1981, the County also adopted the *Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR) (Alameda County 1981). In 1987, the County approved SMP-23 for the Eliot facility via a negative declaration, which relied on the LAVQAR EIR's CEQA analysis. Since then, two corrective action plans and several conditions from 5-year periodic reviews have modified the approved 1987 reclamation plan for the Eliot Quarry (the "approved reclamation plan") (Lone Star Industries, Inc. 1986).

The proposed project contains revisions to the project that were not analyzed in the LAVQAR EIR. The California Supreme Court concluded in *Friends of the College of San Mateo Gardens v. San Mateo County*

Community College District (2016) that a lead agency has broad discretion to utilize CEQA's subsequent review provisions if "at least some of the environmental impacts of the modified project were considered in the original document, such that the original document retains some relevance to the ongoing decision-making process." (1 Cal.5th 937, 951.) In this case, a SEIR is appropriate to evaluate the environmental impacts resulting from the proposed project because numerous portions of the 1981 EIR remain relevant to the proposed revisions to SMP-23.

The SEIR will review and update some portions of the LAVQAR EIR because of project revisions, changed circumstances, and availability of new information that was not available in 1981. As a result, the relevant LAVQAR EIR sections will be reevaluated and expanded considering project revisions, new information and changed circumstances, as required by CEQA. In addition, the SEIR would only replace and update portions of the LAVQAR EIR that pertain to the proposed project area. Other LAVQAR EIR analysis and mitigation for the larger LAVQAR Specific Plan area are not addressed in this EIR and will therefore remain in place.

3.3.3 Statutory and Regulatory SEIR Provisions

When an EIR has been prepared for a project, CEQA establishes a presumption against requiring further environmental review. In summary, "no [supplemental or subsequent EIR] is required unless there are substantial changes in the project or the circumstances surrounding the project, or if new information becomes available." (*Santa Teresa Citizen Action Group v. City of San Jose* (2003) 114 Cal.App.4th 689, 703.) The lead agency has determined that preparation of an SEIR, pursuant to CEQA Section 21166, is necessary, given that substantial changes to the project are proposed and new information has become available since 1981.

California Public Resources Code Section 21166 provides:

> When an [EIR] has been prepared for a project…, no subsequent or supplemental [EIR] shall be required by the lead agency…unless one or more of the following events occurs:
>
> (a) Substantial changes are proposed in the project which will require major revisions of the [EIR].
> (b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the [EIR].
> (c) New information, which was not known and could not have been known at the time the [EIR] was certified as complete, becomes available.

CEQA Guidelines Section 15162, subdivision (a), expands on the three circumstances listed in Section 21166:

> (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR…due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
>
> (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR…due to the involvement of new significant, environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete…, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR …;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

For certain resource areas, all four of the above conditions apply to the proposed project; therefore, the County has determined that an SEIR will be required for this project. This 2020 SEIR is subsequent to the LAVQAR EIR.

When an agency evaluates a proposed change or modification to a previously reviewed project, the scope of subsequent environmental review is limited. The subsequent review standards apply whether or not the project has actually been constructed. (*Communities for a Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 326*; Fairview Neighbors v. County of Ventura* (1999) 70 Cal.App.4th 238, 240-241.)

3.3.4 Age of the LAVQAR EIR

The age of the original EIR (1981) does not affect the County's ability to use an SEIR here. CEQA establishes no rules regarding the expiration of prior environmental review. For example, the appellate court in *Mani Brothers Real Estate Group v. City of Los Angeles* (2007) upheld the city's decision to rely on an addendum prepared in 2005 for an EIR certified in 1989—a 16-year gap, except as to the issue of police services. (153 Cal.App.4th 1385, 1390–1391, 1397–1398.) On the topic of police services, the court required the county to prepare an SEIR, pursuant to section 21166. (*Id.* at pp. 1403–1404.) Indeed, *Mani Brothers* noted that courts have upheld even the use of an addendum (a much lesser degree of environmental review than an SEIR) under Section 21166 in "numerous contexts," including "in cases where many years had elapsed between the original EIR and later project revisions…and where the project's appearance had changed fairly dramatically." (*Id.* at p. 1398.) In another case, the court endorsed the use of an SEIR, rather than a new EIR, when considering modifications to a conditional use permit (CUP) for mining operations in 1996, where that CUP had been previously studied in a 1976 EIR—20 years prior. (*Fairview Neighbors, supra,* 70 Cal.App.4th at p. 243.)

3.3.5 Project Description and Impacts Previously Considered in the LAVQAR EIR

The LAVQAR EIR evaluated numerous design features to coordinate reclamation of the Quarry Area. Several major project features considered in the LAVQAR EIR are relevant to the 2020 SEIR, including:

- creation of the chain of lakes, including Lakes A and B (LAVQAR EIR p. 3);
- use of the pits to store high-quality groundwater and imported water with which to recharge the groundwater basin, with the aim of improving water quality (LAVQAR EIR p. 4);

- use of the chain of lakes for water storage, flood control, recreation, and water quality enhancement (LAVQAR EIR p. 26);
- retention or construction of a channel for Arroyo del Valle along the southern perimeter of the Quarry Area, to help convey water (LAVQAR EIR p. 3); and
- conduits connecting water-filled pits, which could transmit or block water flow through the area (LAVQAR EIR p. 3).

The LAVQAR EIR analyzed several features and impacts relevant to the proposed project. The following excerpts are from the LAVQAR EIR and list impacts that are applicable to the 2020 SEIR.

Aesthetics

- The Reclamation Plan is intended, in part, to restore the Quarry Area landscape to an attractive condition. Pits will either be backfilled or filled with water. In most areas, the net result will not deteriorate current aesthetics and may enhance visual quality in some cases. (LAVQAR EIR p. 45.)
- One identifiable adverse impact is potential for degradation of visual quality of the Arroyo del Valle area. (LAVQAR EIR p. 45.)

Biological Resources

- No rare or endangered plant or animal species is known to exist in the area. The area exhibits a mix of vegetation and habitat including cultivated fields, settling ponds and other lakes, and barren areas devoted to active quarrying[1]. (LAVQAR EIR p. 39.)
- Livermore-Amador Valley is part of the hunting area of the Southern Bald Eagle and the American Peregrine Falcon, which have been classified as endangered by the State. However, neither is endemic to the region and their primary hunting area would lie outside the Quarry Area. (LAVQAR EIR p. 39).
- The most significant adverse impact of the Plan on biota would result from replacing the existing Arroyo del Valle channel with an artificial channel. (LAVQAR EIR p. 39.)
- The best mitigation of loss of the natural Arroyo del Valle channel is to construct the new channel as close in appearance and function to the natural existing channel as is feasible. (LAVQAR EIR p. 40.)

Cultural Resources

- No archaeological sites have been recorded within the Quarry Area. The quarrying has the potential to both reveal and destroy archaeological sites. The Reclamation Plan does not address the possible discovery of artifacts or methods of action to respond to the possibility. (LAVQAR EIR p. 48.)

Geology and Soils

- Areas termed "capped settlement ponds," in which 5 to 10 feet of overburden material is proposed to be placed over water saturated fine sand and silt, may not be suitable for building construction. (LAVQAR EIR p. 8.)
- Typical backfilled areas would be below original surface elevations. Drainage problems may result. (LAVQAR EIR p. 8.)

[1] This biological resource area requires additional review in the 2020 SEIR.

Climate and Atmospheric Conditions

- No adverse impacts foreseeable. No other impacts on climate are identifiable at this time. (LAVQAR EIR p. 41.)[2]

Hydrology and Water Quality

- A channel for Arroyo del Valle is to be retained or constructed along the southern perimeter of the Quarry Area so that Arroyo del Valle flow could pass through the area without first going into the gravel pit lakes. (LAVQAR EIR p. 3; LAVQAR p. 1.)
- Conduits to transmit water between the gravel pit lakes as shown in Figure 4D attached to the LAVQAR Specific Plan EIR. (LAVQAR EIR p. 23.)
- The natural transmission function of the upper aquifer would be replaced with pipes, canals and the lakes (LAVQAR EIR p. 25).
- Considered the relocation of the Arroyo Del Valle Channel. (LAVQAR EIR p. 33.)

Land Use and Planning

- As quarrying continues…agricultural and open space uses will decline while land used for quarrying increases. (LAVQAR EIR p. 42.)
- To mitigate impacts of untimely or illogical development on reclaimed lands, policies should be adopted in the LAVQAR to implement the Reclamation Plan as part of the *Livermore-Amador Valley General Plan* to guide such uses during the Plan period. To avoid impacts of commitment to intensive land uses, an assumption could be made in the Specific Plan that open space and mining related industrial uses of reclaimed lands are appropriate as a present designation until it can be demonstrated that agricultural, industrial, or residential uses would not conflict with other land uses, policies, plans, and environmental quality existing at that future time. (LAVQAR EIR p. 43.)
- Sand and gravel mining is consistent with the General Plan, as is the concept of reclamation and reuse of land in the Quarry Area. (LAVQAR EIR p. 51.)
- No impacts on zoning or impacts of zoning upon the Reclamation Plan are evident. (LAVQAR EIR p. 51.)
- The consistency of the Reclamation Plan as submitted with the Alameda County Surface Mining Ordinance (ACSMO) must be evaluated by the Planning Commission,…this EIR, and other elements comprising the record on this matter. Specific requirements of the ACSMO are relied upon…to mitigate impacts which would otherwise occur. (LAVQAR EIR p. 54.)

Noise

- High noise levels would be generated in excavation and backfilling processes. Reduction of noise at the source can be accomplished by proper maintenance of equipment and usage of newer equipment. (LAVQAR EIR p. 49.)

Transportation/Traffic

- Approval of the Reclamation Plan would have no significant effect on traffic levels on area streets for the duration of the interim period while quarrying is still taking place. Urban or recreational development of the area would generate significant amounts of traffic; meaningful analysis cannot

2 GHG emissions require additional review in this 2020 SEIR.

be accomplished at this time, but would occur in detailed environmental review for any specific proposal. (LAVQAR EIR p. 44)

Utilities and Service Systems

- Sand and gravel excavation and reclamation activities are self-contained and have little need for community facilities and services. (LAVQAR EIR p. 44)

Energy

- Energy would be consumed to construct the Reclamation Plan facilities. The Plan, if followed, would indirectly cause an increase in energy needed to supply water to the Livermore Valley from the State Water Project. More of this import water would be needed if groundwater levels are kept low so as not to interfere with mining. After completion of mining, some energy would be required to transmit water through the area. (LAVQAR EIR p. 47.)
- Consumption of energy is but one factor to be taken into account in planning for a water management plan for the Quarry Area. Public benefits of increased water supply, flood control, and conservation may outweigh costs of increased energy consumption. (LAVQAR EIR p. 48.)

Health and Safety

- Potentially hazardous areas exist within the Quarry Area. Large ponds are present with near vertical sides. Steep slopes abound. (LAVQAR EIR p. 49.)
- The Reclamation Plan calls for 1:1 final cut slopes as the norm for water-filled pits. Slopes this steep are difficult to grab onto to pull ones' self out of the water in an emergency. Such slopes also have a tendency to crumble underfoot if walked upon, and they make rescue operations difficult. (LAVQAR EIR p. 49.)
- Mitigation of safety hazards of steep slopes can be accomplished by adhering to the 2:1 slope requirements of the ACSMO. (LAVQAR EIR p. 49.)
- Mitigation of mosquito production includes the following measures: proper grading and reformation of land to allow proper drainage and prevent standing water; avoiding extensive shallow areas in permanent ponds, minimization of vegetation near the edge of ponds; establishment of access roads to allow inspections and control activities; and coordination of planning and project management with the Alameda County Mosquito Abatement District to provide information and mosquito control materials. (LAVQAR EIR p. 50.)

3.3.6 New Impacts to Be Considered in the SEIR

The proposed project contains features that were not analyzed in the LAVQAR EIR (see Chapter 2, "Project Description"). These features will undergo environmental review in this SEIR. Additionally, some portions of the LAVQAR EIR will be reviewed and updated in this SEIR, because circumstances have changed and new information has become available since 1981. As a result, the relevant EIR sections will be reevaluated and expanded to consider new information and changed circumstances, as required by CEQA.

3.4 RESOURCE SECTION FORMAT

Each resource section follows the same format and includes the following primary subsections:

- The **"Environmental Setting"** subsections provide an overview of the existing physical environmental conditions at the time this analysis was prepared, as relevant to each resource topic. When relevant to the analysis, the "Environmental Setting" subsection also provides the

environmental conditions approved under the existing reclamation plan to provide a benchmark for the impact analysis of conditions with the project.

- The **"Regulatory Setting"** subsections identify the plans, policies, laws, regulations, and ordinances that are relevant to each resource subject. This subsection describes required permits and other approvals necessary to implement the project.
- The **"Significance Criteria and Analysis Methodology"** subsections provide criteria that define when an impact would be considered significant. Criteria are based on CEQA Guidelines, scientific and factual data, views of the public in affected area(s) where appropriate, the policy/regulatory environment of affected jurisdictions, or other factors. The methodology for the impact analysis is also provided as relevant to each resource topic.
- The **"Project Impacts and Mitigation Measures"** subsections provide an assessment of the potential impacts of the project and specify why impacts are found to be significant and unavoidable, significant, potentially significant, or less than significant, or why there is no environmental impact. Feasible mitigation measures to avoid or reduce the severity of identified impacts follow the impact discussions. Where feasible mitigation and feasible alternatives cannot reduce impacts to a less-than-significant level, the impacts are identified as significant and unavoidable. The analysis of cumulative impacts is provided in Chapter 6, "Other CEQA Topics."

3.5 MITIGATION MEASURES

In most cases, implementation of recommended mitigation measures would either result in complete avoidance of impacts or reduce impacts to less than significant. However, impacts that cannot be reduced to a less-than-significant level after application of feasible mitigation measures and alternatives are considered significant and unavoidable. As a condition of project approval, the applicant for the proposed project would be required to implement all of the feasible mitigation measures identified in this EIR and adopted by the County.

In accordance with PRC Section 21081.6(a), the County would adopt a mitigation monitoring and reporting program (MMRP) at the time it certifies the EIR. The purpose of the MMRP is to ensure that the applicant would comply with the adopted mitigation measures when the project is implemented. The MMRP would identify each of the mitigation measures and describe the party responsible for monitoring, the time frame for implementation, and the program for monitoring compliance.

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4—ENVIRONMENTAL ANALYSIS

Sections 4.1 through 4.8 of this chapter document the resource impact analyses conducted for the project. As discussed in Section 1.1, "Purpose of a Subsequent Environmental Impact Report," of this SEIR, the California Environmental Quality Act (CEQA) Guidelines require analysis of environmental impacts caused by a proposed project.

As an initial step in the environmental review process, issues identified in the Environmental Checklist of Appendix G of the CEQA Guidelines were considered to determine whether the project would have the potential to result in significant impacts associated with each issue. The initial review is documented in the initial study prepared for the project (see Appendix A-1, "Initial Study"). Sections 4.1 through 4.8 are based on the resource topics as listed in the CEQA Guidelines' Appendix G Environmental Checklist. These resource topics are relevant to this project:

- aesthetics,
- air quality,
- biological resources,
- geology and soils,
- greenhouse gas emissions,
- hydrology and water quality,
- land use and planning,
- noise, and
- mandatory findings of significance.

Section 1.3.1, "Scope of This Environmental Impact Report," discusses those issue areas for which a detailed analysis is not included. These issue areas are agricultural and forestry resources, cultural resources, energy, hazards and hazardous materials, mineral resources,, population and housing, public services, recreation, transportation, utilities and services systems, and wildfire.

The general methodologies used for analyzing project impacts for the resource analyses is discussed in Chapter 3, "Terminology, Methodology, and Assumptions." Specific methodologies are discussed in each resource section.

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4.1—AESTHETICS AND VISUAL RESOURCES

This section of the subsequent environmental impact report (SEIR) describes the visual setting of the project site as it exists today and as depicted in the proposed reclamation plan and documents potential aesthetic impacts of the project, including changes to the visual character of the project area. Elements considered in this section include the degree of natural screening by vegetation and topography, relative size of features, and the length of time these features are in view.

4.1.1 Visual Quality at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) described the project site as generally flat with a skyline of trees and mining machinery. Pits were not visible unless in close proximity. The Arroyo Del Valle (ADV) corridor east of Isabel Avenue is described as untouched with heavy riparian vegetation and year-round water flow. Finally, the LAVQAR EIR described the settling ponds as tranquil bodies of water surrounded by steep slopes, which included some vegetation (Alameda County 1980: 44).

4.1.2 Environmental Setting

The environmental setting for this analysis includes the project site and surrounding areas that contribute to the visual quality of the area and from which the project site is visible. This section first describes the general visual characteristics of the proposed project, and then discusses the visual quality of representative viewpoints selected for use in describing and determining potential visual impacts of the project.

The project site is situated between the cities of Pleasanton and Livermore, south of Interstate 580 (I-580) and Stanley Boulevard in the Livermore-Amador Valley, north of Vineyard Avenue, and both east and west of Isabel Avenue (State Route 84 [SR 84]), as shown on Figure 1-2, "Site Location."

4.1.2.1 Regional Character

The Livermore Valley is located between the extensively developed San Francisco Bay plain and the agrarian San Joaquin Valley. The Livermore Valley is surrounded by the Diablo Range. The major stream in the Livermore Valley is Arroyo del Valle (ADV), which converges with other streams on the valley floor to join Arroyo de la Laguna and flow out of the Valley via Alameda Creek. Alameda Creek drains into south San Francisco Bay. ADV is controlled by Del Valle Dam, more than 3 miles southeast of the site. Water stored behind Del Valle dam is used, in part, for groundwater recharge into ADV and Alameda Creek. Arroyo Mocho and Arroyo Las Positas also drain the Valley floor in the area.

4.1.2.2 Vicinity Character

The topography surrounding the project site is generally flat, except for the area southwest of the site, which gradually elevates from approximately 380 feet mean sea level (msl) to over 700 feet msl.

Land uses surrounding the project site include transportation corridors, another mining operation, open space areas, agricultural uses (vineyards), event centers (on-site at the vineyards), recreational facilities (Shadow Cliffs Regional Recreation Area), and residential development (see Figure 2-6, "Existing Facilities"). The following transportation corridors are near the site:

- Stanley Boulevard (55 mph speed limit) borders the site on the north.
- Isabel Avenue (SR 84) (50 mph speed limit) runs between the east end of Lake B and west end of Lake A.
- Vallecitos Road (50 mph speed limit) borders the east end of Lake A.
- Vineyard Avenue (40–50 mph speed limit) borders the south edge of the site.

Bordering the project site on the west is Shadow Cliffs Regional Recreation Area, operated by East Bay Regional Park District. Its major attraction is water recreation provided by a lake. The lake is a reclaimed gravel pit. North and directly east of the project site is another mining operation with an intended end use of water management, as part of the "Chain of Lakes" (see Section 1.2, "Summary of the Proposed Project," for additional details on the Chain of Lakes). Residential uses are located in the city of Livermore, north of the Lake A area of the project site. The Ruby Hills residential subdivision in the city of Pleasanton is located across Vineyard Avenue to the south of the Lake B portion of the project site. Vineyards for wineries (e.g., Ruby Hill Winery and Rubino Estates Winery), related tasting rooms, and two event centers (i.e., Casa Real at Ruby Hill Winery and Palm Event Center in the Vineyard) are located along the south side of Vineyard Avenue. A retail center with a gas station is located south of Lake A on the corner of SR 84 and East Vineyard Avenue.

4.1.2.3 Project Site Character

The project site consists of approximately 920 acres that are predominated by mining and processing facilities associated with CEMEX's operation (see Figure 2-6 and Figure 2-7, "Plant Site Area Utilities"). The eastern portion of the site (east of Isabel Avenue) contains Lake A, a formerly mined area that contains water primarily from groundwater infiltration. South of Lake A is the eastern portion of the ADV, which is a perennial drainage channel that runs east-west along the southern portion of the site. The portion of the site west of Isabel Avenue contains Lake B, which is a portion of the active mining area with a mine pit approximately 100 to 130 feet deep. The ADV and its corresponding riparian vegetation continues east-west along the southern portion of this area of the site before merging with Alameda Creek near Interstate 680. North of Lake B are CEMEX's currently operating materials processing facility, processing ponds, freshwater ponds, and stockpile areas. A vegetated berm currently bounds the northern border of the site, obstructing views of the site. Additional visible features include processing activities, stockpiles, administrative offices, a truck scale, and other facilities related to mining and processing.

4.1.2.4 Potentially Sensitive Viewpoints

For purposes of the California Environmental Quality Act (CEQA) and this analysis, potentially sensitive viewpoints include scenic vistas, scenic highways, residential views, public parks, recreational areas, and/or culturally important locations from which the project is readily visible.

A "scenic vista" is defined as an area that is designated, signed, and accessible to the public for the express purposes of viewing and sightseeing. This includes any such areas designated by a federal, state, or local agency. The project is not located within the viewshed of a recognized scenic vista.

A "scenic highway" is defined as any stretch of public roadway that is designated as a scenic corridor by a federal, state, or local agency. Residential viewers typically have extended viewing periods and are generally considered to have high visual sensitivity. For this reason, residential views are typically considered sensitive. Views from public parks, recreational trails, and/or culturally important sites also have high visual sensitivities and are therefore considered as sensitive viewpoints. No highways within

view of the project site are designated by California Department of Transportation (Caltrans) as scenic (Caltrans 2020).

The Scenic Route Element of the *Alameda County General Plan* provides a continuous, countywide scenic route system and is intended to serve as a guide for local jurisdictions for development of city-scale scenic route systems and for development to protect and enhance the scenic values along designated scenic routes (Alameda County 1994). Three of these designated routes are adjacent to the project area. The type of route, as categorized by the County, is also included in the list:

- Isabel Freeway (proposed as a scenic route, freeway and expressway);
- Vallecitos Freeway (proposed as a scenic route, freeway and expressway); and
- Vineyard Avenue (existing, major thoroughfare).

While these roads are proposed as a scenic route in the Scenic Route Element of the *Alameda County General Plan*, these roads are not discussed in the *East County Area Plan* nor have they been designated in Caltrans' State Scenic Highway program.

4.1.2.5 Key Observations Points

To identify viewpoints, or key observation points (KOPs), from which the project may be visible, the project area was studied in the field on January 2, 2020. The analysis of viewpoints was limited to representative locations with the most potential for the project site to dominate or substantially alter the view. Potential viewers of the project site consist of residents and drivers, cyclists, or pedestrians on nearby roads or trails or nearby residents who are commuting, visiting nearby businesses, or enjoying the nearby paved trails. The quality of views from these locations are described and rated below. See Figure 2-3, "Reclamation Plan Overview," for an aerial map of the existing project boundaries and features of Lakes A and B. Figure 4.1-1, "Location of Key Observation Points," shows the location of each viewpoint. Figures 4.1-2 through 4.1-7, KOPs 1–6, show photographs of the existing viewpoints and simulations of the proposed conditions at the existing viewpoints, as described in the following list:

- **KOP 1 (Medium-High):** This viewpoint is located the corner of Safreno Way and Vineyard Avenue and is oriented northeast toward the west end of Lake B. Viewers would include residents of nearby homes and drivers (traveling approximately 45 mph) and cyclists on Vineyard Avenue. The quality of this view is considered medium-high because while the view includes open space lands, the area is disturbed by mining. The foreground view includes barbed-wire fencing in front of graded surfaces covered with grass and shrubs, middle-ground views of the vegetation related to the ADV and the top of the graded slopes of the mined Lake B, and background views of the northern Diablo Range.
- **KOP 2 (Medium-High):** This viewpoint is located at the corner of Ruby Hills Boulevard and Vineyard Avenue and is oriented north and northeast toward Lake B and Isabel Avenue. Viewers would include residents of the Ruby Hills residential community and drivers and cyclists on Vineyard Avenue. The quality of this view is considered medium-high because while the view includes open space lands, the area is disturbed by mining and visible residential neighborhoods. The view includes foreground views of a barbed-wire fence in front of vegetation related to the ADV, middle ground views of the top of the graded slopes of the mined Lake B, and residential homes between the trees, and background views of the northern Diablo Range.
- **KOP 3 (High):** This viewpoint is located on East Vineyard Avenue and is oriented north toward the eastern portion of Lake A. Viewers would include drivers and cyclists on Vineyard Avenue

and cyclists and pedestrians on the paved multi-use trail. The quality of this view would be high because the trail is enjoyed for recreational purposes and includes open space vegetation in the foreground views, middle ground views of the top of the graded slopes of Lake A and the residential neighborhood on the northern bank, and background views of the Diablo Range.

- **KOP 4 (Medium):** This viewpoint is located on the west side of Isabel Avenue and is oriented west toward Lake B. Viewers would include drivers traveling approximately 50 mph on Isabel Avenue and cyclists. The quality of this view would be medium because views are brief (mainly visible for passengers and cyclists) and of the mined Lake B, with the vegetation related to the Arroyo del Valle visible alongside the south side of Lake B.
- **KOP 5 (High):** This viewpoint is located on Alden Lane at the northwest corner of Lake A, looking south/southeast. Viewers would include residents of the nearby homes and cyclists and pedestrians using the trail system. The quality of this view would be high because users of the path would have long-duration views of open space and a waterbody.
- **KOP 6 (High):** This viewpoint is located near Lakeside Circle, on the trail system on the northeast side of Lake A. Viewers would include residents of the nearby homes and cyclists and pedestrians using the trail system. The view is oriented southwest toward Isabel Avenue. The quality of this view would be high because users of the path would have long-duration views of a waterbody.

4.1.3 Regulatory Setting

No federal regulations relevant to the visual impact analysis presented herein apply to the project. Relevant state and local programs and policies are discussed below.

4.1.3.1 State

California Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to protect scenic highway corridors from changes that would diminish the aesthetic value of lands next to the highways. The state statutes governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. State and local agencies are responsible for protecting the social and economic values provided by the State's scenic resources through the development of specific planning and design standards and procedures. A highway may be designated as "scenic" depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon travelers' enjoyment of the view. A list of state scenic highways is identified in Streets and Highway Code Section 263. No highways near the project site are designated as scenic (Caltrans 2020).

4.1.3.2 Local

East County Area Plan

The *East County Area Plan* serves as the applicable general plan document for the area in which the project site is located. Relevant goals and policies are listed below. The project's consistency with the goals and policies is evaluated in Section 4.7, "Land Use and Planning," of this SEIR.

Community Separators

Policy 109: The County shall preserve community separators largely in open space in the following locations:

2. The Chain of Lakes area which separates the cities of Pleasanton and Livermore;



SOURCES: Aerial–Google Earth (4-2-2018)

Reclamation Plan Boundary

KOP-1 Key Observation Point Location/Direction and Number

BENCHMARK RESOURCES

N

0 1,000 2,000 4,000 Feet

Location of Key Observation Points

ELIOT QUARRY SMP-23 SEIR

Figure 4.1-1

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Existing Conditions



Final Proposed Conditions

NOTES: See Figure 4.1-1 for viewpoint locations.

BENCHMARK RESOURCES

Key Observation Point 1
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Figure 4.1-2

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Existing Conditions



Final Proposed Conditions

NOTES: See Figure 4.1-1 for viewpoint locations.

BENCHMARK RESOURCES

Key Observation Point 2
ELIOT QUARRY SMP-23 SEIR
Figure 4.1-3

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Existing Conditions



Final Proposed Conditions

NOTES: See Figure 4.1-1 for viewpoint locations.

BENCHMARK RESOURCES

Key Observation Point 3
ELIOT QUARRY SMP-23 SEIR
Figure 4.1-4

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Existing Conditions



Final Proposed Conditions

NOTES: See Figure 4.1-1 for viewpoint locations.

BENCHMARK RESOURCES

Key Observation Point 4
ELIOT QUARRY SMP-23 SEIR
Figure 4.1-5

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Existing Conditions



Final Proposed Condition

NOTES: See Figure 4.1-1 for viewpoint locations.

BENCHMARK RESOURCES

Key Observation Point 5
ELIOT QUARRY SMP-23 SEIR
Figure 4.1-6

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Existing Conditions



Final Proposed Conditions

NOTES: See Figure 4.1-1 for viewpoint locations.

BENCHMARK RESOURCES

Key Observation Point 6
ELIOT QUARRY SMP-23 SEIR
Figure 4.1-7

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Landscaping

Policy 114: The County shall require the use of landscaping in both rural and urban areas to enhance the scenic quality of the area and to screen undesirable views. Choice of plants should be based on compatibility with surrounding vegetation, drought-tolerance, and suitability to site conditions; and in rural areas, habitat value and fire retardance.

Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation (1981)

Quarry operators in the Livermore-Amador Valley are required to comply with the requirements of the *Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR) (Alameda County 1981). The LAVQAR EIR (Alameda County 1980) includes one applicable mitigation measure related to aesthetics:

> Mitigation of adverse effects of 1:1 side slopes could occur by establishing 2:1 slopes as the norm, unless 1:1 can be shown to be beneficial, as discussed in Sections IV.C.1. Topography and IV.D.1 Land Use. Details of revegetation slope treatments, and other aesthetic considerations involved in reclamation are most appropriately analyzed in future specific plans to be submitted by the individual operators.

The proposed project would include 2:1 slopes.

County Surface Mining and Reclamation Ordinance

The Alameda County Surface Mining Ordinance (Chapter 6.80) includes the following provisions related to aesthetics:

> ***6.80.210—Mining***
> ***D. Screening of Operations***
> Where the planning commission determines that mining operations may conflict with visual qualities that should be maintained for adjacent areas, such operations shall be screened by the operator by the construction of appropriate landforms and planting and maintenance of appropriate landscape materials.

Here, the project involves a change to the approved SMP-23 reclamation plan, not the vested mining operation.

4.1.4 Significance Criteria and Analysis Methodology

4.1.4.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to aesthetics if it would:

a) have a substantial adverse effect on a scenic vista;

b) substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;

c) in nonurbanized areas, substantially degrade the existing visual character or quality of public views (i.e., views experienced from publicly accessible vantage points) of the site and its surroundings; or

d) create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Regarding items a and b, and as described in the initial study for the project (see Appendix A-1, "Initial Study"), the project is not located within the viewshed of a recognized scenic vista and is not located within a state scenic highway corridor (Caltrans 2020). Therefore, these issues are eliminated from further consideration.

4.1.4.2 Analysis Methodology

To identify KOPs from which the project may visible, the project area was studied in the field on January 2, 2020. The analysis of viewpoints was limited to representative locations determined to have the potential for the project site to dominate or substantially alter the view. Potential viewers of the project site consist of drivers on nearby roads, nearby residents, and people visiting nearby businesses. Computer simulations were generated from the same KOPs from which the existing photographs were taken. Project-specific information available at the time the simulations were created (e.g., expected lake depths, sizes, berm slopes and heights, related facilities) was included in the computer simulations.

Existing aerial photographs, topography, and County literature (e.g., *Alameda County General Plan* [Alameda County 1994]) were reviewed to assess the visual quality of the area. Elements considered in determining the project's change to the visual character of the site or surroundings included the degree of natural or project-proposed screening by vegetation, topography, berms, relative size of project features and components, and the length of time the features are in view.

The procedure for analysis in the visual assessment was based, in part, on the visual impact assessment methodology employed by the Federal Highway Administration, the Bureau of Land Management (BLM), and the U.S. Forest Service. The assessment was conducted in a series of steps:

1. defining the project setting and viewsheds;
2. identifying sensitive view receptors for assessment;
3. analyzing the baseline visual quality and character of the identified views;
4. depicting the visual appearance of the project from the identified views;
5. assessing the project's impacts to those views in comparison to their baseline visual quality and character; and
6. proposing methods to mitigate potentially significant visual impacts identified.

To assess the potential for aesthetic impacts associated with implementation of the project, the analysis focuses on the degree to which the project directly and/or indirectly diminishes or enhances the existing visual quality and character of the natural environment. The analysis depends largely on the visual contrast created between the project and the existing landscape. Visual contrast is measured by comparing the project's features with the major features in the existing landscape. While an assessment of potential visual impacts is by nature somewhat subjective, qualitative criteria such as an evaluation of basic design elements of form, line, color, and texture are used to make this comparison and describe the visual contrast created by the project.

4.1.5 Project Impacts and Mitigation Measures

4.1.5.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, aesthetic impacts were determined to be less than significant regarding the project's effects on the visual quality of the surrounding area and less than significant with mitigation regarding the project's impacts on the visual quality of the ADV area. (Alameda County 1980: 45)

The approved project includes the following mitigation of aesthetic impacts:

- To mitigate loss of the natural Arroyo del Valle, a specific landscaping/design plan should be proposed by Lone Star Industries at the time their specific reclamation plan is submitted. The landscape/design plan should incorporate extensive revegetation of the channel banks to native species, perhaps a meandering channel alignment, and in general a restoration to as near a natural appearing watercourse as possible. Costs for this program should be borne by the company, as relocation is to occur solely to increase resource yield.
- Mitigation of adverse effects of 1:1 side slopes could occur by establishing 2:1 slopes as the norm, unless 1:l can be shown to be beneficial, as discussed in Sections IV.C.1. Topography and IV.D.1 Land Use. Details of revegetation, slope treatments, and other aesthetic considerations involved in reclamation are most appropriately analyzed in future specific plans to be submitted by the individual operators.

Project Revisions

The proposed project would adjust the boundaries and contours of the 1981 project, incorporate a public use pedestrian and bike trail, and realign and restore an approximately 5,800-linear-foot reach of the ADV.

Changed Circumstances

Since 1981, the project site has become more visible from public and private vantage points due to new public rights-of way (e.g., Isabel Avenue north of Stanley Boulevard), residential developments to the south (e.g., Ruby Hills south of Lake B), and residential developments to the north (e.g., Pulte Oaks and Kristopher Ranch north of Lake A). SMP-23 was originally approved when this property was zoned agricultural and was within the jurisdiction of the County. Over the years, the property was annexed to the City of Livermore, the zoning was changed to residential, and the houses were built adjacent to Lake A. These new visual receptors are changed circumstances that could create a new or increased significant impact.

New Information

Current regulatory requirements are addressed above. No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the LAVQAR EIR was adopted.

Significance Determination

Based on project revisions and changed circumstances that may create a new or increased significant impacts, the County has amplified and augmented the analysis contained in the LAVQAR EIR. This evaluation is provided in the following impact analysis.

4.1.5.2 Subsequent Environmental Analysis

Impact 4.1-1: Substantial Degradation of the Approved Visual Character or Quality of the Site and Its Surroundings

Figure 4.1-1 provides a map of the KOP locations. Figures 4.1-2 through 4.1-7, show photographs of the existing viewpoints and simulations of proposed conditions for the existing viewpoints. Simulations showing the ADV realignment are based on early conceptual design features that would be refined as improvement plans are completed and implemented over time. As represented in the simulations, the differences between the existing and proposed conditions are evaluated below:

- **KOP 1:** As shown in Figure 4.1-2, the proposed project from this viewpoint would result in foreground views of a landscaped multi-use trail similar to the existing trail south of Lake A and riparian growth from hydroseeding and landscaping behind a fence along the 5,800-linear foot reach of the realigned ADV. The ADV would be rerouted closer to Vineyard Avenue, but the stream would not be directly visible because it would be at a lower elevation than the road and obscured by the native vegetation that would be planted on either side of the rerouted creek. The raised berm, featuring an elevation of 380 feet, would be visible along the west side of the fresh water pond now known as Pond A. Although not shown in Figure 4.1-2, the rip-rap lined Lake B overflow outlet would also be visible just to the left of this vantage point. Views of the proposed project from this viewpoint would be improved compared to existing conditions because the views would provide a more natural, landscaped setting.
- **KOP 2:** As shown in Figure 4.1-3, and similar to KOP 1, the proposed project from this viewpoint would result in foreground views of a landscaped multi-use trail similar to the existing trail south of Lake A and riparian growth behind a fence along the trail. Some existing trees and shrubs would be removed from the northern half of this viewpoint, but new trees and vegetation would be added in the midground along the ADV behind the fence. The Arroyo del Valle would be rerouted closer to Vineyard Avenue, but the stream would not be directly visible because it would be at a lower elevation than the road and obscured by the native vegetation that would be planted on either side of the rerouted creek. The south-facing wall of the graded Lake B pit would be visible from this viewpoint, but it would have a thin profile and not be easily distinguished from its surroundings. The raised berm and proposed conduit from Lake B to future Lake C would not be visible from this viewpoint. Views of the proposed project from this viewpoint would be of similar quality compared to existing conditions because the views would continue to be of a generally natural setting.
- **KOP 3:** As shown in Figure 4.1-4, **v**iews with the proposed project would largely consist of new plantings and landscaping in the foreground. The concrete water diversion structure would not be visible behind the existing ADV riparian area from this viewpoint. The low-head dam with concrete core and gravel infiltration bed would also not be visible within this view (and generally would not be visible from the road or bike path). Views of the Lake A water level elevation increase resulting from the proposed berm would be visible from this location. The increase in water level and additional plantings and landscaping would not degrade the overall character of the view and may be considered to result in a more natural setting. Therefore, the quality of views under the proposed project would be similar to existing conditions.
- **KOP 4:** As shown in Figure 4.1-5, views from this location would include the vegetated slopes of Lake B, water would be visible in Lake B, and the realigned Arroyo del Valle would

be partially visible on the south side of Lake B. Existing vegetation removal, and cut, and fill along the south side of Lake B along the existing ADV alignment would occur as a result of vested and approved mining activity. Although this viewpoint would undergo substantial changes compared to existing conditions as a result of vested mining activities, the quality of this view would be considered improved after reclamation because the character of the view would become more natural with the addition of more native vegetation and filling of the lake with water.

- **KOP 5:** As shown in Figure 4.1-6, views with the proposed project would be altered by removal of vegetation and development of the island at Lake A in the midground following the excavation of drainage slots. The overflow structure would not be visible from this viewpoint. Views of the conversion of a berm in Lake A into a small island would not degrade the overall character of the view and may be considered to result in a more natural setting. Therefore, the quality of views under the proposed project would be similar to existing conditions.
- **KOP 6:** As shown in Figure 4.1-7, views with the proposed project would be altered with the increased berm elevation surrounding Lake A. The water diversion structure would not be visible from this viewpoint. Views of the conversion of a berm in Lake A into a small island would be minimal because of the distance (approximately ¾ mile) and would not degrade the overall character of the view. Substantial, new landscaping would be visible in the foreground along the north side of Lake A on both sides of the north Livermore trail extension. Views of landscape planting and restoration along the ADV, as well as the filled and vegetated former percolation ponds, would be visible in the midground. The quality of this view would be considered improved because the character of the view would become more natural.

Overall, the differences between existing conditions and the proposed project would result in improved views because views of vegetated waterbodies and landscaped multi-use trails are typically considered desirable, and the proposed project would provide a more natural setting, more native vegetation, and a higher quality of visual character than under existing conditions. Also, the project eliminates the artificial concrete spillways proposed in the approved reclamation plan and retains the ADV. Therefore, the proposed project would result in a less-than-significant impact on the visual character or quality of the site and its surroundings.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.1-2: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area

No reclamation activities would occur at night and the completed project would not include lighting. The Applicant has agreed to mitigation measures that limit reclamation operations to daytime hours. Mitigation Measure 4.1-1, "Daily Limitation of Construction Hours," below, will be made a condition of approval. Construction equipment related to reclamation activities, ADV realignment, and security lighting may introduce glare and or light levels that could adversely affect day or nighttime views in the area; however, these elements exist under current operations and would not create a new source of substantial light and glare. Vehicles and structures would be removed from the site upon the completion of reclamation activities. Therefore, the project's potential for creation of a new

source of substantial light and glare that would adversely affect day or nighttime views in the area would be less than significant.

Level of Significance: Potentially significant.

Mitigation Measure 4.1-1: Daily Limitation of Construction Hours.

All construction activities shall be limited to the hours of 7 am – 7 pm Monday through Friday, and 8 am – 5 pm on Saturday and Sunday.

Level of Significance after Mitigation: Less than significant.

4.2—AIR QUALITY

This section of the subsequent environmental impact report (SEIR) documents potential project impacts associated with air quality and air pollutant emissions. Impacts considered in this section include the potential for project air emissions to exceed established thresholds or to cause or contribute to exceedance of state or federal ambient air quality standards. The section also considers human health risks associated with air pollutant emissions resulting from the project and the potential for public nuisance as a result of project odors.

The information in this section is based on a peer review of applicant-prepared studies and publicly available sources. The applicant-prepared studies used are:

- *Air and Greenhouse Gas Emissions Study, Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (Compass Land Group 2019) (Appendix C-1, "Air Quality and Greenhouse Gases Report")
- *Public Health Risk Assessment of Site Reclamation, Eliot Quarry SMP-23 Reclamation Plan Amendment* (Compass Land Group 2020) (Appendix C-2, "Public Health Risk Assessment")

These analyses were peer reviewed by County-retained Yorke Engineering, LLC in May of 2019 and June of 2020. The peer review letter reports are on file with the County. The applicant revised the referenced analyses in response to Yorke's comments and provided responses to the peer reviewer comments, which are also on file with the County. Both the *Air and Greenhouse Gas Emissions Study*, dated December 2019, and *Public Health Risk Assessment* (HRA), dated June 2020, adequately addressed the peer reviewer's comments and questions.

4.2.1 Air Quality Conditions at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR), written in 1979, which included an addendum in 1980 (the addendum included response to comments similar to what is included in a Final EIR in today's practice). The EIR, certified in 1981, states that mean maximum temperatures in the Livermore-Amador Valley averaged 99 degrees in July and mean minimums during January averaged 35 degrees. Temperatures over 100 degrees were common during the summer and below freezing temperatures typically occurred every winter.

Average annual precipitation in Pleasanton was seventeen inches at the time of the LAVQAR EIR, which decreased easterly to 14 inches at Livermore. More than 80 percent of annual rainfall normally occurred between November and March, which made more water available for percolation into the Arroyo del Valle (ADV) forebay area during storm events. ·

Similar to existing conditions, the LAVQAR EIR states that the bowl shape of the Valley, together with commonly occurring temperature inversions that prevent normal mixing and dilution of the air, resulted in periodic reaching of critical air pollution levels. The principal types of air pollution in the Valley are photochemical oxidants (caused by reactions between hydrocarbons and oxides of nitrogen in the presence of sunlight) and particulate matter. The number of days per year during which standards were exceeded varied widely, in proportion to adverse or beneficial weather patterns. From 1973 to 1977, the area experienced between 17 and 93 days per year, during which the oxidant level exceeded the National Ambient Air Quality Standard of 0.08 parts per million. This period exceeded the state standard for suspended particulate between 16 to 41 days per year (Alameda County 1980: 40-41).

4.2.2 Environmental Setting

Location and the amount of air pollutants in said locations are the primary factors that influence air quality; however, topography, climate, and meteorological conditions are also influential factors because they determine the movement and dispersal of air pollutants. California is divided into fifteen air basins, each with its own unique regional climate. The project site is located in the southwestern Alameda County sub region of the San Francisco Bay Area Air Basin (SFBAAB).

The SFBAAB includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, the southern portion of Sonoma County, and the southwest portion of Solano County. The SFBAAB covers approximately 5,540 square miles of complex terrain consisting of coastal mountain ranges, inland valleys, and the San Francisco Bay. The SFBAAB is generally bounded on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range.

The climate within the SFBAAB is dominated by a strong, semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Climate is also affected by the adjacent oceanic heat reservoir's moderating effects. Mild summers and winters, moderate rainfall and humidity, and daytime onshore breezes characterize regional climatic conditions in the San Francisco Bay Area (Bay Area). In summer, when the high-pressure cell is strongest and farthest north, fog forms in the morning and temperatures are mild. In winter, when the high-pressure cell is weakest and farthest south, occasional rainstorms occur.

4.2.2.1 Environmental Factors Affecting Air Quality

Ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors affecting transport and dilution include terrain, wind, atmospheric stability, and sunlight. Existing air quality conditions in the project area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutants. The environmental factors that affect ambient air pollutant concentrations are discussed separately below.

Temperature Inversions

Temperature inversion layers, also called thermal inversions, describe areas where the normal decrease in air temperature as altitude increases is reversed and air above the ground is warmer than the air closer to the ground. Inversion layers can be anywhere from under 100 feet to over thousands of feet thick. Thermal inversions limit the vertical dispersion of air pollutants, which can trap pollutants close to the ground. These inversions occur most often when a warmer, less dense air mass flows over a colder, more dense air mass close to the ground. The highest air pollutant concentrations in the Bay Area generally occur during these inversions, of which there are two types: 1) subsidence inversions, a regional phenomenon that is most common in the Bay Area during summer and fall, when descending warmer air from the subtropical high pressure cell centered over the Pacific Ocean caps the cooler marine air layer nearer the surface; and 2) radiation inversions, more localized and typical of winter nights in interior parts of the Bay Area where air in contact with the ground cools more rapidly than the air layer above it (BAAQMD 2019a).

Topography and its Effect on Wind Speeds and Patterns

Low wind speed conditions limit horizontal air dispersion and can result in the buildup of air pollutants. Poor air quality under low wind speed conditions can be especially pronounced in interior valleys, where the topography also contributes to the restriction of air movement and pollutant dispersion.

Solar Radiation and its Impact on Photochemical Pollutants

The higher intensity and longer duration of solar radiation during the Bay Area's summer months provide ultraviolet light and warm temperatures that promote the formation of secondary photochemical pollutants (e.g., ozone). Sunlight intensity and summer temperatures are much higher in many of the Bay Area's inland valleys than near the coast, causing these inland areas to be especially prone to photochemical air pollution. In contrast, photochemical pollutants do not usually reach significant levels anywhere in the Bay Area during the winter, when temperatures are lower and daylight hours are shorter.

As a consequence of all these factors, the parts of the Bay Area having the highest air pollution potential tend to be the inland areas, which experience higher temperatures in the summer and lower temperatures in the winter. Furthermore, the inland areas are sheltered from the higher winds and more frequent fog episodes that affect the coastal areas. Also, air pollutant levels depend on the amount of pollutants emitted locally or from upwind sources, which cause higher ambient levels in inland areas because they are subject to emissions transported by the prevailing winds from populous upwind areas (BAAQMD 2019a).

Local Topography, Meteorology, and Climate

The proposed project is located in the Southwestern Alameda County Subregion, a mostly flat area that encompasses the southeast side of San Francisco Bay from Dublin Canyon to north of Milpitas and is bordered on the east by the East Bay hills and on the west by the bay.

This subregion is indirectly affected by marine air flow. Marine air entering through the Golden Gate is blocked by the East Bay hills, forcing the air to diverge into northerly and southerly paths. The southern flow is directed down the bay, parallel to the hills, where it eventually passes over southwestern Alameda County. These sea breezes are strongest in the afternoon. The further from the ocean the marine air travels, the more the ocean's effect is diminished.

The climate of southwestern Alameda County is also affected by its close proximity to San Francisco Bay (Bay). The Bay cools the air with which it comes in contact during warm weather, while during cold weather the Bay warms the air. The normal northwest wind pattern carries this air onshore. Bay breezes push cool air onshore during the daytime and draw air from the land offshore at night.

Winds are predominantly out of the northwest during the summer months. In the winter, winds are equally likely to be from the east. Easterly-southeasterly surface flow into southern Alameda County passes through three major gaps: Hayward/Dublin Canyon, Niles Canyon, and Mission Pass. Areas north of the gaps experience winds from the southeast, while areas south of the gaps experience winds from the northeast. Wind speeds are moderate in this subregion, with annual average wind speeds close to the Bay at about 7 mph, while further inland they average 6 mph.

Air temperatures are moderated by the subregion's proximity to the Bay and to the sea breeze. Temperatures are slightly cooler in the winter and slightly warmer in the summer than East Bay cities to the north. During the summer months, average maximum temperatures are in the mid-70s. Average maximum winter temperatures are in the high-50s to low-60s. Average minimum temperatures are in the low 40s in winter and mid-50s in the summer.

Pollution potential is relatively high in this subregion during the summer and fall. When high pressure dominates, low mixing depths and Bay and ocean wind patterns can concentrate and carry pollutants from other cities to this area, adding to the locally emitted pollutant mix. The polluted air is then pushed

up against the East Bay hills. In the wintertime, the air pollution potential in southwestern Alameda County is moderate. Air pollution sources include light and heavy industry and motor vehicles. Increasing motor vehicle traffic and congestion in the subregion may increase Southwest Alameda County pollution, as well as that of its neighboring subregions (BAAQMD 2019a).

Surface data (wind speed, wind direction, temperature, etc.) were recorded at Livermore airport for the period January 1, 2009 to December 31, 2013. This was the most recent data available from the California Air Resources Board (CARB) at the time of study. The HRA (Appendix C-2) shows winds are predominantly from the northwest with an average annual speed of 5.5 knots. Calm winds occur approximately 31 percent of the time.

4.2.2.2 Pollutants and Health Effects

Air pollution contributes to a wide variety of adverse health effects. The United States Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for six of the most common air pollutants—carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide—known as "criteria" air pollutants. CARB also has adopted California ambient air quality standards (CAAQS) for these same criteria air pollutants. The presence of criteria pollutants in ambient air is generally caused by numerous, diverse, and widespread sources of emissions.

Ambient air quality standards are established to protect the public from adverse health effects of criteria pollutants and to provide protection against visibility impairment and damage to animals, crops, vegetation, or buildings. Health effects that have been associated with each of the criteria pollutants are summarized below.

Ozone

Ground-level ozone is a secondary pollutant that forms through the reaction of pollutants (e.g., oxides of nitrogen and reactive organic gases) in the atmosphere by a photochemical process involving sun energy. Chemicals that are precursors to ozone formation can also be emitted by natural sources, particularly trees and other plants. Ground-level ozone can pose risks to human health, in contrast to the stratospheric ozone layer that protects the earth from harmful wavelengths of solar ultraviolet radiation.

Short-term exposure to ground-level ozone can cause a variety of respiratory health effects, including inflammation of the lining of the lungs, reduced lung function, and respiratory symptoms such as cough, wheezing, chest pain, burning in the chest, and shortness of breath. Ozone exposure can decrease the capacity to perform exercise. Exposure to ozone can also increase susceptibility to respiratory infection. Exposure to ambient concentrations of ozone has been associated with the aggravation of respiratory illnesses such as asthma, emphysema, and bronchitis, leading to increased use of medication, absences from school, doctor and emergency department visits, and hospital admissions. Short-term exposure to ozone is associated with premature mortality. Studies have also found that long-term ozone exposure may contribute to the development of asthma, especially among children with certain genetic susceptibilities and children who frequently exercise outdoors. Long-term exposure to ozone can permanently damage lung tissue (EPA 2013a).

Other health effects of ozone include:

- difficulty to breathe deeply and vigorously,
- shortness of breath and pain when taking a deep breath,
- coughing and sore or scratchy throat,

- inflammation and damage to the airways,
- aggravation of lung diseases such as asthma, emphysema, and chronic bronchitis,
- increased frequency of asthma attacks,
- increased susceptibility of the lungs to infection, and
- continued damage to the lungs even when the symptoms have disappeared (EPA 2012).

Nitrogen Oxides

Nitrogen oxides (NO_X) are a group of gases that form when nitrogen reacts with oxygen during combustion, especially at high temperatures. These compounds (including nitric oxide and nitrogen dioxide), can contribute significantly to air pollution, especially in cities and areas with high motor vehicle traffic.

In the Bay Area, nitrogen dioxide appears as a brown haze. At higher concentrations, nitrogen dioxide can damage sensitive crops, such as beans and tomatoes, and aggravate respiratory problems. The U.S. Environmental Protection Agency, California Air Resources Board, and Air District have all adopted measures to reduce emissions of nitrogen oxides. The Air District places restrictions on pollutant sources such as power plants, boilers, stationary turbines, and stationary engines, and addresses motor vehicle sources by working to change people's driving habits (BAAQMD 2020b).

Sulfur Dioxide

Fossil fuel combustion by electrical utilities and industry is the primary source of sulfur dioxide in the United States. People with asthma are especially susceptible to the effects of sulfur dioxide. Short-term exposures of asthmatic individuals to elevated levels of sulfur dioxide while exercising at a moderate level may result in breathing difficulties, accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Studies also provide consistent evidence of an association between short-term sulfur dioxide exposures and increased respiratory symptoms in children, especially those with asthma or chronic respiratory symptoms. Short-term exposures to sulfur dioxide have also been associated with respiratory-related emergency department visits and hospital admissions, particularly for children and older adults. (EPA 2013a)

Particulate Matter

Particulate matter (PM) is a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles (liquid droplets or solids) over a wide range of sizes. Particles originate from a variety of man-made stationary and mobile sources, as well as from natural sources like forest fires. The chemical and physical properties of PM vary greatly with time, region, meteorology, and the source of emissions.

For regulatory purposes, EPA distinguishes between categories of particles based on size and has established standards for fine and coarse particles. PM_{10}, in general terms, is an abbreviation for particles with an aerodynamic diameter less than or equal to 10 micrometers (μm), and it represents inhalable particles small enough to penetrate deeply into the lungs (i.e., thoracic particles). PM_{10} is composed of a coarse fraction referred to as $PM_{10-2.5}$ or as thoracic coarse particles (i.e., particles with an aerodynamic diameter less than or equal to 10 μm and greater than 2.5 μm) and a fine fraction referred to as $PM_{2.5}$ or fine particles (i.e., particles with an aerodynamic diameter less than or equal to 2.5 μm). Thoracic coarse particles are emitted largely as a result of mechanical processes and uncontrolled burning. Important sources include resuspended dust (e.g., from cars, wind, etc.), industrial processes, construction and demolition operations, residential burning, and wildfires. Fine particles are formed chiefly by combustion

processes (e.g., from power plants, gas and diesel engines, wood combustion, and many industrial processes) and by atmospheric reactions of gaseous pollutants (EPA 2013a).

Although scientific evidence links harmful human health effects from exposures to both fine particles and thoracic coarse particles, the evidence is much stronger for fine particles than for thoracic coarse particles. Effects associated with exposures to both $PM_{2.5}$ and $PM_{10-2.5}$ include premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital and emergency department visits), and changes in sub-clinical indicators of respiratory and cardiac function. Such health effects have been associated with short- and/or long-term exposure to PM. Exposures to $PM_{2.5}$ are also associated with decreased lung function growth, exacerbation of allergic symptoms, and increased respiratory symptoms. Children, older adults, individuals with preexisting heart and lung disease (including asthma), and persons with lower socioeconomic status are among the groups most at risk for effects associated with PM exposures. Information is accumulating and currently provides suggestive evidence for associations between long-term $PM_{2.5}$ exposure and developmental effects, such as low birth weight and infant mortality resulting from respiratory causes (EPA 2013a).

Specifically, the following three types of public health impacts are commonly associated with exposure to trace metals in dust and diesel particulate matter:

- Cancer risk (reported as a probability)
- Acute non-cancer risk (reported as a hazard index [HI])
- Chronic non-cancer risk (reported as an HI) (Compass Land Group 2020)

Lead

Historically, the primary source of lead emissions to the air was combustion of leaded gasoline in motor vehicles (such as cars and trucks), prior to the eradication of leaded gasoline in the United States in the mid-1990s. Since then, the remaining sources of lead air emissions have been industrial sources, including lead smelting operations, battery recycling operations, and piston-engine small aircraft that use leaded aviation gasoline. Lead accumulates in bones, blood, and soft tissues of the body. Exposure to lead can affect development of the central nervous system in young children, resulting in neurodevelopmental effects such as lowered IQ and behavioral problems (EPA 2013a).

Carbon Monoxide

Gasoline-fueled vehicles and other on-road and non-road mobile sources are the primary sources of carbon monoxide (CO) in the United States. Exposure to carbon monoxide reduces the capacity of the blood to carry oxygen, thereby decreasing the supply of oxygen to tissues and organs. Reduction in oxygen supply to the heart, in particular, causes critical complications. People with any heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart), often accompanied by chest pain (angina), when exercising or under increased stress. For these people, short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion. Therefore, people with angina or heart disease are at the greatest risk from ambient CO. Other potentially at-risk populations include those with chronic obstructive pulmonary disease, anemia, diabetes, and those in prenatal or elderly lifestages (EPA 2013a).

4.2.2.3 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 vehicles, emit TACs. TAC can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants. This section and the *Air and Greenhouse Gas Emissions Study* (Appendix C-1) focus on direct TAC emissions that would be associated with project reclamation 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 effects, 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 they are generally assumed to feature 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 an HI, which is the ratio of expected exposure levels to an acceptable reference exposure levels.

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 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 the mandate of the Children's Environmental Health Protection Act (Senate Bill 25, Escutia, Chapter 731, Statutes of 1999, Health and Safety Code Sections 39669.5 et seq.).

4.2.2.4 Regional Air Quality and Attainment Status

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to the CAAQS and NAAQS. Both CARB and USEPA use monitoring station data to designate an area's attainment status with respect to the CAAQS and NAAQS, respectively, for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified." The "unclassified" designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. See Table 4.2-1, "Ambient Air Quality Standards."

TABLE 4.2-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary*[3,4]	*Secondary*[3,5]
O_3	1 hour	0.09 ppm (180 µg/m³)	—	Same as Primary Standard
	8 hours	0.070 ppm (137 µg/m³)	0.070 ppm (147 µg/m³)	
NO_2	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary Standard
	1 hour	0.18 ppm (339 µg/m³)	0.100 ppm (188 µg/m³)	
CO	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	None
	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	
SO_2	24 hours	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—
	3 hours	—	—	0.5 ppm (1300 µg/m³)
	1 hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³	—
PM_{10}	24 hours	50 µg/m³	150 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m³	—	
$PM_{2.5}$	24 hours	No Separate State Standard	35 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m³	12.0 µg/m³	15.0 µg/m³
Lead[6]	30-day Average	1.5 µg/m³	—	—
	Calendar Quarter	—	1.5 µg/m³	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m³	
Hydrogen sulfide	1 hour	0.03 ppm	—	—
Vinyl chloride	24 hours	0.01 ppm	—	—
Sulfates	24 hours	25 µg/m³	—	—
Visibility-reducing particles	8 hours (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer because of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016
Notes:
ppm = parts per million by volume.
µg/m³ = micrograms per cubic meter.
mg/m³= milligrams per cubic meter.
1. California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary*[3,4]	*Secondary*[3,5]

2. National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For NO_2 and SO_2, the standard is attained when the 3-year average of the 98th and 99th percentile, respectively, of the daily maximum 1-hour average at each monitor within an area does not exceed the standard (effective April 12, 2010). For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms per cubic meter ($\mu g/m^3$) is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr.
   Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm (parts per million) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

With respect to the CAAQS, the SFBAAB is currently designated as a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$, and as an attainment or unclassified area for all other pollutants. With respect to the NAAQS, the SFBAAB is designated as a marginal nonattainment area for ozone, as a nonattainment area for $PM_{2.5}$, and as an attainment or unclassified area for all other pollutants.

Criteria Air Pollutant Monitoring Data

Several ambient air quality monitoring stations are located in SFBAAB to monitor progress toward air quality standards attainment of NAAQS and CAAQS. The monitoring station closest to the project area, the Pleasanton (Owens Court) air monitoring station (ID 06-001-0015), is located at approximate GPS coordinates 37.701222, 121.903019 and at I-580 near the Hopyard interchange. Recent air quality monitoring results from the Owens Court station are summarized in the *Air and Greenhouse Gas Emissions Study* (Appendix C-1).Criteria Pollutant Emissions—Alameda County

Mobile sources (on-road and off-road) are the largest contributor to the estimated annual average air pollutant levels of reactive organic gases (ROG), CO, NO_X, and oxides of sulfur (SO_X), accounting for approximately 47, 92, 91, and 53 percent, respectively, of the total inventory for each pollutant. Area-wide sources (e.g., solvent evaporation from equipment cleaning operations), on-site fuel combustion for space and water heating (e.g., boilers), and landscape maintenance equipment such as lawnmowers and leaf blowers), account for approximately 82 percent of Alameda County's PM_{10} emissions and 61 percent of the County's $PM_{2.5}$ emissions.

Although mobile source emissions constitute the majority of the 2011 criteria pollutant inventory both statewide and for Alameda County, emissions from this source category have decreased greatly since the 1970s as a result of more stringent federal and state emission controls on mobile sources and fuels. Examples of vehicle emissions standards include CARB's low-emission vehicle (LEV) standards, CARB's heavy-duty engine standards, and USEPA's corporate average fuel economy (CAFE) standards for passenger car and light duty trucks. Examples of cleaner fuel standards include the elimination of lead from gasoline and lowering of sulfur content in fuels. Criteria pollutant emissions from mobile sources are projected to continue decreasing with vehicle fleet turnover to newer, cleaner models. However, while emissions from gasoline- and diesel-fueled mobile sources are showing a decreasing trend, a

greater reduction in emissions from gasoline-fueled vehicles relative to diesel-fueled vehicles has increased the relative contribution of diesel sources to criteria air pollution from mobile sources. As a result, current regulatory development is focusing on reducing emissions from diesel sources.

4.2.3 Regulatory Setting

Federal, state, and local regulations pertaining to air quality potentially applicable to the project are discussed below.

4.2.3.1 Federal—U.S. Environmental Protection Agency

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The U.S. EPA is responsible for implementing most aspects of the Clean Air Act, which include NAAQS for major air pollutants, performance standards for new and modified sources, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions. NAAQS are established for "criteria pollutants" under the Clean Air Act, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames. NAAQS are presented in Table 4.2-1.

4.2.3.2 State—California Air Resources Board

The Clean Air Act delegates the regulation of air pollution control and the enforcement of NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to the CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB is responsible for ensuring implementation of the California Clean Air Act (CCAA) and the federal Clean Air Act and regulating emissions from motor vehicles, mobile equipment, and consumer products. CARB also sets health-based air quality standards and control measures for TACs. CARB has established CAAQS, which are generally more restrictive than NAAQS. CAAQS describes adverse condition (i.e. pollution levels must be below these standards before a basin can attain the standard). CAAQS for O_3, CO, SO_2 (1 hour and 24 hours), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. NAAQS and CAAQS are presented in Table 4.2-1.

Idling of Commercial Heavy Duty Trucks

In January 2005, CARB adopted an Airborne Toxic Control Measure (ATCM) to control emissions from idling trucks. The ATCM, which became effective February 1, 2005, prohibits idling for more than 5 minutes for all diesel-fueled commercial motor vehicles with a gross vehicular weight ratings over 10,000 pounds that are or must be licensed for operation on highways. The ATCM contains several exceptions that allow trucks to idle, including during the following periods:

(1) a bus is idling for

(A) up to 10.0 minutes prior to passenger boarding, or

(B) when passengers are onboard;

(2) idling of the primary diesel engine is necessary to power a heater, air conditioner, or any ancillary equipment during sleeping or resting in a sleeper berth. This provision does not apply when operating within 100 feet of a restricted area;

(3) idling when the vehicle must remain motionless due to traffic conditions, an official traffic control device, or an official traffic control signal over which the driver has no control, or at the direction of a peace officer, or operating a diesel-fueled APS at the direction of a peace officer;

(4) idling when the vehicle is queuing that at all times is beyond 100 feet from any restricted area;

(5) idling of the primary engine or operating a diesel-fueled APS when forced to remain motionless due to immediate adverse weather conditions affecting the safe operation of the vehicle or due to mechanical difficulties over which the driver has no control;

(6) idling to verify that the vehicle is in safe operating condition as required by law and that all equipment is in good working order, either as part of a daily vehicle inspection or as otherwise needed, provided that such engine idling is mandatory for such verification;

(7) idling of the primary engine or operating a diesel-fueled APS is mandatory for testing, servicing, repairing, or diagnostic purposes;

(8) idling when positioning or providing a power source for equipment or operations, other than transporting passengers or propulsion, which involve a power take off or equivalent mechanism and is powered by the primary engine for:

(A) controlling cargo temperature, operating a lift, crane, pump, drill, hoist, mixer (such as a ready mix concrete truck), or other auxiliary equipment;

(B) providing mechanical extension to perform work functions for which the vehicle was designed and where substitute alternate means to idling are not reasonably available; or

(C) collection of solid waste or recyclable material by an entity authorized by contract, license, or permit by a school or local government;

(9) idling of the primary engine or operating a diesel-fueled APS when operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency;

(10) idling of the primary engine or operating a diesel-fueled APS by authorized emergency vehicles while in the course of providing services for which the vehicle is designed;

While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling (CARB 2020).

In-Use Off-Road Diesel-Fueled Fleets

On July 26, 2007, CARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Diesel Regulation) to reduce PM and NO_x emissions from existing off-road heavy-duty diesel vehicles in California. This regulation required that specific fleet average requirements are met for NO_x emissions and for PM emissions. Where average requirements cannot be met, Best Available Control Technology (BACT) requirements apply. All self-propelled off-road diesel vehicles 25 horsepower (hp) or greater

used in California and most two-engine vehicles (except on-road two-engine sweepers) are subject to the Off-Road Diesel Regulation. This includes vehicles that are rented or leased (rental or leased fleets).

The Off-Road Diesel Regulation:

- requires all vehicles be reported to CARB and labeled,
- restricts the adding of older vehicles into fleets starting on January 1, 2014,
- requires fleet owners to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS) i.e., exhaust retrofits,
- imposes limits on idling and requires a written idling policy, and
- requires a disclosure when selling vehicles.

All fleets must meet emission performance and reporting requirements by January 1, 2028. Annual reporting requirements, including the Responsible Official Affirmation of Reporting form, must be completed by March 1, 2028. Large fleets must report annually from 2012 to 2023, medium fleets from 2016 to 2023, and small fleets from 2018 to 2028. For each annual reporting date, a fleet must report any changes to the fleet, hour meter readings (for low-use vehicles and vehicles used a majority of the time, but not solely, for agricultural operations), and also must submit the Responsible Official Affirmation of Reporting (ROAR) form. Following January 1, 2023, small fleets may no longer add a vehicle with a Tier 2 engine to its fleet. The engine tier must be Tier 3 or higher. Medium and large fleets may not add tier 2 engines as of January 1, 2018. The goal of the In-Use Off-Road Diesel-Fueled Fleets Regulation is to reduce PM and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles in California (CARB 2020).

Truck and Bus Regulation

The Truck and Bus regulation affects individuals, private companies, and Federal agencies that own diesel vehicles with a Gross Vehicle Weight Rating (GVWR) greater than 14,000 lbs. that operate in California. The regulation also applies to publicly and privately owned school buses; however, their compliance requirements are different and reporting is not required. The regulation does not apply to state and local government vehicles and public transit buses because they are already subject to other regulations. Vehicles that are exempt from other heavy duty diesel regulations, such as Cargo Handling Equipment, Drayage Truck, and Solid Waste Collection Vehicle regulations, may be subject to the Truck and Bus Regulation. Drayage and solid waste collection trucks with 2007 to 2009 model year engines must meet the requirements of the regulation by January 1, 2023.

Heavier trucks and buses with a GVWR greater than 26,000 pounds must comply with a schedule by engine model year or owners can report to show compliance with more flexible options. All heavier vehicles with 1996 or newer model year engines should have a PM filter (OEM or retrofit). By January 1, 2023, all trucks and buses must have 2010 model year or later engines with few exceptions.

Lighter trucks and buses with a GVWR of 14,001 to 26,000 lbs. have replacement requirements starting January 1, 2015. The Engine Model Year Schedule for Lighter vehicles shown in the table to the right lists the compliance dates by engine model year for existing lighter trucks. Starting January 1, 2015, lighter vehicles with engines that are 20 years or older must be replaced with newer trucks (or engines). Starting January 1, 2020, all remaining vehicles need to be replaced so that they all have 2010 model year engines or equivalent emissions by January 1, 2023 (CARB 2020).

4.2.3.3 State—Assembly Bills 1807 and 617 and Assembly Bill 2588

Assembly Bill 1807 (AB 1807) was enacted in 1983 and established a two-step process of risk identification and risk management to address the potential health effects from air toxic substances and protect the public health of Californians. During the first step (identification), CARE and OEHHA determined if a substance should be formally identified as a TAC in California. In the second step (risk management), CARE reviewed the emission sources of an identified TAC to determine if any regulatory action is necessary to reduce the risk. The analysis included a review of controls already in place, the available technologies and associated costs for reducing emissions, and the associated risk. The AB 1807 program was amended in 1993 as AB 2728, which required CARE to identify the 189 federal hazardous air pollutants as TACs and develop health effects values for newly identified TACs.

The Air Toxics "Hot Spots" Information and Assessment Act, or Assembly Bill 2588 (AB 2588), was enacted in 1987 and requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

Assembly Bill 617 was enacted in 2017 to develop a new community focused program to reduce exposure to air pollution and preserve public health.

4.2.3.4 Local—Alameda County General Plan—East County Area Plan

The *Alameda County General Plan—East County Area Plan* (ECAP) contains air quality goals and policies to address air pollution in the eastern area of the county. ECAP air quality goals applicable to the project include the following:

- **Policy 291:** The County shall strive to meet federal and state air quality standards for local air pollutants of concern. In the event that standards are exceeded, the County shall require appropriate mitigation measures on new development.
- **Policy 294:** The County shall require new development projects to include traffic and air pollutant reduction measures to help attain air quality standards. For non-residential projects, these measures could include Transportation Demand Management programs such as ridesharing and transit promotion; for residential projects, these measures could include site plan features to reduce traffic trip generation such as mixed use development and transit-oriented development.
- **Policy 295:** The County shall require major projects of commercial or industrial nature to include bicycle storage facilities for employees and customers, shower/locker areas, and other facilities identified in the East County Bicycle Plan (described in Program 84) for employees that commute using bicycles.
- **Policy 296:** The County shall review the cumulative impact of proposed projects for their potential effect on air quality conditions.

4.2.3.5 Local—Bay Area Air Quality Management District

Bay Area Air Quality Management District (BAAQMD) has local air quality jurisdiction over projects in Alameda County. BAAQMD's responsibilities include overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by

CEQA. BAAQMD is also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws and ensuring that the NAAQS and CAAQS are met.

Under the CCAA, BAAQMD is required to develop an air quality plan for nonattainment criteria pollutants in the air district. The 2001 San Francisco Bay Area Ozone Attainment Plan for the 1- Hour National Ozone Standard was prepared to address ROG and NO_X emissions following the region's nonattainment designation for the 1-hour ozone NAAQS. The Bay Area 2017 Clean Air Plan, adopted by BAAQMD on April 19, 2017, provides an integrated control strategy to reduce ozone, PM, TACs, and greenhouse gas (GHG) emissions in a manner that is consistent with federal and state air quality programs and regulations. The 2017 Clean Air Plan updates the previous Bay Area ozone plan and the 2010 Clean Air Plan, to include strategies to reduce emissions of ozone precursors, particulate matter, and TAC emissions pursuant to air quality planning requirements defined in the California Health & Safety Code. BAAQMD also adopted a redesignation plan for CO in 1994. The redesignation plan includes strategies to ensure the continuing attainment of NAAQS for CO in SFBAAB.

In support of Assembly Bill 617 (AB 617: Community Health Protection Program), BAAQMD established the CARE Program to reduce health risks linked to local air quality. The CARE Program identifies areas with elevated pollution burden and vulnerable populations, develops air quality programs to minimize these burdens, and unites government, businesses, and communities to develop and implement additional actions.

BAAQMD's CEQA Guidelines document provides guidance to assist lead agencies in determining the level of significance of project-related emissions, and contains thresholds of significance for O_3, CO, PM_{10}, $PM_{2.5}$, TACs, and odors. According to BAAQMD's CEQA Guidelines, project emissions that exceed the recommended threshold levels are considered potentially significant and should be mitigated where feasible. Although BAAQMD's CEQA Guidelines are intended to help lead agencies navigate through the CEQA process, BAAQMD indicates that the guidelines for implementation of its significance thresholds are advisory only and should be followed by local governments at their own discretion.

4.2.4 Significance Thresholds and Analysis Methodology

4.2.4.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on air quality if it would:

a) conflict with or obstruct implementation of the applicable air quality plan;
b) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard;
c) expose sensitive receptors to substantial pollutant concentrations; or
d) result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The BAAQMD has established significance thresholds to assist lead agencies in determining whether a proposed project may have a significant air quality impact. These thresholds, contained within the district's *California Environmental Quality Act Air Quality Guidelines* (May 2017 Revision) ("BAAQMD CEQA Guidelines") are shown in Table 4.2-2, "BAAQMD Project Level Thresholds of Significance," below.

TABLE 4.2-2
BAAQMD PROJECT LEVEL THRESHOLDS OF SIGNIFICANCE[1]

Pollutant (Criteria Air Pollutants and Precursors (Regional))	Construction-Related (Average Daily Emissions [lb/day])	Operational-Related	
		Average Daily Emissions (lb/day)	Maximum Annual Emissions (tpy)
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.00 ppm (1-hour average)	
GHGs – Projects other than Stationary Sources	None[2]	Compliance with Qualified GHG Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)	
GHGs – Stationary Sources	None[2]	10,000 MT/yr	
Odors	None	5 confirmed complaints per year averaged over three years	

Notes:

1. Project level thresholds of significance adapted from Tables 2-1 and 2-2 of the BAAQMD CEQA Guidelines (BAAQMD 2017).
2. BAAQMD does not have an adopted threshold for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals, as required by the Public Resources Code, Section 21082.2. The Lead Agency is encouraged to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable. (BAAQMD 2017: 2-6).
3. Definitions: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; GHGs = greenhouse gases; lb/day = pounds per day; MT = metric tons; NO_X = oxides of nitrogen; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; SP = service population; tpy = tons per year; yr = year; TBD = to be determined.

The issues identified above are considered in the air quality impact analysis presented in Section 4.2.5. Issues related to greenhouse gas are presented in Section 4.5, "Greenhouse Gas."

In addition, the BAAQMD CEQA Guidelines inform the lead and responsible agencies of the extent of airborne emissions from stationary sources and the potential public health impacts associated with such emissions. To assist lead agencies in evaluating air quality impacts at the neighborhood scale, BAAQMD recommends thresholds of significance for local community risks and hazards associated with TACs and $PM_{2.5}$ with respect to siting a new source and/or receptor; as well as for assessing both individual source and cumulative multiple source impacts. Local community risk and hazard impacts are associated with TACs and $PM_{2.5}$ because emissions of these pollutants can have significant health impacts at the local level. If emissions of TACs or $PM_{2.5}$ exceed any of the thresholds of significance listed below, a proposed project would result in a significant impact:

1. Non-compliance with a qualified risk reduction plan; or
2. An excess cancer risk level of more than 10 in one million, or a non-cancer (i.e., chronic or acute) HI greater than 1.0 would be a cumulatively considerable contribution; or

3. An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) annual average $PM_{2.5}$ would be a cumulatively considerable contribution.

A project would have a cumulatively considerable impact if the aggregate total of all past, present, and foreseeable future sources within a 1,000 foot radius from the fence line of a source plus the contribution from the project, exceeds the following:

1. Non-compliance with a qualified risk reduction plan; or
2. An excess cancer risk levels of more than 100 in one million or a chronic non-cancer HI (from all local sources) greater than 10.0; or
3. 0.8 $\mu g/m^3$ annual average $PM_{2.5}$.

These thresholds for local risks and hazards associated with TACs and $PM_{2.5}$ are intended to apply to both permitted stationary sources and on- and off-road mobile sources, such as sources related to construction, busy roadways, or freight movement. While the project does not introduce a new stationary source, the modeled project health risks involve on- and off-road mobile sources that can be compared to the BAAQMD thresholds for purposes of CEQA analysis. Cumulative impacts are addressed in Chapter 5 of this SEIR.

4.2.4.2 Analysis Methodology

The following sections discuss the methods for evaluating emissions of criteria air pollutants and potential ambient air quality and health impacts associated with project emissions.

This analysis, presented in Section 4.2.5 below, the *Air and Greenhouse Gas Emissions Study* and the HRA (Appendix C) evaluates the potential air quality and health risk impacts for the proposed project and present emissions information related to existing operations at the project site for informational purposes. Project reclamation emissions are compared against significance thresholds adopted by BAAQMD. Emissions from existing operations (i.e., mining and processing activities that are outside the scope of the Project) are presented for evaluation of cumulative impacts only, which are analyzed in Chapter 5, "Cumulative Impacts."

Criteria Pollutant Emissions

The CEQA baseline used for purposes of this analysis is existing conditions; however, no current reclamation activity exists for which baseline emissions would be evaluated or measured. Reclamation activity would occur in the future after mining and processing activities are completed over time in the different locations at the project site, as shown in Table 2-5, "Anticipated Mining and Reclamation Sequence and Schedule."

For proposed project reclamation activities, the air consultant primarily used the California Emissions Estimator Model (CalEEMod) to quantify emissions in the *Air and Greenhouse Gas Emissions Study*. Project reclamation activities are modeled as independent phases in CalEEMod for each of the Lake A, Lake B, and North Areas. The phases were then combined to calculate total project emissions. For CalEEMod modeling purposes, certain end-of-life reclamation activities are assumed to be constructed in year 2049 (ahead of the applicant's anticipated reclamation schedule). This is to ensure proper CalEEMod model functionality, which requires that the project build-out year be set to at least one year after the final year of construction. The final build-out year option in CalEEMod is year 2050; therefore, end-of-life activities are all modeled in construction year 2049 (one year sooner). Since CalEEMod's emissions factors do not extend beyond 2045 and should continue to improve over time, this results in a conservative estimate of

emissions for the reclamation activities that are anticipated to occur between 2050 and 2056. This has no effect on the significance conclusions presented in the analysis.

Using the outputs of the CalEEMod model runs, the highest pollutant-generating years for each pollutant are selected for reporting of emissions and comparison of the project's emissions to BAAQMD's thresholds of significance (see Table 4.2-2).

For evaluation of local CO emissions, the air consultant applied BAAQMD's preliminary screening methodology, which provides a conservative indication of whether the implementation of the proposed project would result in CO emissions that exceed the applicable thresholds of significance described in Table 4.2-2. BAAQMD does not publish a threshold of significance for construction-related CO. Construction activities are not usually a significant source of CO as most construction equipment are diesel-powered and produces much lower CO emissions than gasoline combustion engines. The air consultant also presents data from a nearby air monitoring station to show that the project's CO contribution from reclamation activity would be de-minimis compared to CO concentrations from I-580 (nearby), and the CO concentrations at the I-580 monitoring station are well below the NAAQS and CAAQS.

Existing operations at the project site (that are not part of the project) include mining operations, processing plant operations, and mobile sources. Existing operations emissions estimates are provided in Appendix C-1 for informational purposes and have been evaluated using a 5-year annual averaging period for production between 2013 through 2017. In order to evaluate these sources, the air consultant primarily relied upon CalEEMod for mining-related emissions, EPA AP-42 emission factors and BAAQMD regulation emissions standards for processing plant related emissions, and CARB's 2017 Emission Factor (EMFAC) model for mobile source emissions.

Health Risk

Exposure to equipment exhaust and fugitive dust can lead to various health impacts. Specifically, the following three types of public health impacts are commonly associated with exposure to trace metals in dust and diesel particulate matter:

1. Cancer risk (reported as a probability)
2. Acute non-cancer risk (reported as a HI)
3. Chronic non-cancer risk (reported as a HI)

The preparation of health risk assessments is a multi-step process. The first step is to identify 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 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.

For evaluation of health risk from exposure to TACs, the air consultant translated the emission rate of individual TACs (presented in Appendix C-2) into a concentration of each TAC. The key step in performing an exposure assessment is the application of an air dispersion model. The dispersion model incorporates the local meteorological data (wind speed, wind direction, local temperature, inversion heights, etc.), stack height, and exhaust flow characteristics into the concentration of individual air contaminant. Dispersion modeling was performed using the AERMOD Modeling System (AERMOD) version 19121. 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.

To calculate the magnitude of the health risk from these pollutant concentrations, the consultant applied the Hotspots Analysis and Reporting Program Air Dispersion Modeling and Risk Assessment Tool Version 2 (HARP2 risk model) developed by CARB 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 consistent with BAAQMD and OEHHA guidelines.

HARP 2 can be used by districts, facility operators, and other parties to manage and evaluate emissions inventory data and the potential health impacts associated with these emissions (CARB 2015).

Odor

For consideration of odors, BAAQMD presents screening distances for a variety of land uses that typically generate odors, such as landfills, composting facilities, rendering plants, and asphalt concrete batch plants. Since the proposed project does not propose or fall under any of the land use categories for which screening distances are provided, the air consultant instead obtained compliance history from BAAQMD for the existing Granite Construction Company asphalt concrete plant located on the project site to show whether or not this use (even though it is not part of the project) has resulted in a significant number of odor complaints compared to BAAQMD thresholds of significance that are discussed in Table 4.2-2.

Detailed estimating methods and assumptions are provided in the *Air Quality and Greenhouse Gases Study*'s appendices (see Appendix C-1). Furthermore, the County retained Yorke Engineering, LLC (Yorke) to peer review the *Air and Greenhouse Gas Emissions Study* on May 17, 2019, at which time Yorke commented on the study and noted the need for a public health risk assessment. The air consultant revised the *Air and Greenhouse Gas Emissions Study* and responded to Yorke's comments in December of 2019. The air consultant p also prepared the HRA (Appendix C-2) in March of 2020, to which Yorke also responded with comments in May 2020. The air consultant then responded to Yorke's comments and revised the HRA in June 2020. Yorke confirmed in June 2020 that the air consultant adequately addressed their comments regarding the HRA.

4.2.5 Project Impacts and Mitigation Measures

4.2.5.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, air quality impacts were determined to be less than significant with implementation of mitigation. The 1981 project included the on-site operation of mobile equipment related to the excavation, grading, and transportation of materials on-site; the processing of mined materials; the backfill of slopes, and revegetation activities (Alameda County 1980: 40-41).

The approved project includes the following mitigation of air quality impacts:

- Availability of reclaimed land for higher intensity land uses does not necessary mean that the land would actually be put to such uses. The potential impact on air quality would be eliminated by adherence to environmental policies which do not allow large scale development which would measurably deteriorate air quality. (Alameda County 1980: 41)

Project Revisions

As discussed in Chapter 2, "Project Description," the proposed project involves revisions to approved reclamation activities and does not involve evaluation of permitted mining or processing activities. The activities and equipment used would be similar to the equipment that was evaluated in the LAVQAR EIR, except that the proposed project (which involves reclamation) would not include processing mined materials, which would reduce emissions compared to the 1981 project. In addition, the equipment used today is more efficient and produces fewer emissions than the equipment proposed to be used as part of the 1981 project. Therefore, the proposed project's revisions would not create a new or increased significant impact in this regard.

Changed Circumstances

SMP-23 was originally approved when the property to the north of Lake A was zoned "Agricultural" and within the jurisdiction of the County. Over the years, the property was annexed to the City of Livermore, the zoning was changed to residential, and houses were built adjacent to Lake A. These land uses are changed circumstances that could create a new or increased significant impact as potential receptors are now closer to where reclamation activities will occur.

New Information

The Applicant has submitted the *Air and Greenhouse Gas Emissions Study* (Compass Land Group 2019) that has been peer reviewed by the County. The evaluation focuses on emissions associated with reclamation activities and quantifies emissions associated with ongoing mining for informational purposes. This SEIR quantifies, below and in Section 4.5, estimated criteria air pollutant and greenhouse gas emissions associated with reclamation activities under existing conditions (baseline or environmental setting) and under the proposed SMP-23 reclamation plan amendment, as these potential impacts were not considered in the LAVQAR EIR.

Significance Determination

Based on project revisions and changed circumstances that may create a new or increased significant impacts, the County has amplified and augmented the analysis contained in the 1980 EIR. This evaluation is provided in the following impact analysis.

4.2.5.2 Subsequent Environmental Analysis

Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

The BAAQMD's 2017 Clean Air Plan (Clean Air Plan) is the applicable air quality plan for the project and the County. Consistency with the air quality plan is determined by whether the project would hinder implementation of control measures identified in the air quality plan or result in growth of population or employment that is not accounted for in local and regional planning.

The project would not result in population growth in the County, as the number of employees for the proposed project would not substantially increase compared to existing conditions and, therefore, would represent an inconsequential growth in County employment and not exceed the employment growth accounted for in the County General Plan and the ECAP.

The Clean Air Plan requires consistency with ATCMs for idling trucks and on- and off-road diesel using vehicles (BAAQMD 2017). Mitigation Measure 4.2-1 below provides for adherence to these ATCMs.

The Clean Air Plan contains control measures that identify actions to be taken by the air district, local government agencies, and private enterprises to reduce stationary and mobile sources of criteria pollutants and ozone precursors and TAC emissions in the SFBAAB (BAAQMD 2017). As discussed under Impact 4.2-2 below, the proposed project would result in a cumulatively considerable impact due to daily NO_X emissions in year 2022. Therefore, project emissions would hinder the air district in its goals for reducing significant air pollutants in the air basin in the short-term. However, the daily NO_X exceedances are related to construction activities required for the reclamation of Lake A and the realignment of the Arroyo del Valle. As such, the emissions are only temporary in nature. Furthermore, the annual NO_X emissions in year 2022 would not exceed the annual thresholds. The remainder of the model years are below the applicable thresholds for all criteria pollutants. Furthermore, as outlined in Impact 4.2-2 below, reducing emissions to a less than significant level would require daily operations to be limited to shorter windows compared to typical 8-10 hour days, which would extend the life of reclamation, thereby also potentially increasing emissions of an extended life of the reclamation activities. Therefore, the proposed project's estimated NO_X emissions would constitute a significant and unavoidable impact on consistency of this portion of the Clean Air Plan in the short term.

Level of Significance Before Mitigation: Significant.

Mitigation Measure 4.2-1: Off-road Equipment Plan

The Applicant shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in Lake A reclamation and the Lake B realignment of the Arroyo del Valle would achieve a fleet-average 20 percent NO_X reduction compared to the most recent ARB fleet average for the duration of these reclamation activities. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as such become available.

The Alameda County Community Development Agency would be responsible for ensuring compliance.

Significance After Mitigation: Significant and Unavoidable.

Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_X

Project operations associated with reclamation would emit criteria air pollutants, including ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ from construction equipment and from mobile equipment and motor vehicles associated with excavation, grading/fill, and construction of water management facilities at Lakes A and B.

The modeling results from the *Air and Greenhouse Gas Emissions Study*'s (Appendix C-1) indicate that project criteria pollutant emissions are below applicable BAAQMD thresholds of significance for CEQA except for daily emissions of NO_X. Daily emissions of NO_X are exceeded only in model year 2022, when Lake A reclamation activity and the Lake B realignment of the ADV are assumed to occur simultaneously. Even if evaluated separately, the year 2022 Lake A reclamation activities and 2022 Lake B realignment of the Arroyo would exceed the daily NO_X thresholds, but to a lesser degree. However, these daily NO_X exceedances are related to construction activities required for the reclamation of Lake A and the realignment of the Arroyo del Valle. As such, they are only temporary

in nature. In 2022, the annual NO_X emissions would not exceed the annual thresholds. The remainder of the model years are below the applicable thresholds for all criteria pollutants.

Table 4.2-3, "Daily Criteria Air Pollutants and Precursor Emissions Analysis (lb/day) Model Year 2022," presents the daily criteria air pollutants and ozone precursor emissions analysis. Table 4.2-4, "Annual Criteria Air Pollutants and Precursor Emissions Analysis (tons/year) Model Year 2022," presents the annual criteria air pollutants and ozone precursor emissions analysis. A complete summary of project emissions is included in the *Air and Greenhouse Gas Emissions Study*'s (Appendix C-1) Appendix A-1, "Daily and Annual Emissions Summary." Detailed modeling inputs and outputs are included in Appendices A-2 through A-6 of the study.

TABLE 4.2-3
DAILY CRITERIA AIR POLLUTANTS AND PRECURSOR EMISSIONS ANALYSIS (LB/DAY) MODEL YEAR 2022

Emissions Category	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Project Emissions	19.62	230.85	8.53	7.90
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Threshold (Yes/No)?	**No**	**Yes**	**No**	**No**

Source: Compass Land Group 2019
Notes:
1. BAAQMD thresholds from Table 4.2-2, above.
2. Project emissions are reported for model year 2022, which is the highest emitting model year for the reported pollutants. See Appendix A-1 of the study (Appendix C-1 of this SEIR) for detail.
3. The Applicant would be required to implement BAAQMD's best management practices for construction-related fugitive dust emission controls.

TABLE 4.2-4
ANNUAL CRITERIA AIR POLLUTANTS AND PRECURSOR EMISSIONS ANALYSIS (TONS/YEAR) MODEL YEAR 2022[2]

Emissions Category	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Project Emissions	0.61	7.60	0.28	0.27
BAAQMD CEQA Significance Thresholds	10	10	15	10
Exceeds Threshold (**Yes/No**)?	**No**	**No**	**No**	**No**

Source: Compass Land Group 2019
Notes:
1. BAAQMD thresholds from Table 4.2-2, above. Operational-related annual thresholds are used since there are no published construction-related annual thresholds.
2. Project emissions are reported for model year 2022, which is the highest emitting model year for the reported pollutants. See Appendix A-1 of the study (Appendix C-1 of this SEIR) for detail.
3. The Applicant would be required to implement BAAQMD's best management practices for construction-related fugitive dust emission controls.

Based on the results presented in Table 4.2-3, above, NO_X emissions are estimated to exceed BAAQMD CEQA significance thresholds by approximately 425 percent in model year 2022. Mitigation Measure 4.2-1 would reduce daily NO_X emissions during Lake A reclamation and the Lake B realignment of the ADV by approximately 20 percent; however, NO_X emissions would remain well above the threshold during this period of time (BAAQMD 2017). Reducing daily emissions to a less than significant level would require daily operations to be limited to shorter windows compared to typical 8-10 hour days, which would extend the life of reclamation, thereby also potentially increasing emissions over an extended life of the project. Therefore, this option is not feasible. In

addition, because of the necessity to mobilize equipment each day, NO_X emissions would be increased over the life of the project should additional daily reductions be implemented. Therefore, the proposed project's estimated NO_X emissions would constitute a significant and unavoidable impact.

Level of Significance Before Mitigation: Significant.

Mitigation Measure*: Implement Mitigation Measure 4.2-1, "Off-road Equipment Plan" (see Impact 4.2-1, above).*

Significance After Mitigation: Significant and Unavoidable.

Impact 4.2-2b: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$

As stated in Impact 4.2-2a above, proposed project operations associated with reclamation would emit criteria air pollutants, including ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ from construction equipment and from mobile equipment and motor vehicles associated with excavation, grading/fill, and construction of water management facilities at Lakes A and B.

Table 4.2-3 presents the daily criteria air pollutants and ozone precursor emissions analysis. Table 4.2-4 presents the annual criteria air pollutants and ozone precursor emissions analysis. The modeling results from *the Air and Greenhouse Gas Emissions Study's* (Appendix C-1) indicate that project criteria pollutant emissions are below applicable BAAQMD thresholds of significance for CEQA except for daily emissions of NO_X. Therefore, the proposed project's estimated ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions would constitute a less than significant impact.

Level of Significance: Less than Significant.

Mitigation Measure: None required

Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

Health Risk

In the HRA (Appendix C-3), the emission rates discussed in Impact 4.2-3, above, were used as a basis to quantify health risks from public exposure to TACs. The HARP2 risk model developed by CARB and OEHHA was used to calculate the health risks.

The project's incremental maximum cancer risk at nearby homes is estimated to be 0.8 cancers per million. The risk varies from approximately 0.8 to less than 0.1 excess cancers per million depending on the exposure scenario (residential or sensitive receptor) and location. Cancer risk at nearby businesses is estimated to be 0.03 excess cancers per million. These results are presented in terms of a probability (cancers risk per million). These values are all well below the applicable thresholds of significance.

The highest of these risk levels are along Vetta Drive, east of Isabel Avenue and north of Lake A in the vicinity of the future construction of the Lake A to C water conveyance pipeline. Risk at nearby schools and hospitals are estimated to be below 0.04 cancers per million. The highest worker risk occurs southwest of the intersection of Isabel Avenue and East Vineyard Avenue.

The maximum non-cancer risks at nearby homes and businesses are calculated in terms of an HI. Chronic HI was below 0.002 at all locations.

The project's incremental annual average $PM_{2.5}$ concentration is 0.26 micrograms per cubic meter ($\mu g/m^3$), which is less than the applicable threshold (Compass Land Group 2020). Therefore, impacts from $PM_{2.5}$ to public health risk would be less than significant.

The results of the health risk analysis are summarized in Table 4.2-5, "Summary of Maximum Long-Term Health Risk at the Project Area," below. For additional detail, refer to Appendix C-3 of this SEIR.

TABLE 4.2-5
SUMMARY OF MAXIMUM LONG-TERM HEALTH RISKS AT THE PROJECT AREA

Risk Metric	Maximum Off-Site Value	Significance Threshold	Significant?
Residential Cancer Risk per Million (30-year exposure)	0.769	10	No
Worker Cancer Risk (25-year exposure)	0.027	10	No
Cancer Risk per Million at Sensitive Receptors (schools, hospitals)	0.039 at Granada High School 0.029 at Stanford Valley Health Center	10	No
Chronic Hazard Index	Residential 0.0019 Worker 0.0012	1.0	No
Acute Hazard Index	Residential 0.065 Worker 0.028	1.0	No
Annual $PM_{2.5}$	0.26 ug/m^3	> 0.3 ug/m^3	No

Source: Compass Land Group 2020

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.

BAAQMD's preliminary screening methodology indicates that the project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. Project is consistent with an applicable congestion management program established by the County congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge, underpass, natural or urban street canyon, below-grade roadway).

Regarding screening criteria number 1, the Alameda County Transportation Commission (ACTC) serves as the congestion management agency for Alameda County, and develops and implements the applicable Congestion Management Program (CMP). ACTC updated the CMP recently in September 2019. ACTC recognizes State Route 84 (between Vallecitos and Isabel Avenues) as a Tier 1 roadway (a highway with more than 30,000 daily traffic volume) and Stanley Boulevard as a Tier 2 roadway (an arterial roadway of County significance) in the CMP. Although the project is located adjacent to roadways that are included in the CMP, the project would not conflict with the CMP because reclamation activities would only occur for short periods of time and would only place very limited traffic on existing roadways. Traffic associated with project reclamation activity would be far less than existing traffic levels associated with mining and processing operations at the site. Based on trip generation estimates found in Appendix A of the *Air and Greenhouse Gas Emissions Study* (Appendix C-1), the project is estimated to generate approximately 834 vehicle trips associated with Lake A reclamation activity, 837 vehicle trips associated with Lake B reclamation activity, and 232 vehicle trips associated with North Area reclamation activity. In total, the project would generate approximately 1,900 trips spread out over six calendar years (based on the estimated schedule provided in Table 2-5), including all worker, vendor, and hauling trips. To put these figures into perspective, as of 2017 Caltrans estimated that State Route 84 (Isabel Ave.) at Vineyard Avenue, which has the highest traffic volume of project-area roadways, would experience 32,100 annual average daily traffic (AADT). The project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour (screening criteria number 2), or to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (screening criteria number 3). Based on BAAQMD's screening criteria alone, the project's potential CO impacts are less-than-significant.

Furthermore, Caltrans independently evaluated CO impacts for the recently completed State Route 84 Expressway Widening Project in its Initial Study with Negative Declaration/Environmental Assessment with Finding of No Significant Impact (Caltrans 2008). This is relevant because State Route 84 has the highest volume of traffic near the project site and is also closely located to residential receptors. Caltrans performed dispersion modeling to predict CO concentrations near affected roadways following the procedures outlined in the Transportation Project-Level Carbon Monoxide Protocol (Niemeier et al., 1997). The CO concentrations were estimated for baseline conditions in 2005 and cumulative conditions in 2030, with and without the Caltrans project. The highest CO concentration measured at the nearest CARB air monitoring station available (793 Rincon Avenue, Livermore) in 2005 was used in the model as the background CO concentration. Caltrans concluded that with or without the project, localized CO concentrations are predicted to decrease (improve) between 2005 and 2030. This benefit would occur because CARB expects continued future improvements in fuel formulations and vehicle emission controls, and older, higher polluting vehicles would continue to be retired from use as California drivers replace them with newer, more efficient cars. Caltrans noted that future CO concentrations would increase slightly with the Caltrans SR-84 project (between 0 to 0.7 parts per million depending on location for a 1-hour period) in comparison to the No Build modeling results for the morning and afternoon peak periods. This increase was expected, as the SR-84 project added an additional lane of traffic in both directions. However, the modeling results showed that the project would not result in localized CO "hot spots"

at intersections exceeding either NAAQS or CAAQS for CO. Therefore, the project would not cause exceedance of an air quality standard or result in an adverse impact in this regard.

The air consultant's CalEEMod modeling results, summarized in Appendix A of the *Air and Greenhouse Gas Emissions Study* (Appendix C-1), indicate that project CO emissions would peak at approximately 133 lbs. per day and 4.31 tons per year in model year 2022 (during the period of concurrent Lake A and Lake B reclamation activities). These values represent mass emissions estimates and not an emissions concentration, which is the metric used in BAAQMD's operational thresholds. As documented by Caltrans and BAAQMD, CO concentrations in the project area currently meet all NAAQS and CAAQS and the Bay Area Air Basin as a whole is in attainment status (meaning meeting standards) for CO. State standards, which have been adopted as part of BAAQMD'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. CO measurements taken at the nearby and new Owens Court air monitoring station since 2018 indicate that CO concentrations are at 0.9 ppm (8-hour average) and 1.2 ppm (1-hour average). Given that these CO concentrations are measured adjacent to I-580, where traffic is heavily congested during the morning and afternoon peak hours, they likely represent much higher concentrations of CO than would be expected at the project site. As of 2017, Caltrans estimated that I-580 at State Route 84 would generate 217,000 AADT. In 2019, BAAQMD estimated that I-580 at the Pleasanton (Owens Ct.) air monitoring station would generate 231,500 AADT based on updated traffic count data from April 1, 2019. These traffic volumes are nearly an order of magnitude higher than traffic along State Route 84 (Isabel Ave) at Vineyard Ave (i.e., 31,200 ADT).

The proposed project's impacts relating to CO are less-than-significant based on BAAQMD CO screening criteria, Pleasanton (Owens Court) air monitoring station data, and Caltrans' CEQA evaluation of the SR-84 Expressway Widening Project.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: None required.

Impact 4.2-4: Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People

Project reclamation 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 equipment that generally dissipate rapidly into the atmosphere as distance increases from the source. Furthermore, BAAQMD has not adopted construction-related thresholds of significance for odors. BAAQMD's operational threshold of significance is five confirmed odor complaints per year averaged over three years.

The BAAQMD CEQA Guidelines provide screening distance criteria for a variety of land uses that have the potential to generate odors, such as landfills, composting facilities, rendering plants, and asphalt batch plants. The project reclamation activity does not involve installation or operation of any of the land use categories that might be expected to generate odors. However, as some paving would occur during reclamation (e.g., for the development of the Lake B pedestrian and bike trail), asphaltic concrete would likely be sourced from the existing Granite Construction Company asphalt concrete plant located on the project site. The air consultant obtained compliance history from BAAQMD for the existing plant to compare it against BAAQMD's operational threshold. For the period 2013 to

August 15, 2019, BAAQMD has recorded five unconfirmed complaints, zero confirmed complaints, and zero pending complaints for the asphalt plant. Zero complaints have been recorded in the most recent three year period.

The project's potential odor impacts are less-than-significant based on the nature of reclamation construction activities, BAAQMD's odor screening criteria, and BAAQMD's record of complaints for the existing asphalt concrete plant.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: None required.

4.3—BIOLOGICAL RESOURCES

This section of the draft subsequent environmental impact report (Draft SEIR) documents potential impacts of the project on biological resources, including special-status plant, wildlife, and invertebrate species and their habitat.

The information in this section is based on a peer review of applicant-prepared studies and publicly available sources. The applicant-prepared studies used are:

- *Biological Resources Assessment, ±920-Acre Eliot Facility Plan Area, Alameda County, California* (Foothill Associates 2019) (Appendix D-1, "Biological Resources Assessment")
- *Addendum to the Biological Resources Assessment for the 920-Acre Eliot Facility Plan Area, in Alameda County, California* (Helix 2020b) (Appendix D-2, "BRA Addendum")
- *±920-Acre Eliot Facility Plan Boundary, Aquatic Resources Delineation Report* (Helix Environmental, Inc. [Helix] 2020a) (Appendix D-3, "Aquatic Resources Delineation Report")

The Biological Resources Assessment (BRA) by Foothill Associates (acquired by Helix in 2019) was initially peer reviewed as a draft by County-retained Stillwater Sciences in 2018. The peer review letter reports are on file with the County. The applicant prepared an addendum to the referenced 2019 analysis, revised the Aquatic Resources Delineation Report, and provided responses to the peer reviewer comments, which are also on file with the County. The Aquatic Resources Delineation report, the BRA, and the BRA addendum adequately addressed the peer reviewer's comments and questions.

4.3.1 Environmental Setting

This section discusses the existing biological resources conditions within and adjacent to the project site. Methods for evaluating site conditions, including literature review and field surveys, are discussed first, which is followed by a description of the habitat types and species composition at the project site.

4.3.1.1 Biological Resources Conditions at the Time of the LAVQAR EIR

The project site had already been greatly modified from its natural state at the time of the *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR). The LAVQAR EIR states that the primary area of biotic significance was the ADV and its associated riparian vegetation. The ADV contained largemouth bass, bluegill, hitch, carp, Sacramento blackfish, goldfish, Sacramento sucker, Mississippi silversides, white catfish, and Sacramento squawfish near the Quarry Area near Shadow Cliffs Park. No rare or endangered plant or animal species were identified to exist in the area at the time (CDFG 1979).

The LAVQAR EIR also noted the presence of waterfowl in the settling ponds and quarry pits, as well as the project area's location within Southern Bald Eagle and American Peregrine Falcon hunting area (CDFG 1979).

4.3.1.2 Data Collection and Field Survey Methods

Information regarding existing conditions is based on a combination of literature review and field investigations.

Literature Review

Foothill Associates and Helix Environmental, Inc. (Helix) collected observational records for natural resources within the Livermore 7.5-minute U.S. Geological Survey (USGS) quadrangle from the following sources:

- California Department of Fish and Wildlife (CDFW) California Natural Diversity Data Base (CNDDB)
- California Native Plant Society's (CNPS) online Inventory of Rare and Endangered Plants
- United States Fish and Wildlife Service (USFWS)'s Information for Planning and Conservation (IPaC) Trust Resource Report: Arroyo Del Valle
- United States Department of Agriculture (USDA), Natural Resources Conservation Service's (NRCS) Web Soil Survey

Foothill Associates reviewed the *Soil Survey, Alameda County, California* (USDA 1966) to determine soil types on the site and identify any soil types (e.g., sandy, acidic, or highly alkaline soils; serpentinite) that may support special-status plants and/or sensitive communities, including wetlands. Biological communities at the project site were mapped using Google Earth aerial imagery and ArcGIS Collector application for Android and iPhones.

Field Surveys

Existing information, including soil maps, and the results of the records search and five-mile radius CNNDB query, was summarized in a species-occurrence table (see Appendix D-1) prior to conducting site surveys. Field surveys of the project were conducted on October 26 and 27 and November 1 and 2, 2017 and April 3 and 4, 2018 by Foothill Associates and on November 25 and 26, 2019 by Helix on an expanded study area ("revised Study Area"). The revised Study Area was systematically surveyed on foot, driving, using public roadways, and scanning the project site with binoculars to ensure total search coverage, with special attention given to identifying those portions of the project site with the potential for supporting special-status species and sensitive habitats. During the field surveys, biologists recorded plant and animal species observed (see Appendix D-2), as well as characterized biological communities occurring onsite. Biological features such as wetlands, trees, or active nests were mapped using a hand-held GPS unit with sub-meter accuracy. Following the site survey, the potential for each species identified in the records search to occur at the project site was determined based on the site surveys, soils, and species-specific information, as shown in Appendix D-1.

Definition of Special-Status Species

For the purposes of this analysis, special-status species are defined as meeting one or more of the following criteria:

- Listed, formally proposed, or designated as candidates for listing as threatened or endangered under the Federal Endangered Species Act (FESA) or California Endangered Species Act (CESA);
- Protected under other regulations (e.g. Migratory Bird Treaty Act [MBTA]);
- Included on the CDFW Special Animals List;
- Designated as fully protected in the Fish and Game Code (e.g., white-tailed kite);
- Identified as Rank 1 through 4 by CNPS; or
- Receive consideration during environmental review under CEQA.

Special-status species considered for this analysis were based on queries of the CNDDB, the U.S. Fish and Wildlife Service (USFWS), and CNPS ranked species (online versions) for the Livermore, and eight surrounding quadrangles: Diablo, Tassajara, Byron Hot Springs, Mendenhall Springs, Altamont, La Costa Valley, Niles, and Dublin. Appendix A of the BRA (Appendix D-1 of this SEIR) includes the common name and scientific name for each species, regulatory status (federal, State, local, CNPS), habitat descriptions, and potential for occurrence at the project site. The following set of criteria was used to determine each species' potential for occurrence at the project site:

- **Present**: Species known to occur at the project site based on CNDDB records and/or observed at the project site during the biological surveys.
- **High**: Species known to occur on or in the vicinity of the project site (based on CNDDB records within five miles and/or based on professional expertise specific to the project site or species) and there is suitable habitat at the project site.
- **Low**: Species known to occur in the vicinity of the project site and there is marginal habitat within the project site **-OR-** Species is not known to occur in the vicinity of the project site, however, there is suitable habitat on the project site .
- **None**: Species is not known to occur on or in the vicinity of the project site and there is no suitable habitat at the project site **-OR-** Species was surveyed for during the appropriate season with negative results **-OR-** The project site occurs outside of the known elevation or geographic ranges.

Only those species that are known to be present or have a high or low potential for occurrence are discussed further in the following sections.

Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified by CDFW on local or regional plans, policies, or regulations. The CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CDFW 2017). Sensitive plant communities are also identified by CDFW (CDFW 2017) and the California Native Plant Society (CNPS 2017, cited in Foothill Associates 2019). Vegetation alliances are ranked 1 through 5 in the CNDDB based on NatureServe's methodology, with those alliances ranked globally (G) or statewide (S). Rankings 1 through 3 are considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or United States Fish and Wildlife Service (USFWS) must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

4.3.1.3 Project Site General Habitat Conditions

The project site is an active gravel quarry. Arroyo del Valle (ADV), part of the Alameda Creek watershed and one of the major drainages of the Livermore-Amador Valley, flows through the site. Prior to completion of the Del Valle reservoir in 1968, the arroyo had an intermittent flow, containing water in most winters and springs and drying in the summer. The Arroyo now contains a perennial flow caused by managed releases from Lake del Valle. The topography of the site was historically a broad outwash plain with a braided stream channel. The site is now made up predominantly of the Lake A and B pits with the Arroyo channel relocated to the south of the currently active pits.

The condition of vegetation growing within the active portions of the quarry depends on the timing of the most recent disturbance. Recently disturbed areas remain barren, while those that have been undisturbed for several years can support a cover of grasses and forbs. Older disturbed areas where groundwater is present support emergent marsh and riparian species (see Figure 4.3-1, "Revised Biological Communities").

Aggregate mining along ADV results in excavating below the existing water table. As a result, groundwater from the surrounding area seeps into these pits. To prevent the active pits from ponding while mining is underway, the water is pumped to unused pits. Currently, quarrying is only occurring within the Lake B portion of the site. Water seeping into this pit is collected in a sump and pumped into a small pond at the western end of the main pit. Water in the pond is eventually pumped into one of the old quarry pits.

The pattern of flow in the ADV has changed since the Arroyo was dammed upstream in 1968. Releases from the Del Valle reservoir have resulted in year-round (perennial) flow and a reduction in the volume of flood flows. These changes have altered the character of the stream. The reduction in flood flows has reduced the historic meandering of the channel and left the bed in a more consistent configuration. The stability of the channel and the year-round availability of water has encouraged the establishment of willow and cottonwood at the expense of sycamores and buckeye.

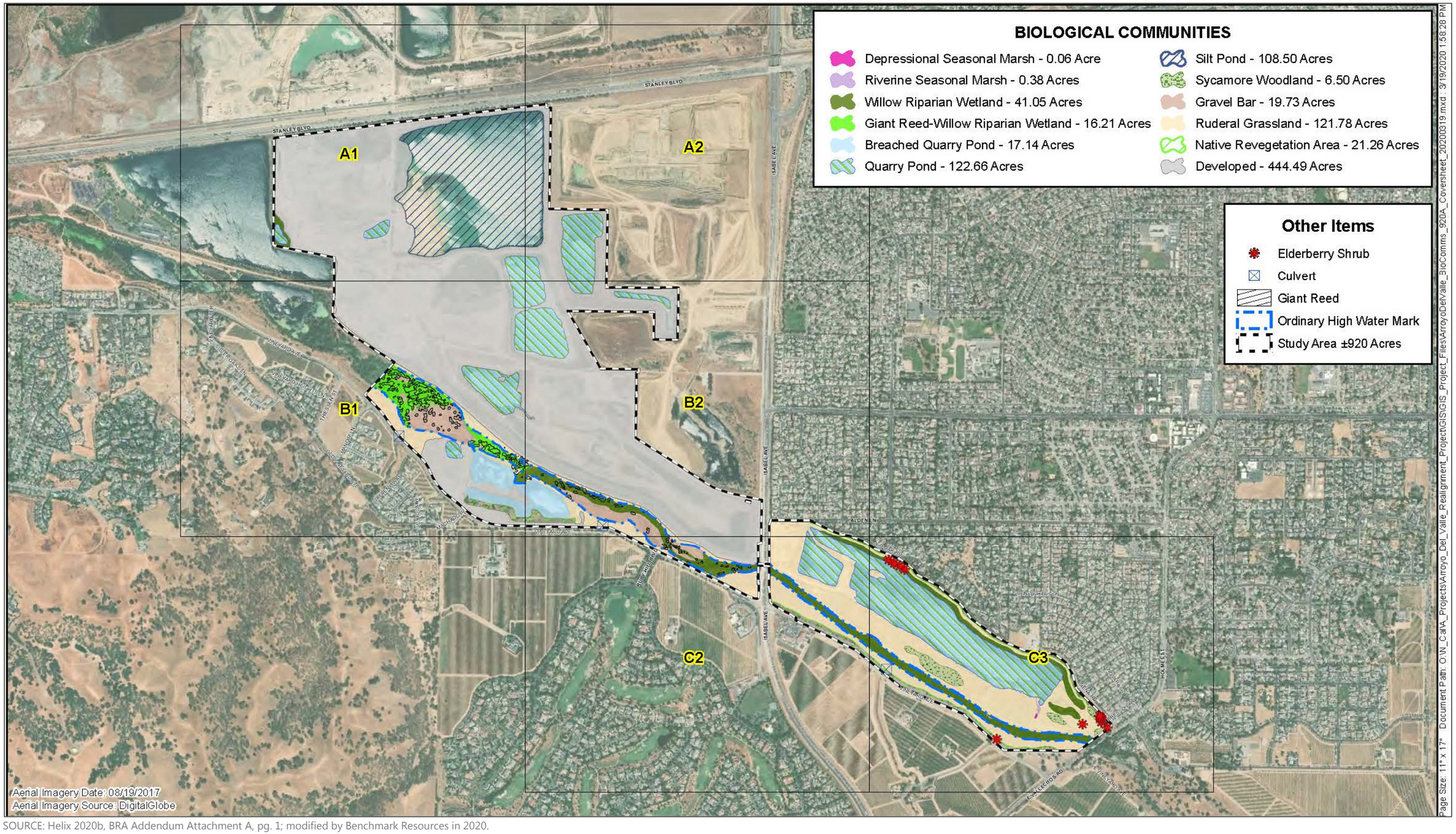
Previous mining activity has resulted in relocating and confining the ADV channel to the southern side of the plan area. The Lake A reach of the Arroyo was constructed by excavating a 6- to 10-foot-deep channel with 2:1 slopes with an approximately 120-foot-wide bed on the downstream side of Vallecitos Road. A weakly defined low-flow channel is present supporting recently established emergent and riparian vegetation. Few pools are in this reach and the creek largely sheet flows through this area.

The Lake B reach of the Arroyo flows through the southern edge of its historic floodplain. This reach was previously realigned to facilitate mining in the area. Depending on adjacent quarry activities, it is either confined to a single channel or a braided channel, particularly at its western end. The riparian species composition is more diverse and more mature in this reach and in places the trees have shaded out emergent species. This reach also contains significant stands of the invasive Arundo reed. The active channel along this reach contains pools that are occasionally more than 3 feet deep. These pools provide habitat for aquatic animals such as fish, turtles, and frogs.

4.3.1.4 Biological Communities

Twelve biological communities occur at the project site (see Figure 4.3-1 and Appendix D-2, Attachment A for greater detail). Historic and ongoing mining activities have reduced the habitat function and values of many of these communities. For example, the ADV has extensive expanses of exotic, invasive plant species within the Ordinary High-water Mark of the channel including common reed, giant reed, and pampas grass. The majority of the project site has been subject to disturbance associated with mining activities. Therefore, biological communities at the project site have been subject to various sources of disturbance over time.

Biological communities that occur at the project site include: riverine seasonal marsh, willow riparian wetland, gravel bar, ruderal grassland, giant reed-willow riparian wetland, breached quarry ponds, quarry ponds, native revegetation area, developed land depressional seasonal marsh, sycamore woodland, and silt pond. These communities provide habitat to a number of common species of wildlife and may provide suitable habitat for special-status plant and wildlife species.



SOURCE: Helix 2020b, BRA Addendum Attachment A, pg. 1; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

BENCHMARK RESOURCES

Revised Biological Communities
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Figure 4.3-1

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The distribution of these communities on the project site is shown in Figure 4.3-1, and approximate acreages of each are listed below in Table 4.3-1, "Biological Communities and Acreages."

TABLE 4.3-1
BIOLOGICAL COMMUNITIES AND ACREAGES[1]

Biological Community	Area on Site (acres)
Breached Quarry Ponds	17.14
Depressional Seasonal Marsh	0.06
Developed	444.49
Giant Reed-Willow Riparian Wetland	16.21
Gravel Bar	19.73
Native Revegetation Area	21.26
Quarry Ponds	122.66
Riverine Seasonal Marsh	0.38
Ruderal Grassland	121.78
Silt Pond	108.50
Sycamore Woodland	6.50
Willow Riparian Wetland	41.05
TOTAL APPROXIMATE ACRES	**920**

Source: Helix 2020b
Notes:
1. Biological communities and acreages are based on Table 1 (page 5) of Helix 2020b.

Dominant vegetation observed within each biological community is discussed in detail below. A comprehensive list of plants observed at the project site is provided in Appendix D-2. The location and extent of each biological community are depicted in Figure 4.3-1, with additional detail provided in Attachment A of Appendix D-2 of this SEIR.

Vegetation and Suitable Wildlife Habitat

Vegetation in the upland portions of the site associated with the quarry varies from disturbed ruderal habitat to a grassland community. Riparian vegetation has developed within groundwater seeps on the floor of the active Lake B quarry. Vegetation along the ADV channel includes a mosaic of freshwater marsh and riparian woodlands. Furthermore, most wildlife species found on the project site occur within and along the ADV and the quarry pit ponds. The dry disturbed grasslands on the site provide limited habitat for a smaller number of wildlife species.

Riverine Seasonal Marsh

A total of 0.38 acres of riverine seasonal marsh were mapped at the project site. This acreage includes 0.09 acre of riverine seasonal marsh above the ordinary high water mark (OHWM) of the ADV and 0.29 acre of riverine seasonal marsh located within the OHWM. Marsh habitats provide habitat for numerous wildlife species including various amphibians and reptiles and provide potential foraging habitat for raptors. Vegetation within this community also provides potential nesting habitat for various bird species.

The aquatic resources delineation for the project site (HELIX 2020b) references 0.09 acre of this community because the remainder (0.29 acre) is located within the OHWM and thus included in the perennial stream classification (HELIX 2020a). This acreage also includes a re-categorization of areas

that were previously mapped by Foothill Associates as freshwater marsh. This biological community is comprised of common reed (*Phragmites australis*), cattails (*Typha* spp.), tall flatsedge (Cyperus eragrostis), and tule (*Schoenoplectus acutus var. occidentalis*).

Willow Riparian Wetland

A total of 41.05 acres of willow riparian wetland were mapped at the project site. Of this 41.05 acres, 2.69 acres is located above the OHWM of the ADV and 38.36 acres is within the OHWM of the ADV. Riparian areas provide habitat for a variety of wildlife species including nesting birds, raptors, and numerous mammals. This biological community has the potential to support American badger as well as providing habitat for western pond turtles, and potentially California redlegged frog (CRLF) and California tiger salamander (CTS).

The 38.36 acres within the OHWM is included in the perennial stream classification in the aquatic resources delineation for the Project site (HELIX 2020b). The total acreage of this community was reduced, due to some previously mapped acreage of this community being re-categorized as giant reed-willow riparian wetland (see below). These riparian communities at the project site have been subject to disturbance from mining activities over time. The overstory is dominated by red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepsis*), Fremont's cottonwood Populus fremontii ssp. fremontii), white alder (*Alnus rhombifolia*), sandbar willow (*Salix exigua var. hindsiana*), and pampas grass (*Cortaderia jubata*). The understory is dominated by cattails, tall flatsedge, tule, Bigelow's sneezeweed (*Helenium bigelovii*), and watercress (*Nasturtium officinale*).

Gravel Bar

A total of 19.73 acres of gravel bar were mapped at the project site. This entire biological community is within the OHWM of the ADV and is therefore included in the perennial stream classification in the aquatic resources delineation for the project site (HELIX 2020b). This community consists of sediment deposits of varying size gravel and some sand. These gravel bars have formed braided bars and cut banks within the OHWM of the ADV. Vegetation within this community is sparse and includes tall flatsedge, American water fern (*Azolla filiculoides*), and duckweed (*Lemna minor*). Gravel bars provide potential habitat for numerous amphibian and reptile species including CRLF and CTS, western spadefoot (*Spea hammondii*), and western pond turtle.

Ruderal Grassland

A total of 121.78 acres of ruderal grassland were mapped at the project site. Ruderal grasslands are areas that have been disturbed by human activity. When vegetation is present, the areas are similar to non-native grasslands and include ripgut brome (*Bromus diandrus*), slender oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), and milk thistle (*Silybum marianum*). Some native species were also present within this biological community including coyote brush (*Baccharis pilularis*) and toyon (*Heteromeles arbutifolia*). Ruderal grasslands support numerous wildlife species including California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and provide foraging habitat for numerous raptors and nesting birds including, golden eagle, bald eagle, American peregrine falcon, red-tailed hawk (*Buteo jamaicensis*), and white-tailed kite. This community provides potential foraging and nesting habitat for burrowing owls, ground nesting birds, and marginal upland habitat for some amphibian species of concern. Additionally, this community has the potential to support San Joaquin whipsnake (*Masticophis flagellum ruddocki*).

Several small aquatic features occur within this biological community including 0.34 acre of intermittent stream, 0.09 acre of ephemeral drainage, 0.14 acre of seasonal excavated basin, 0.24 acre

of excavated basin, and 0.07 acre of percolation ponds. These small aquatic features are discussed in further detail in the aquatic resources delineation report (HELIX 2020b).

Giant Reed-Willow Riparian Wetland

A total of 16.21 acres of giant reed-willow riparian wetland were mapped at the project site. This community lies entirely within the OHWM of the ADV and is included in the perennial stream classification in the aquatic resources delineation for the project site (HELIX 2020b). This biological community is dominated by invasive giant reed (*Arundo donax*) and willow (*Salix* spp.) trees, with interspersed pampas grass. These exotic species provide marginal habitat values. Portions of this community were previously mapped as willow riparian wetland but have been re-categorized based on field verification of the biological community composition with a significant composition of giant reed.

Riparian areas provide habitat for a variety of wildlife species including nesting birds, raptors, and numerous mammals. This biological community has the potential to support American badger as well as providing habitat for western pond turtles, and potentially CRLF and CTS.

Breached Quarry Ponds

A total of 17.14 acres of breached quarry ponds were mapped at the project site south of the ADV by Lake B. This biological community was reassessed during the final evaluation of the project site and minor changes were made to boundary margins of these previously mapped features. These features are hydrologically connected to the ADV stream channel and receive flows directly from the ADV. Overstory vegetation surrounding these features include red, sand bar, and arroyo willow. Dominant understory vegetation in the centrally located breached ponds includes tall flatsedge, fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus armeniacus*), and rough cocklebur (*Xanthium strumarium*). The northern breached quarry pond is dominated by overstory of cottonwoods and willows with steep banks dominated by coyote brush and non-native grasses.

Breached quarry ponds provide habitat for numerous wildlife species. A great horned owl (*Bubo virginianus*) was observed roosting in a cottonwood adjacent to the southern stream impoundment. A nesting colony of double-breasted cormorants (*Phalacrocorax auratus*) was observed on a willow riparian island surrounded by the northern feature within the project site. Additional species that have the potential to occur in this community include nesting birds and amphibian species.

Quarry Ponds

A total of 122.66 acres of quarry ponds were mapped at the project site. This biological community was reassessed during the final evaluation of the expanded study area in the BRA Addendum (Appendix D-2), and minor changes were made to boundary margins of these previously mapped features. These man-made features are a result of aggregate mining activities. These mining pits are now used for water storage and supply for the active mining and processing operations. Dominant vegetation within riparian fringes of these features include red willow, and arroyo willow along the eastern portion of Quarry Pond A. Additionally, elderberry shrubs (*Sambucus nigra* ssp. *caerulea*) and white sage (*Salvia apiana*) line the margins of Quarry Pond A in the eastern portion of the project site.

Quarry ponds provide habitat for an array of wildlife species. Numerous waterfowl including ring-necked duck (*Aythya collaris*) and bufflehead were observed during the site visits. California scrub-jay (*Aphelocoma californica*), Anna's hummingbird (*Calypte anna*), American coot (*Fulica americana*), dark-eyed junco (*Junco hyemalis*), mourning dove (*Zenaida macroura*), and black phoebe (*Sayornis nigricans*) were also observed utilizing quarry ponds. The steep slopes of the ponds could potentially provide

nesting habitat for cliff-dwelling raptors such as American peregrine falcons and marginal roosting habitat for listed bat species including pallid bats (*Antrozous pallidus*) along with providing foraging habitat over the open water for other special-status bat species. However, cliff-dwelling raptors and bat species were not observed utilizing the slopes of the ponds during site visits.

Native Revegetation Areas

A total of 21.26 acres of native revegetation areas were mapped at the project site. This biological community was reassessed during the final evaluation of the project site and minor changes were made to boundary margins. Native revegetation areas were previously barren or sparsely vegetated and have been planted with native species including coast live oak (*Quercus agrifolia*) and California buckeye (*Aesculus californica*). Some shrubs and herbaceous species have become naturalized in these areas, including toyon and elderberry. The herbaceous layer is dominated primarily by non-native grasses. Additionally, a portion of native revegetation area occupies the southeastern portion of the project site. This vegetation is comprised of valley oak (*Quercus lobata*), coast live oak, and occasionally northern California black walnut (*Juglans hindsii*), as well as California sycamore.

Native revegetation areas provide potential habitat for numerous wildlife species. Ground squirrel burrows were noted in this community and providing potential habitat for burrowing owls. Additionally, the understory grassland may provide habitat for the San Joaquin whipsnake.

Developed

A total of 444.49 acres of developed areas were mapped at the project site. This biological community was reassessed during the final evaluation of the project site and minor changes were made to boundary margins. This area contains active quarry pits, developed roads, offices, mining stockpiles, and processing facilities. The substrate within the developed/mining area is highly disturbed and is composed of a mix of native and non-native soil types, often with a high proportion of gravel and cobbles. Vegetative cover is sparse and is dominated by non-native, often invasive grasses and forbs, and shrubs such as soft chess, foxtail chess (*Bromus madritensis*), ripgut brome, slim oat, and yellow star thistle (*Centaurea solstitialis*).

The developed areas support foraging, and marginal shelter habitat for several species of wildlife. A white-tailed kite (*Elanus leucurus*) was observed foraging near Silt Pond 1 (S-01) in the northeastern portion of the project site, and an American peregrine falcon (*Falco peregrinus anatum*) was observed foraging between Quarry Pond H (QP-H) in the northeastern portion of the project site.

Depressional Seasonal Marsh

A total of 0.06 acre of depressional seasonal marsh was mapped at the project site. This biological community is above the OHWM of the ADV. This biological community contains similar vegetation as the riverine seasonal marsh community, and is comprised of common reed, cattails, tall flatsedge, and tule.

Marsh habitats provide habitat for numerous wildlife species including various amphibians and reptiles and provide potential foraging habitat for raptors. Vegetation within this community also provides potential nesting habitat for various bird species.

Sycamore Woodland

A total of 6.50 acres of sycamore woodland were mapped at the project site. This community is comprised of patches of California sycamore and a mix of non-native grassland. The small, isolated patches of sycamores are in varying degrees of health with the majority of the trees being in poor

health. The understory of this community is comprised of non-native grasses and milk thistle. This community is associated with isolated remnant wetland features that appear to be located in the vicinity of previous alignments of the ADV. These areas are adjacent to developed areas and therefore subject to ongoing human disturbance.

Sycamore woodland provides habitat for numerous wildlife species. Trees in poor health that have trunk decay provide potential roosting habitat for numerous bat species including pallid bat and hoary bat (*Lasiurus cinereus*).

Silt Pond

A total of 108.50 acres of operational silt ponds were mapped at the project site. This actively managed manmade basin is part of ongoing quarry operations. Vegetation cover is moderate and dominated by nonnative grasses and forbs such as soft chess, ripgut brome, and slim oat. Milk thistle and coyote brush line the steep slopes of the pond.

Silt ponds provide habitat for a variety of wildlife species. Numerous waterfowl were observed including western grebe (*Aechmophorus occidentalis*), ring-necked duck (*Aythya collaris*), and bufflehead (*Bucephala albeola*). Additionally, three western pond turtles (*Actinemys marmorata*) were observed in Silt Pond 1 (S-01) located in the northeastern section of the project site (Foothill Associates 2019).

4.3.1.5 Project Site Wetlands and Waters of the United States

The ADV is a naturally occurring drainage feeding into the Alameda Creek system. However, much of the ADV has been realigned through the project reach to facilitate mining in the area. This feature is regulated by United States Army Corps of Engineers (USACE) and the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) under the jurisdiction of the federal Clean Water Act (CWA) and Porter Cologne. The presence of a bed and bank means the Arroyo is also regulated by CDFW under Section 1600 of the Fish and Game Code. Aquatic resources were identified and delineated following the technical guidelines provided in the Corps of Engineers Wetlands Delineation Manual (USACE Manual) (Environmental Laboratory 1987, cited in Helix 2020b) and the USACE Arid West Regional Supplement (Regional Supplement) (USACE 2008b, cited in Helix 2020b). The Regional Supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. The jurisdictional boundaries for other waters of the U.S. were identified based on the presence of an OHWM as defined in 33 C.F.R. 328.3(c)(6).

A total of 318.98 acres of aquatic resources were delineated at the project site consisting of depressional seasonal marsh, riverine seasonal marsh, willow riparian wetland, intermittent streams, a perennial stream (ADV), ephemeral drainage, breached quarry ponds, seasonal excavated basin, quarry ponds, silt pond, percolation ponds, and excavated basin. Details for the delineated resources at the project site are provided in Table 4.3-2, "Potentially Jurisdictional Aquatic Resources Within the Project Area," below.

TABLE 4.3-2
POTENTIALLY JURISDICTIONAL AQUATIC RESOURCES WITHIN THE PROJECT AREA

Aquatic Resources Classification	Aquatic Resources Classification (*Cowardin Code*)	Aquatic Resources Size		Potentially Jurisdictional
		Acres	*Linear Feet*	
Depressional Seasonal Marsh	PEM	0.06	-	Yes
Riverine Seasonal Marsh	PEM	0.09	496	Yes

Aquatic Resources Classification	Aquatic Resources Classification (*Cowardin Code*)	Aquatic Resources Size		Potentially Jurisdictional
		Acres	*Linear Feet*	
Willow Riparian Wetland	PFO	2.69	1,410	Yes
Intermittent Stream	R4SB	0.34	597	Yes
Perennial Stream (ADV)	R2UB	66.96	13,275	Yes
Breached Quarry Pond	R2UB	17.14	-	Yes
Quarry Pond	L1UB	122.66		No
Silt Pond	L2UB	108.50		No
Percolation Pond	L2UB	0.07		No
Seasonal Excavated Basin	PEM	0.14	-	Yes
Excavated Basin	PUB	0.24		No
Ephemeral Drainage	R6	0.09	241	Yes[1]

Source: Helix 2020a, Table 1
Notes:
PEM = palustrine emergent
PFR = palustrine forested
1 = Not jurisdictional under the June 2020 Waters of the United States rule.

4.3.1.6 Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or those that are protected under CEQA, Section 1600 of the California Fish and Game Code, or Section 404 of the CWA. Based on CNDDB queries, alkali meadow, alkali seep, cismontane alkali marsh, northern claypan vernal pool, valley needlegrass grassland, valley sink scrub, and California sycamore woodlands historically were known to occur in the vicinity of the project site. Of these sensitive habitats, only California sycamore woodland currently occurs at the project site. California sycamore woodland is listed as a sensitive plant community on the California Department of Fish and Wildlife Natural Communities List and is required to be considered in CEQA documents. In order for California sycamore woodlands to be considered a natural community, at least 30 percent of the relative cover in the tree canopy would need to be dominated by California sycamore. Salix species, or Fremont's cottonwood (*Populus fremontii*) may be codominant (CNPS 2018). Although the sycamore woodland meets the criteria to be considered a sensitive community, it is very low quality due to small patch size, declining tree health, lack of supporting hydrology, and fragmented patches. Additional sensitive habitats at the project site include: potentially jurisdictional waters of the U.S. (seasonal wetlands, seasonal marshes, a perennial drainage, intermittent drainages, and willow riparian wetland habitats). The project site also contains native oak species that must be reviewed under CEQA and by Alameda County (Foothill Associates 2019).

The ADV in the Lake B reach is a highly degraded and disturbed system that hosts an abundance of non-native invasive species. Artificial stream impoundments are also present adjacent to the existing ADV channel in the Lake B reach, as a result of past mining excavations. An upstream dam and major hydrologic alterations within the channel and in adjacent areas have impacted stream flow, bank condition, flooding, and riparian vegetation from historical conditions in the ADV (see page 2 of Appendix B-1, "Proposed Reclamation Plan").

The ADV, although highly degraded and disturbed as noted above, is a potential movement corridor for the Alameda whipsnake (striped racer) (*Masticophis lateralis euryxanthus*), the California red-legged frog (*Rana draytonii*), and the California tiger salamander (*Ambystoma californiense*).

4.3.1.7 Special-Status Plant Species

According to the records search, 65 special-status plant species have the potential to occur on or in the vicinity of the project site. Based on field observations and literature review, three special-status plant species were determined to have the potential to occur at the project site. No special-status plant species were considered to have a high potential to occur at the project site due to the high degree of ongoing disturbance caused by ongoing mining operations at the project site. The plant species that are considered to have a low potential to occur at the project site include Congdon's tarplant (*Centromadia parryi ssp. congdonii*), Mt. Diablo buckwheat (*Eriogonum truncatum*), and Mt. Diablo fairy-lantern (*Calochortus pulchellus*). See Table 4.3-3, "Special Status Plant Species Potentially Occurring on the Project Site," below.

TABLE 4.3-3
SPECIAL-STATUS PLANT SPECIES POTENTIALLY OCCURRING ON THE PROJECT SITE

Species	Status*	Habitat Requirements	Potential to Occur on Site
Centromadia parryi (Greene) Greene ssp. congdonii (Rob. & Greenm.) B.G. Baldwin (Congdon's tarplant)	--; --; --; 1B	Annual herb found in valley and foothill grassland sometimes in alkaline soils from 0-230 meters (0-755 feet). Blooming period: May – October (November)	**Low;** the Ruderal grassland and native revegetation area at the project site provides marginal habitat for this species. The species was previously surveyed for at the project site with negative results. However, the age of the previous negative survey may require an updated survey to confirm absence given the presence of suitable habitat at the project site. Seven known occurrences within five miles of the project site have been noted (CDFW 2017).
Eriogonum truncatum (Mt. Diablo buckwheat)	--; --; --; 1B	Annual herb found on sandy soil in chaparral, coastal scrub, valley and foothill grassland from 3-350 meters (10-1,148 feet). Blooming period: April – September (November – December)	**Low;** the Northern Coastal Scrub located in the northern section of the project site may contain suitable habitat for this species as well as the Ruderal Grassland.
Calochortus pulchellus (Mt. Diablo fairy-lantern)	--; --; --; 1B	Perennial bulbiferous herb found in chaparral, cismontane woodland, riparian woodland, valley and foothill grassland, from 30-840 meters (98-2,755 feet). Blooming period: April – June	**Low;** the project site contains marginally suitable habitat for this species within the Ruderal grassland and Native Revegetation Area

Source: Foothill Associates 2019
Notes:
***Status:**
FE = Federally listed as endangered
CE = California state listed as endangered
List 1A = California Native Plant Society; plants presumed extinct in California
List 1B = California Native Plant Society; plants rare, threatened, or endangered in California and elsewhere
List 2 = California Native Plant Society; plants rare, threatened in California but more common elsewhere

Congdon's Tarplant—California Rare Plant Rank 1B.1 (Plants Rare, Threatened, or Endangered in California and Elsewhere)

This annual herb is rare throughout its range with the majority of its range located in California. Congdon's tarplant is in the Asteraceae family and blooms from May to November. This species is found in moderately alkaline to alkaline or saline soils in valley and foothill grasslands, at elevations from 0 to 230 meters (0 to 755 feet) (CNPS 2017, cited in Foothill Associates 2019). Seven occurrences are documented within five miles of the project site including the following locations: Camp Parks Reserve Forces Training Area (10,000 individuals reported in 2003) along Tassajara Road north of Livermore (4,000+ plants and 9,600 plants observed at two locations in 1998), east of Livermore along North Livermore Road (370,000 plants observed in 1998), and along the Contra Costa/Alameda County line along Collier Canyon Road (321,000 plants observed in 1998) (CDFW 2017). Focused surveys for this species were conducted at the project site in 2016 by WRA, Inc. with negative results (WRA 2016). In addition, the potential mapped habitat for this species in the East Alameda County Conservation Strategy (EACCS) does not overlap with the project site (ICF 2010). However, agencies consider focused plant surveys to be valid for generally two years. Therefore, based on the age of previous focused surveys for this species and the presence of marginally suitable habitat within the ruderal grassland and the native revegetation areas at the project site as well as the species' ability to colonize disturbed areas and the known CNDDB records in the near vicinity of the project site, the potential for Congdon's tarplant to occur at the project site is considered low.

Mt. Diablo Buckwheat—California Rare Plant Rank 1B.1

Mt. Diablo buckwheat is an annual herb in the Polygonaceae family that blooms from April to September. This species is found in northern coastal scrub, valley grasslands, and chaparral, at an elevation from 3 to 350 meters (10 to 1,150 feet) (CNPS 2017, cited in Foothill Associates 2019). This species is known to occur in Alameda and Contra Costa counties. Mt. Diablo buckwheat is a small pink wildflower, believed to have been extinct since 1936 until its rediscovery in 2005. Although no occurrences have been recorded within a five-mile radius of the project site (CDFW 2017), the CNPS' estimated plant range for the species includes the project site (CNPS 2017, cited in Foothill Associates 2019). The northern coastal scrub and ruderal grassland at the project site provide potential habitat for this species. Based on the presence of marginally suitable habitat at the project site and the degree of ongoing disturbance at the project site, the potential for Mt. Diablo buckwheat to occur at the project site is considered low.

Mt. Diablo Fairy-Lantern—California Rare Plant Rank 1B.1

Mt. Diablo fairy-lantern is a perennial bulbiferous herb in the Liliaceae family that blooms from April to July. This species is found within valley grassland, foothill woodland, and chaparral at an elevation between 30 to 840 meters (98 to 2,755 feet). This species is known to occur in Alameda and Contra Costa counties. Mt. Diablo fairy-lantern produces bright yellow pendant flowers. Although no occurrences have been recorded within a five-mile radius of the project site, the CNPS' estimated plant range includes the project site (CNPS 2017). The ruderal grassland and native revegetation areas at the project site provide marginal potential habitat for this species. Based on the presence of marginally suitable habitat and the degree of ongoing disturbance at the project site, the potential for Mt. Diablo fairy-lantern to occur at the project site is considered low.

4.3.1.8 Special-Status Fish Species

The ADV historically supported a population of steelhead trout (*Oncorhynchus mykiss*). *Oncorhynchus mykiss* is unique in that individual fish develop differently depending on their environment. All trout

hatch in gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Those that stay in fresh water their entire lives are called rainbow trout. Those that migrate to the ocean and back are called steelhead, and they develop a much more pointed head, become more silvery in color, and typically grow much larger than the rainbow trout that remain in fresh water (Zone 7 2020).

However, over the course of the early- to mid-twentieth century, flood control structures and other barriers to fish migration downstream of the project site removed the potential for steelhead and other special-status fish species to occur at the project site (Hanson et al. 2004, cited in Foothill Associates 2019). Since 1999, more than a dozen agencies comprising the Alameda Creek Fisheries Restoration Workgroup have been working to provide fish passage, improve stream flows, and restore stream and riparian habitat along Alameda Creek and its tributaries, including the ADV. Furthermore, Zone 7 Water Agency (Zone 7) is planning for multiple fish passage projects in Arroyo Mocho, ADV, and Arroyo de la Laguna as part of their Stream Management Master Plan for flood protection and stream restoration in Livermore and Pleasanton (Alameda Creek Alliance 2020).

Plans are actively underway to remediate fish passage barriers in lower Alameda Creek and National Marine Fisheries Service (NMFS) anticipates that threatened Central California Coast steelhead could return to the upper Alameda Creek watershed by 2021. Construction has been completed on one fish ladder and construction was initiated in 2019 on a second fish ladder in lower Alameda Creek. The Alameda County Water District will complete construction on the second fish ladder in 2021, at which time listed CCC steelhead may be present in the project area. NMFS noted that ESA Section 7 consultation will be required for this project once steelhead access to the upper watershed has been restored in 2021 (Alameda County Water District 2020).

Essential Fish Habitat (EFH) was designated as part of the 1996 revisions to the federal Magnuson-Stevens Act which refined the focus of fish management by emphasizing the need to protect fish habitat. EFH is defined as "*…those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity*." Until recently, the project area was presumed to not contain suitable aquatic habitat for coho salmon (*Oncorhynchus kisutch*), steelhead or other important or sensitive fish species due to the historic and ongoing disturbance to aquatic features within the project reach and downstream movement barriers that prevent fish from accessing the area. As barriers to fish passage are removed by Zone 7 and others, the potential for steelhead to be present during project activities in the ADV may exist (Hanson et. al. 2004, as cited in Foothill Associates 2019). For this reason, if determined to be necessary, the applicant will be required to consult with the NMFS (pursuant to Section 7 of the Endangered Species Act) and potentially obtain an incidental take statement for work associated with the Lake A diversion structure and realignment of the ADV.

4.3.1.9 Listed and Special-Status Wildlife

According to the records search, 53 special-status wildlife species (including invertebrates) have the potential to occur onsite or in the vicinity of the project site. Based on field observations and literature review, 33 species were determined to have the potential to occur at the project site.

Species that are known to be present or that are considered to have a high potential to occur at the project site include bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), hoary bat (*Lasiurus cinereus*), pallid bat (*Antrozous pallidus*), Yuma myotis (*Myotis yumanensis*), western pond turtle (*Emys marmorata*), American peregrine falcon (*Falco peregrinus anatum*), great blue heron (*Ardea herodias*), prairie falcon (*Falco mexicanus*), and white-tailed kite (*Elanus leucurus*) (described below).

Species that are considered to have a low potential to occur at the project site include Alameda whipsnake (striped racer) (*Masticophis lateralis euryxanthus*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), tricolored blackbird (*Agelaius tricolor*), coast horned lizard (*Phrynosoma blainvillii*), San Joaquin whipsnake (*Masticophis flagellum ruddocki*), western spadefoot (*Spea hammondii*), grasshopper sparrow (*Ammodramus savannarum*), western burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris actia*), Cooper's hawk (A*ccipiter cooperii*), ferruginous hawk (*Buteo regalis*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus cyaneus*), American badger (*Taxidea taxus*), Bridge's coast range shoulderband (*Helminthoglypta nickliniana bridgesi*), crotch bumble bee (*Bombus crotchii*), curved-foot hygrotus diving beetle (*Hygrotus curvipes*), obscure bumble bee (*Bombus caliginosus*), and western bumble bee (*Bombus occidentalis*). See Table 4.3-4, "Special-Status Wildlife Species Potentially Occurring on the Project Site," below.

The species with high potential for occurrence are discussed below.

Bald Eagle—State Endangered, Bald and Golden Eagle Protection Act

Bald eagles winter throughout most of California near lakes, reservoirs, river systems, and some rangelands and coastal wetlands. The breeding range is mostly restricted to mountainous habitats near reservoirs, lakes, and rivers, primarily in the northern two-thirds of the State. Nests are large, typically between 5 to 6 feet in diameter and 2 to 4 feet tall. Nests are typically built in large, old-growth trees with open branch work, especially ponderosa pine (CDFW 2017). The bald eagle diet consists mainly of fish, but it will eat a wide variety of foods depending on what is available. They will eat waterfowl, reptiles, amphibians, invertebrates, small mammals, and sometimes carrion. The nearest CNDDB occurrence of this species is located approximately 5.5 miles southeast of the project site near Lake Del Valle Reservoir (CDFW 2017). However, bald eagles are also known to occur in Anthony Chabot Regional Park, approximately 15 miles northeast of the project site (SFPUC 2020), and the San Francisco Public Utility Commission's watershed lands in the southern portion of the County, which includes the San Antonio Reservoir, approximately 4.4 miles south of the project site (EBRPD 2020). The project site contains quarry ponds and silt ponds that provide foraging habitat and large trees that could support a nesting pair within the willow riparian wetland, breached quarry pond and, native revegetation area. This species was not observed at the project site or in the vicinity during the field surveys. However, it was observed in 2016 foraging within Shadow Cliffs Lake immediately adjacent to the project site during previous site visits. Due to the suitable habitat found at the project site and the known occurrences of this species in the vicinity of the project site, the potential for bald eagles to occur at the project site is considered high.

Golden Eagle—California Fully Protected, Bald and Golden Eagle Protection Act

The golden eagle is found in grasslands, forested habitat and woodland. This species preys mostly on small reptiles, birds, and mammals up to the size of mule deer fawns and coyote pups. They build nests on cliffs or in large trees. The ruderal grassland provides marginal foraging habitat and large trees at the project site provide suitable nesting habitat.

The nearest CNDDB occurrence is 3.5 miles south of the project site (CDFW 2017), and the species is known to nest in the region. This species was not observed at the project site or in the vicinity during the field surveys. However, due to the suitable habitat found at the project site and the known occurrences of this species in the vicinity, the potential for golden eagle to occur at the project site is considered high.

TABLE 4.3-4
SPECIAL-STATUS WILDLIFE SPECIES POTENTIALLY OCCURRING ON THE PROJECT SITE

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
INVERTEBRATES				
Desmocerus californicus Dimorphus (Valley elderberry longhorn Beetle)	FT: --; --: --	Elderberry shrubs usually associated with riparian areas.	Adults emerge in spring until June. Exit holes visible year-round.	**Low;** elderberry shrubs are located at the project site along the margins of Quarry Pond A; and on the southern section of the Ruderal Grassland, however, no CNDDB occurrences have been documented within a 5-mile radius of the project site nor were any exit holes observed within elderberry shrubs during the fall 2017 and April 2018 site visits.
FISH				
Oncorhynchus mykiss irideus (Central California coast steelhead)	FT; --; --; --	Dependent on estuaries at the mouths of rivers and streams, this species' distribution is located below natural and manmade barriers on stream from the Russian River in the north to Aptos Creek in the south.	Spawn in winter and spring.	**None;** (at the time of study); the project site currently lacks suitable habitat for this species. Downstream barriers prevent this species from occurring in the Study Area. However, as these barriers are removed the potential for this species to occur may exist.
AMPHIBIANS/REPTILES				
Masticophis lateralis euryxanthus (Alameda whipsnake /striped racer)	FT; CSC; --; --	Found in chaparral foothills, shrublands with scattered grassy patches, rock canyons and watercourses, and within adjacent habitats. When inactive they are under cover or underground. Known to occur from Alameda, Contra Costa, San Joaquin, and Santa Clara counties. The population in Stanislaus County is extirpated or possibly extirpated.	Breeding: Spring Eggs laid: May—July Eggs hatch: August—October	**Low;** the project site contains marginally suitable habitat for this species. Degree of historical and ongoing disturbance at the project site reduces the likelihood for this species to occur. The EACCS does not include the project site as containing suitable habitat for this species. Twenty-one known occurrences within five miles of the project site have been noted (CDFW 2017).
Rana draytonii (California red-legged frog)	FT; CSC; -- ; --	Requires a permanent water source and is typically found along quiet, slow-moving streams, ponds, or marsh communities with emergent vegetation. Breeding sites are in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons from 0 to 1,500 meters.	Breeding: November—March Non-breeding: June—August	**Low;** the project site contains marginal aquatic habitat within the willow riparian wetland and highly disturbed upland habitat within the ruderal grassland and native revegetation area. Thirty-two known occurrences within five miles of the project site have been noted (CDFW 2017).

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
		Additionally, frequently breed in artificial impoundments such as stock ponds. Typically found in or within 300 feet of aquatic habitat, but may disperse up to two miles between suitable aquatic habitat. Elevational range extends from sea level to about 1,500 meters, but typically occur below 1,200 meters.		
Ambystoma californiense (California tiger salamander, Central Population)	FT; CT; -- ;--	Found in grassland, oak savannah, edges of mixed woodland, and lower elevation coniferous forest. Breeds in temporary ponds that form during winter and may dry out in summer. During the summer, adults spend time underground in small mammal burrows. Known range from Alameda, Butte, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, Monterey, Fresno, San Benito, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, Stanislaus, Tulare, and Yolo counties.	Drift fence studies during fall and winter for upland habitats. Adults: November—February Larvae: March 15—May 15	**Low**; the project site contains marginal suitable aquatic habitat within the willow riparian wetland and highly disturbed upland habitat within the Ruderal grassland and native revegetation area. The disturbed nature of these communities and the artificial hydrology associated with the aquatic features reduce the likelihood of this species to occur. Sixty-five known occurrences within five miles of the project site have been noted (CDFW 2017).
Phrynosoma blainvillii (Coast horned lizard)	--; CSC; --; --	Inhabits open areas of sandy soils and low vegetation in valleys, foothills, and semiarid mountains. Found in grasslands, coniferous forests, woodlands, and chaparral, with open areas and patches of loose sandy soil. Often found in lowlands along sandy washes with scattered shrubs and along dirt roads, and frequently found near ant hills.	Year-round (excluding extended periods of low temperatures or extreme heat).	**Low;** the project site contains some suitable habitat for this species within the Willow Riparian Wetland and ruderal grassland communities in and adjacent to the ADV.
Masticophis flagellum ruddocki (San Joaquin whipsnake)	--; CSC; --; --	Found in valley grassland and saltbush scrub in the San Joaquin Valley in open, dry habitats with little or no tree cover. Requires mammal burrows for refuge and breeding sites.	Year-round.	**Low;** this species has a wide habitat range and has been observed six miles east of the project site. Ruderal grassland and the native revegetation area located at the project site provides marginal habitat for this species. The ongoing and historical level of disturbance reduces the potential for this species to occur.

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
Emys marmorata (Western pond turtle)	--; CSC; --; --	Typically associated with permanent ponds, lakes, streams, irrigation ditches and canals, and marshes, or pools in intermittent drainages, usually lined with abundant vegetation and either rocky or muddy bottom substrates. Requires aquatic basking sites, such as logs, rocks, cattail mats or exposed banks. Turtles are active from February to November, in which breeding occurs from April to May. Overwintering occurs in upland terrestrial habitats close to water sources (approximately 300 feet), in which they will bury themselves under loose soil.	Active: February—November	**Present;** the species was observed in a pond the northeast section of the project site during the fall 2017 site visit as well as in 2013 by LSA Associates, Inc. (Alameda County Resource Conservation District 2015, LSA Associates, Inc. 2013). Additionally, the riparian woodland at the project site provides suitable aestivation habitat and the perennial drainage provides breeding habitat for this species. Four CNDDB occurrences are documented within five miles of the project site (CDFW 2017).
Spea hammondii (Western spadefoot)	--; CSC; --; --	Found in open grasslands and woodlands. Breeds in seasonal ponds and vernal pools.	Year-round.	**Low;** the margins of the willow riparian wetland, marsh, and gravel bar located at the project site provide marginal breeding habitat for this species. The ruderal grassland and native revegetation area provide marginal upland habitat. Level of disturbance reduces potential for this species to occur).
BIRDS				
Haliaeetus leucocephalus (Bald eagle)	FD; CE; --; --	Breeding habitat most commonly includes areas within 2.5 miles (4.0 kilometers) of coastal areas, bays, rivers, lakes, and reservoirs. Nests usually are in tall trees or on pinnacles or cliffs near water.	Year-round	**High;** the species has been observed foraging within project site (WRA 2016) and documented numerous times within Shadow Cliffs Lake immediately adjacent to the project site. Ruderal Grassland, Silt Ponds, Quarry Ponds, Willow Riparian Wetlands, Breached Quarry Ponds, Native Revegetation Area, Sycamore Woodland, Marsh, Northern Scrub, and Intermittent Stream provide foraging habitat for bald eagle at the project site. Additionally, large trees located in the Willow riparian wetland and Native revegetation area provide potential nesting habitat for the species
Aquila chrysaetos(Golden eagle)	--; CFP; --; -- (nesting and wintering)	Open and semi-open areas in the mountains up to 12,000 feet in elevation. They are also found in canyon lands, rimrock, terrain, and riverside cliffs and	Year-round	**High;** this species has been observed foraging numerous times in Shadow Cliffs Lake, which is located immediately adjacent to the project site (eBird 2017). Trees located throughout the project site provide

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
		bluffs. Nest are built on cliffs and steep escarpments in grassland, in trees, chaparral, shrubland, forests and man-made structures within vegetated areas..		potential nesting habitat. The nearest CNDDB occurrence is 3.5 miles south of the project site (CDFW 2017). The oak trees and sycamore woodland at the project site provide nesting habitat for this species.
Agelaius tricolor (nesting colonies) (tricolored blackbird)	--; CE; CSA; --	Breeding habitat is freshwater marshes that include cattails, tules, bulrushes and sedges. Nests are made in the dense vegetation of the marsh or thickets, and sometimes on the ground. In migration and winter, will inhabit open cultivated lands and pastures as well as marshes..	Year-round	**Low;** vegetation in and adjacent to the willow riparian wetland provides some suitable nesting habitat. The degree of historical and ongoing disturbance within the ruderal grassland reduces the suitability of foraging habitat which reduces the likelihood for this species to occur. Five known occurrences within five miles of the project site have been noted (CDFW 2017).
Falco peregrinus anatum (Peregrine falcon)	FSC; CFP; --; --	Found in a wide variety of habitats from open country, cliffs (mountains to coast), tundra, desert, and sometimes in cities. Is found often near water, especially along the coast, and migrants may fly far out to sea. Nests are typically situated on ledges of vertical rocky cliffs commonly with shelter overhang; however, locally, tundra mounds, open bogs, large stick nests of other species and man-made structures (ledges of city buildings) are also used.	Year-round (some migrate)	**Present;** this species was observed during the fall 2017 site visits foraging in the northeast section of the project site. The steep banks of the quarry ponds and the oak trees and sycamore woodlands provide suitable nesting habitat for this species.
Ammodramus savannarum (Grasshopper sparrow)	--; CSC; --; --	Breeding range occurs in portions of western California, including most coastal counties south to extreme northwest Baja California (where resident). Also, the western Sacramento Valley and along the western edge of the Sierra Nevada. Wintering range is extreme Southern California and Baja.	Breeding: Summer	**Low;** the project site provides potentially suitable foraging habitat for this species within the ruderal grassland and native revegetation area located at the project site. The level of ongoing and historic disturbance at the project site reduces the potential for this species to occur.
Athene cunicularia (burrowing owl)	--; CSC; --; -- (burrowing sites and some wintering sites)	Nests in burrows in the ground, often in old ground squirrel burrows or badger, within open dry grassland and desert habitat. The burrows are found in dry, level, open terrain, including prairie, plains, desert, and grassland with low	Year-round	**Low;** suitable ground squirrel burrows were observed at the project site during the fall 2017 site visits, and the project site provides potentially suitable foraging habitat for this species. Level of ongoing disturbance at the project site reduces the potential for this species to occur. Fourteen occurrences are documented within

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
		height vegetation for foraging and available perches, such as fences, utility poles, posts, or raised rodent mounds.		five miles of the project site (CDFW 2017).
Eremophila alpestris actia (California horned lark)	--; CSA; --; --	Found in open areas dominated by sparse vegetation or widely scattered low shrubs. Nests in hollow on ground often. Year-round.	Year-round	**Low;** the ruderal grassland and native revegetation area located throughout the project site provides breeding, nesting, and foraging habitat. The level of historic and ongoing disturbance at the project site reduces potential for this species to occur.
Accipiter cooperii (Cooper's hawk)	--; CSA; --; --	Found in mature forests, open woodlands, woodland edges, and river groves. Nesting occurs in coniferous, deciduous and mixed woodlands that have tall trees with openings or edge habitat nearby. Can also be found in trees along rivers through open country, and in suburbs and cities. Overwintering usually occurs in fairly open country..	Year-round	**Low;** various habitats located throughout and adjacent to the project site provide breeding, nesting, and foraging habitat for this species. Level of disturbance reduces potential for this species to occur.
Buteo regalis (Ferruginous hawk)	--; CSC; --; --	Frequents open habitats including grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Preys on rodents and other vertebrates. Winter.	Winter	**Low;** ruderal grassland habitat located at the project site provide moderate foraging habitat. The level of historic and ongoing disturbance at the project site reduces potential for this species to occur. One occurrence is documented within five miles of the project site (CDFW 2017).
Ardea herodias (Great blue heron)	--; CSA; --; --	Inhabits both freshwater and saltwater habitats and forages in grassland and agricultural fields. Breeding colonies are located within two to four miles of feeding areas, often in isolated swamps or on islands, and near lakes and ponds bordered by forests..	Year-round	**Present;** numerous observations were made at the project site during the 2017 site visit. A rookery site present immediately to the west of project site.
Lanius ludovicianus (Loggerhead shrike)	--; CSC; --; --	Found in grasslands, semi-open terrain, woodland clearing or desert with scattered shrubs. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting..	Year-round	**Low;** dense vegetation along the ADV may provide suitable nesting habitat for this species. Level of disturbance reduces potential for his species to occur. One known occurrence within five miles of the project site has been noted (CDFW 2017).

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
Circus cyaneus (Northern harrier)	--; CSA; --; --	Found in coastal scrub, Great Basin grassland, marshes and swamps, riparian scrub, valley and foothill grassland, wetlands. Nests and forages in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation usually at marsh edge; nests built of a large mound of sticks in wet areas..	Year-round	**Low**; Ruderal Grassland habitat located at the project site provides moderately suitable foraging habitat. The willow riparian wetland habitat provides nesting habitat.
Falco mexicanus (Prairie falcon)	--; CSA; --; --	Inhabits dry, open terrain, including deserts and grasslands and well as open spaces past treeline.	Wintering	**High;** upland habitat located throughout the project site provides foraging habitat for this species. Two occurrences are documented within five miles of the project site (CDFW 2017).
Accipiter striatus (Sharp-shinned hawk)	--; CSA; --; --	The smallest hawk in North America found in mature forests and woodland edges. Nesting occurs in conifers and hardwood trees under dense canopy cover.	Year-round	**Low**; the project site lacks preferred habitats for this species, but there are some woodland edges that potentially would support nesting habitat for this species.
Elanus leucurus (White-tailed kite)	--; CFP; --; -- (nesting)	Inhabits savanna, open woodlands, marshes, desert grassland, partially cleared lands and cultivated fields. Nests in trees, often near a marsh in savanna, open woodland, partially cleared lands, and cultivated fields. Foraging occurs within ungrazed or lightly-grazed fields and pastures.	Year-round	**Present**; this species was observed in the northern portion of the project site during the fall 2017 site visit.
MAMMALS				
Taxidea taxus (American badger)	--; CSC; --; --	Found in a variety of grasslands, shrublands, and open woodlands throughout California.	Year-round	**Low**; Suitable grassland habitat for this species is located in portions of the project site. However, no signs of badger were observed during the fall 2017 site visits. Additionally, the project site is surrounded on all sides by mining operations, highways, and/or suburban development, rendering the site unlikely to be colonized. Two occurrences are documented within five miles of the project site. (CDFW 2017).

Species	Status*	Habitat Requirements	Identification/ Survey Period	Potential for Occurrence on Site
Lasiurus cinereus (Hoary bat)	--; CSA; --; --	Found in broadleaf upland forest, woodland, lower montane coniferous forest, and north coast coniferous forest. Roosts in dense foliage of medium to large trees.	Year-round	**High;** trees within the riparian woodland and disturbed/developed areas at the project site provide suitable roosting habitat for this species. One occurrence is documented within five miles of the project site (CDFW 2017).
Antrozous pallidus (Pallid bat)	--; CSC; --; --	Found in arid and semi-arid locations in low elevation areas in California. Can be found in grasslands, shrublands, woodlands and mixed conifer forests near water. Although most common habitats occur in open, dry habitats with rocky areas for roosting. Three types of roosting habitats include (1) day roosts occur in warm, horizontal openings such as attics or rock cracks; (2) night roosts occur in the open, near foliage; and (3) hibernation roosts, which occur in buildings, cracks in rocks, or caves. This species is very sensitive to disturbance.	Year-round	**High;** trees within the riparian woodland and disturbed/developed areas at the project site provide suitable roosting habitat, this species is very sensitive to human disturbance. Three occurrences are documented within five miles of the project site (CDFW 2017).
Myotis yumanensis (Yuma myotis)	--; CSA; --; --	Found in a variety of habitats throughout the state, typically closely associated with open water. Roost in caves, attics, buildings, mines, and underneath bridges. Forage over open water or open land.	Spring – Fall	**High;** the project site provides adequate foraging habitat; however, roosting habitat is limited.

Source: Foothill Associates 2018

Notes: This table is based on Tables 1, 2, and 3 of the Biological Resources Assessment (Appendix D-1 of this SEIR). Species with no potential to occur on the project site were not included in Table 4.3-2, but they are listed in the summary above and in Tables 1, 2, and 3 of Appendix D-1.

***Status:**

1B = Plants rare, threatened, or endangered in California and elsewhere
FD = Federal delisted
FSC = Federal Species of Concern
FT = Federal threatened
CE = California state endangered
CFP = California Fully Protected
CSA = California Special Animals list
CSC = California Species of Special Concern
CT = California state threatened

Special-Status Bat Species

Three special-status bat species have the potential to occur at the project site: hoary bat, pallid bat, and Yuma myotis.

Hoary bats are found in many habitats suitable for bearing young, which include all woodlands and forests with medium to large-size trees and dense foliage. Preferred roost sites are hidden from above, with few branches below, and have ground cover with low reflectivity. The native revegetation area and sycamore woodland at the project site provide suitable roosting habitat for the hoary bat and the ruderal grassland provides suitable foraging habitat. One CNDDB occurrence for this species is located within five miles of the project site (CDFW 2017).

Pallid bats roost in rock crevices and caves and occasionally hollow trees and buildings and forage over open ground. The native revegetation area, sycamore woodland, silt and quarry ponds, and ruderal grasslands at the project site may provide suitable roosting and foraging habitat. There are three known occurrences in the CNDDB within five miles of the project site (CDFW 2017).

Yuma myotis roost in caves, tunnels, or buildings and may occasionally be found under bridges and they generally forage over open water. The silt and quarry ponds may provide suitable foraging habitat. There is one known occurrence in the CNDDB within five miles of the project site (CDFW 2017). Therefore, there is a high potential for special-status bat species to occur at the project site.

Western Pond Turtle—California Species of Special Concern

Western pond turtles occur in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with suitable basking sites (Californiaherps 2017, cited in Foothill Associates 2019). Suitable aquatic habitat typically has a muddy or rocky bottom and has emergent aquatic vegetation for cover (Stebbins 2003). Western pond turtles nest and overwinter in areas of sparse vegetation comprised of grassland and forbs.

There are four CNDDB records for this species within five miles of the project site (CDFW 2017). Three adult western pond turtles were observed in Silt Pond 1 (S-01) during the November 1 and 2, 2017 site visits. The silt ponds, quarry ponds, and perennial drainage all provide suitable aquatic habitat and the willow riparian wetland, freshwater marsh, gravel bars, and ruderal grassland provide suitable upland habitat for this species. This species is assumed to be present within suitable habitat at the project site.

American Peregrine Falcon—California Fully Protected

American peregrine falcon occurs in landscapes with cliffs or skyscrapers for nest sites. They can be found nesting at elevations up to about 12,000 feet, as well as along rivers and coastlines or in cities. In migration and winter, peregrine falcons are found in nearly any open habitat, but with a greater likelihood along barrier islands, mudflats, coastlines, lake edges, and mountain chains. Falcons nest in tall structures, cliffs, and forage for shore birds or waterfowl. Peregrine falcons typically nest on cliffs faces from 25 to 1,300 feet above MSL. Other nesting locations include quarries, silos, and tall man-made structures.

An American peregrine falcon was observed foraging along the dirt road between Quarry Pond H (QP-H) and Silt Pond 1 (S-01) during the November 2, 2017 site visit. The project site provides foraging and nesting habitat for this species. This species is assumed to be present at the project site.

White-Tailed Kite—California Fully Protected

White-tailed kite is a year-long resident in coastal and valley lowlands in California. White-tailed kites breed from February to October, peaking from May to August (Zeiner et al. 1990, cited in Foothill Associates 2019). This species nests near the top of dense oaks, willows, or other large trees.

One white-tailed kite was observed foraging adjacent to Silt Pond 1 (S-01) at the project site on November 2, 2017. A photo of this species taken on site is located in Appendix C of the BRA (Appendix D-1 of this SEIR). Therefore, this species is assumed to be present at the project site.

Nesting Birds and Raptors

The nests of raptors and most other birds are protected under the Migratory Bird Treaty Act. Raptors are also protected by Section 3503.5 of the California Fish and Game Code, which makes it illegal to destroy any active raptor nest. Additionally, the USFWS and CDFW identified a number of avian species of conservation concern that do not have specific statutory protection. Avian species forage and nest in a variety of habitats throughout Alameda County. The ruderal grassland, sycamore woodland, native revegetation area, willow riparian wetland, freshwater marsh, and northern coastal scrub on and surrounding the project site may provide nesting and foraging habitat for raptors and other protected birds, including: prairie falcon (*Falco mexicanus*) and great blue heron (*Ardea herodias*). Raptors and other protected migratory birds have a high potential to occur at the project site (Foothill Associates 2019).

4.3.2 Regulatory Setting

The following sections discuss federal, State, and local regulations pertaining to biological resources that warrant consideration during the environmental review of the project.

4.3.2.1 Federal

Federal Endangered Species Act

The FESA (16 USC 1531-1544) provides protection for federally listed endangered and threatened species and their habitats. An "endangered" species is a species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. Other special-status species include proposed species and species of concern. Proposed species are those that have been officially proposed (in the *Federal Register*) for listing as threatened or endangered. Species of concern are species for which not enough scientific information has been gathered to support a listing proposal, but still may be appropriate for listing in the future after further study. A delisted species is one whose population has reached its recovery goal and is no longer in jeopardy. The USFWS administers the FESA. A project may obtain permission to take federally listed species in one of two ways: (1) a Section 10 Habitat Conservation Plan (HCP) issued to a private party; or (2) a Section 7 Biological Opinion (BO) from the USFWS or the National Oceanic and Atmospheric Administration (NOAA) issued to another federal agency that funds or permits an action (such as the USACE issuance of a permit under CWA Section 404). Under either section of the ESA, adverse impacts to federally listed species must be avoided, minimized, or mitigated to the satisfaction of the USFWS and/or NOAA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668D, 54 Stat. 250) prohibits the take, possession, sale, or transport of bald eagles and golden eagles and their parts, eggs, or nests without a permit issued by the USFWS.

Migratory Bird Treaty Act

Raptors (birds of prey), passerine birds, and other migratory avian species are protected by a number of state and federal laws. The Migratory Bird Treaty Act (16 USC 703-712) establishes special protection for migratory birds by regulating hunting or trade in migratory birds. Furthermore, this Act prohibits anyone to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Section 10.13, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Part 21). The definition of "take" includes any disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young), and such activity is potentially punishable by fines and/or imprisonment.

Clean Water Act (Section 404/401 Jurisdiction)

The USACE regulates discharge of dredged or fill material into waters of the United States under Section 404 of the federal CWA (33 USC 1251–1376). "Discharge of fill material" is defined as the addition of fill material into waters of the United States, including, but not limited to, the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines (33 CFR Section 323.2[f]). In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and state water quality standards.

Waters of the United States include a range of wet environments such as lakes, rivers, streams (including some intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. The USACE typically considers USGS 7.5-minute quadrangle map "blue line" drainages to be jurisdictional waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and nontidal waters are described below.

- Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Section 328.3[b]). Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.
- The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (33 CFR Section 328.4[c][1]). The ordinary high water mark is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]). The Clean Water Act regulations were just revised in June 2020, and may be revised again in the next 1-2 years.

4.3.2.2 State

California Endangered Species Act

Similar to the ESA, the CESA (California Fish and Game Code Sections 2050–2116), along with the Native Plant Protection Act (Fish and Game Code Sections 1900–1913), authorizes the California Fish and Game Commission to designate, protect, and regulate the taking of special-status species in California. CESA defines "endangered" as those species which are "in serious danger of becoming extinct throughout all, or a significant portion, of its range...." (Fish and Game Code Section 2062). Species State-listed as threatened are those not presently threatened with extinction, but which are "likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts...." (Fish and Game Code Section 2067).

Section 2080 of the Fish and Game Code prohibits the taking of State-listed plants and animals. Any projects that may adversely affect species that are State listed as threatened or endangered or candidate species must formally consult with CDFW. CDFW can issue incidental take permits under Section 2081 of CESA. The County's approval of the project does not eliminate the applicant's obligation to comply with Fish and Game Code Section 2080. In other words, compliance with CESA does not automatically occur based on the County's approvals or the completion of CEQA. Before and during implementation of the project, consultation with CDFW is required to ensure that project implementation does not result in unauthorized "take" of a State-listed species.

CDFW Species of Concern

In addition to species formally listed under the ESA and CESA, species of special concern receive consideration by CDFW and local lead agencies during the CEQA process. Species that may be considered for review are included on a list of species of special concern, developed by CDFW. It tracks species in California whose breeding populations in California may be decreasing or face local extirpation. To avoid the future need to list these species as endangered or threatened, CDFW recommends consideration of these species, which do not as yet have any legal status, during analysis of the impacts of projects.

Lake or Streambed Alteration

Under Section 1602 of the California Fish and Game Code, a private party must notify CDFW if a project will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures to protect those resources. If these measures are agreeable to the party, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

Executive Order W-59-93

California Executive Order W-59-93 (Order), signed by Governor Pete Wilson in 1993, along with implementing regulations and a draft wetlands policy, prescribes an overall state goal of no net loss of wetlands. The Order states the following three objectives for the State of California's comprehensive wetlands policy:

1. To ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
2. To reduce procedural complexity in the administration of State and Federal wetlands conservation programs.
3. To encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus on wetlands conversation.

The Order directs that all agencies of the state shall conduct their activities consistent with their existing authorities, in accordance with these three objectives.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) [Section 13000 et seq.]) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It created the State Water Resources Control Board (SWRCB) and nine RWQCBs to plan, implement, manage, and enforce water quality protection and management. The RWQCBs are empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards. The project site is located within the SFBRWQCB and is regulated by the SFBRWQCB. The National Pollutant Discharge Elimination System (NPDES) permitting program is administered by the SWRCB. To obtain a NPDES permit under the General Permit for stormwater, applicants must prepare and submit a notice of intent with the SWRCB and development of a stormwater pollution prevention plan (SWPPP) and monitoring program that incorporates applicable BMPs.

401 Water Quality Certification and Wetlands Program

The 401 Water Quality Certification and Wetlands Program is responsible for regulating discharges of dredged or fill material to waters of the state. The SWRCB and the RWQCBs have the authority to regulate these discharges under section 401 of the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne), described above.

State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State

On April 2, 2019, the State Water Board adopted the State Wetland Definition and Procedures for the Discharge of Dredged or Fill Material to Waters of the State (Procedures). The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. The Procedures became effective May 28, 2020. Applicants proposing to discharge dredged or fill material into waters of the state are required to comply with the Procedures unless an exclusion applies, or the discharge qualifies for coverage under a General Order.

On December 18, 2020, the Sacramento Superior Court issued a decision that prohibited the State Water Resources Control Board ("SWRCB") from implementing California's new wetlands and "waters of the state" protection program, and limited SWRCB's application of the regulatory program to only waters already protected under the federal Clean Water Act..

Waste Discharge Requirements Program

Waste discharges that can be exempted from the California Code of Regulations (CCR) requirements are issued waste discharge requirements (WDRs) by the Water Boards and are regulated by the State Water Board WDR Program. Typical discharge types include domestic or municipal wastewater, and industrial wastewater. State regulations addressing the treatment, storage, processing, or disposal of waste are contained in Title 27, CCR, section 20005 et seq. (hereafter Title 27). Discharges that qualify for exemption from Title 27 must be consistent with the exemptions provided in Title 27 section 20090.

CEQA Guidelines

CEQA Guidelines Section 15065 requires a mandatory finding of significance for projects that have the potential to substantially degrade or reduce the habitat of a fish or wildlife species, and to fully disclose and mitigate impacts to special-status resources. Although threatened and endangered species are protected by specific federal and State statutes, described above, the CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria for the region or locality.

4.3.2.3 Local

Alameda County General Plan

The goals and policies in the *Alameda County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following goal contained within the *Alameda County General Plan Conservation Element* pertains to biological resources for the proposed project:

Vegetative and Wildlife Resources

Goal: To protect and enhance wildlife habitats and natural vegetation areas in Alameda County.

Alameda County East County Area Plan

The goals and policies in the *East County Area Plan* (ECAP) are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The plan identifies the need for public facilities and services, and provides the basis for County zoning and subdivision approvals, as well as other regulatory actions. The plan also serves as an important source of detailed information regarding existing conditions and trends in the East County. The following goals and policies from the ECAP relating to biological resources are applicable to the proposed project.

Goal: To preserve a variety of plant communities and wildlife habitat.

Policy 122: The County shall encourage that wetland mitigation be consolidated in areas that are relatively large and adjacent to or otherwise connected to open space. To the extent possible areas should be included in, adjacent to, or linked through open space corridors with lands designated as "Resource Management" that are managed specifically for the preservation and enhancement of biological resources.

Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur

in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands in order to establish a continuous open space system in East County and to provide for long term protection of biological resources.

Policy 125: The County shall encourage preservation of areas known to support special status species.

Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.

Policy 127: The County shall encourage the preservation of East County's oak woodland plant communities.

Policy 128: The County shall ensure that, where quarries will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.

Policy 129: The County shall protect existing riparian woodland habitat present along the Arroyo Mocho, Arroyo Del Valle, Arroyo Las Positas, Arroyo de la Laguna; and Alamo, Tassajara, and Alameda Creeks. Exceptions to these requirements shall apply for those portions of the Arroyo del Valle to be excavated for water transfer Lakes A and B under the Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation, which shall instead be subject to riparian habitat restoration as specified by Policies 128 and 164; and for any approved quarry operations in Regionally Significant Construction Aggregate Resource Sector C (Arroyo Mocho) or any other streambeds, which shall also be subject to habitat restoration under Policies 128 and 164, and according to applicable State Public Resources Code requirements, to the extent that proposed reclamation specifies riparian habitat as the end use.

Goal: To recognize the regional value of the County's construction aggregate resources and to ensure compatibility between quarry operations and surrounding land uses.

Policy 164: The County shall ensure that where quarry operations will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees

Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation (1981)

The *Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR Specific Plan) (Alameda County 1981) is intended to plan for reclamation, productive reuse, and rehabilitation of the Quarry Area, in which the proposed project area lies.

The following aspects of the LAVQAR Specific Plan relate to biological resources:

III. General Objectives

5. To provide a coordinated plan for arrangement of mining-produced land and water masses into a coherent, flexible form, reflecting interrelatedness of geology, hydrology, land use, and other factors throughout the Quarry Area.

Alameda County Surface Mining Ordinance

The Alameda County Surface Mining Ordinance was enacted to ensure the continued availability of important mineral resources, while regulating surface mining operations as required by SMARA, Public Resources Code (PRC) Section 2207, and state regulations for surface mining and reclamation practice (California Code of Regulations [CCR], Title 14, Division 2, Chapter 8, Subchapter 1, Sections 3500 et seq.), to ensure prevention or mitigation of adverse effects on the environment, including damage to aquatic or wildlife habitat.

East Alameda County Conservation Strategy

The East Alameda County Conservation Strategy (EACCS) was developed by a committee of several partners, including but not limited to County of Alameda, CDFW, Cities of Dublin, Livermore, and Pleasanton, and Zone 7. The purpose of the EACCS is to preserve endangered species by developing a shared vision for long term habitat protection. The EACCS assesses areas all across East Alameda County for their conservation value and establishes guiding biological principles for conducting conservation in the county. Part of that guidance includes working with willing landowners to implement long-term conservation stewardship that would offset impacts from local land use, transportation, or other infrastructure projects.

East Bay Regional Conservation Investment Strategy

A state law passed in 2016, AB 2087, establishes a conservation planning tool called a Regional Conservation Investment Strategy (RCIS) to promote the conservation of species, habitats, and other natural resources. The draft East Bay RCIS, which addresses Alameda and Contra Costa Counties is one of six pilot RCISs currently being developed in California. The draft East Bay RCIS, not yet adopted, is a voluntary, non-binding assessment of conservation priorities and is being developed based on existing plans and other information, including the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP), the EACCS, and the Bay Area's Conservation Lands Network, among others.

The RCIS is intended to promote landscape-scale conservation through protection, restoration, and enhancement of high priority habitat, including actions to improve habitat connectivity for wildlife. It also identifies areas suitable for conservation and mitigation investments by local, state, and federal government entities as well as private entities and conservation organizations. Finally, the RCIS considers focal species and sensitive habitats and addresses working lands, proposed infrastructure, and development projects.

4.3.3 Significance Criteria and Analysis Methodology

4.3.3.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to biological resources if it would:

a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG (now CDFW) or USFWS;

b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG (now CDFW) or USFWS;

c) have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

d) interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

e) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and

f) conflict with the provisions of any adopted habitat conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

No HCP, NCCP, or other such plan applies to the project area. Although the East Alameda County Conservation Strategy (EACCP) is a conservation strategy for the project area, it is not an adopted policy document, primarily serving as a guidance document to provide a baseline inventory of biological resources and conservation priorities for agencies to consider in planning and permitting efforts. Therefore, criteria f is hereby scoped out of the impact analysis provided below; additional discussion on this topic is provided in Appendix A-1, "Initial Study."

4.3.3.2 Analysis Methodology

The evaluation of potential impacts to biological resources is based on the resources present, or likely to be present, on the project site and the known disturbance and other activities associated with the project that could potentially alter habitat, reduce the quality of habitat, or otherwise have an adverse effect on biological resources. Due to the intended 36-year life span of the project and the alteration to the existing landscape that would occur as a result of the project, physical disturbance and activities associated with project activities are considered permanent for purposes of determining the significance of project impacts.

When impacts are deemed significant, mitigation measures are identified to avoid or minimize the impact. Some of the mitigation measures are based on specific agency guidelines and performance standards, and they may also be conditions of permits or other approvals that are ultimately required for the project. The project will be required to comply with a number of environmental laws and regulations including those administered by USACE, USFWS, NOAA (or NMFS), CDFW and the SFBRWQCB, as described in Section 4.3.2. Approvals issued by these agencies may include measures to offset potential impacts associated with the Project consistent with or in addition to those identified herein.

4.3.4 Project Impacts and Mitigation Measures

4.3.4.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, biological impacts were determined to be less than significant with mitigation or less than significant. The 1981 project included disturbing and reclaiming significantly more surface area than the proposed project, considering the proposed ADV realignment and reduced Lake A and B surface area, as described in the project description. The approved 1981 project includes the following mitigation measures for biological resources impacts (Alameda County 1980: 39-40):

- The best mitigation of loss of the natural Arroyo del Valle channel is to construct the new channel as close in appearance and function to the natural channel as is feasible. (An alternative to leaving the existing channel untouched is discussed in Section VI. Alternatives [of the LAVQAR EIR]).

> The most important measure is revegetation of the channel banks to natural riparian species. Also, ponds should be placed at certain points along the channel to encourage fish habitat. The channel should meander in a natural manner to maximize edge habitat and also for aesthetic reasons. In general, its artificiality should be minimized and softened. The proposed new channel should be completed, revegetation established, and should be functioning as a viable watercourse prior to commencement of mining in the existing channel. Continuous riparian habitat should be maintained at all times; in time it will become even more critical as wildlife habitat as urbanization continues. Modification of the Del Valle channel will require a stream alteration permit issued by the State Department of Fish and Game. The Department will impose conditions intended to mitigate adverse impacts of stream alteration on fish and wildlife. A program of revegetation and other mitigation measures should be worked out between Fish and Game and the operator involved (Alameda County 1980: 40).

Project Revisions

The proposed project area has been disturbed by mining activities and the proposed project involves disturbance of soil beyond that already disturbed in the stream restoration portion of the project area. The proposed project includes activities similar to those analyzed under the 1981 project (grading and backfill, stream restoration, revegetation). However, because the proposed project will involve relocation and restoration of the ADV, the analysis provided below describes potential impacts of the stream restoration component of the proposed project. The required biological surveys have been completed, but the required permits must still be acquired per all regulatory requirements.

Changed Circumstances

To accommodate mining, the ADV along the southern boundary of Lake A was relocated to the south in the mid-1990s with the authorization of a Section 1602 Lake and Streambed Alteration Agreement from the California Department of Fish and Game (under Notification 1600-2004-0214-3), now the California Department of Fish and Wildlife. After the ADV was relocated south of Lake A, that agreement expired on December 31, 2009. In addition, the site is now made up predominantly of the Lake A, B and J pits with the ADV channel relocated south of the existing active pits. Also, additional listing of special-status species may result in changed circumstances that could create a new or increased significant impact biological resources.

Finally, since the preparation of the LAVQAR EIR, the invasion of non-native species (e.g., *arundo donax*) has reduced the biological value of the ADV, constituting a changed circumstance. The proposed project reintroduces native species, as the LAVQAR Specific Plan envisions, but the baseline is much more degraded than at the time of the LAVQAR EIR.

New Information

New information regarding the additional listing of special-status species since 1981 is available and could create a new or increased significant impact to biological resources.

Significance Determination

Significance criteria (f), conflict with the provisions of any adopted habitat conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, has been scoped out of this SEIR (see the Initial Study in Appendix A-1).

4.3.4.2 Subsequent Environmental Analysis

Impact 4.3-1a: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Species: Lake A Reclamation and Diversion Structure Construction

Biological Communities

Table 4.3-5, "Impacted Biological Communities in the Project Area," notes which existing biological communities, as characterized in Section 4.3.1.4, would be impacted by the proposed actions in the Lake A, Lake B, Northern Reclamation, and ADV Realignment Areas (compare Figure 4.3-1 to Figure 4.3-2, "Proposed Southerly Progression of Lake B and ADV Realignment," and Figure 2-3, "Reclamation Plan Overview," in Chapter 2, "Project Description"). The ADV Realignment and Northern Reclamation Area habitat impacts are discussed in Impacts 4.3-1b-d, below.

TABLE 4.3-5
IMPACTED BIOLOGICAL COMMUNITIES IN THE PROJECT AREA

Biological Community	Lake A	Lake B	Northern Reclamation Area	ADV Realignment
Developed	No	Yes	Yes	Yes
Native revegetation area	Yes	No	No	Yes
Breached quarry pond	No	No	No	Yes
Gravel bar	No	No	No	Yes
Giant reed willow riparian wetland	No	No	No	Yes
Depressional seasonal marsh	Yes	No	No	No
Riverine seasonal marsh	Yes	No	No	No
Willow riparian wetland	Yes	No	No	Yes
Ruderal grassland	Yes	Yes	No	Yes
Quarry Pond	Yes	Yes	Yes	Yes
Sycamore Woodland	Yes	No	No	No
Silt Pond	No	No	Yes	No

Source: Table assembled by Benchmark Resources in 2020.
Note: This table incudes mining area. However, mining activities are a vested use and not subject to discretionary approval. Some reclamation activities in these areas (e.g., revegetating post-mining quarry side slopes) would be concurrent with mining, so these areas are included in this table.

Habitat for Special-status Wildlife Species

Known or potential biological habitat for threatened, endangered, proposed threatened, proposed endangered, candidate species, sensitive species, and species of concern in the project area include the following habitats:

Potential Habitat

- Potential habitat for special-status wildlife including valley elderberry longhorn beetle (low), Alameda whipsnake (low); San Joaquin whipsnake (low), California red-legged frog (low), Coast horned lizard (low), western spadefoot toad (low), and American badger (low);
- Potential foraging and nesting habitat for bald eagle (high), golden eagle (high), and northern harrier (low);
- Potential nesting habitat for tricolored blackbird (low), loggerhead shrike (low), and sharp-shinned hawk (low);

- Potential foraging habitat for grasshopper sparrow (low), burrowing owl (low), ferruginous hawk (low), and prairie falcon (high);
- Potential breeding, nesting ,and foraging habitat for California horned lark (low) and Cooper's hawk (low);
- Potential roosting habitat for hoary bat (high) and pallid bat (high); and
- Potential foraging and roosting habitat for Yuma myotis (high).

Known Habitat

- Known habitat for western pond turtle;
- Known foraging and nesting habitat for peregrine falcon; and
- Known habitat for great blue heron;

Since the preparation of the LAVQAR EIR, the invasion of non-native species (e.g., arundo donax) has reduced the biological value of the ADV, constituting a changed circumstance. The proposed project reintroduces native species, as the LAVQAR Specific Plan envisions, but the baseline is much more degraded than at the time of the LAVQAR EIR.

Lake A Reclamation Features

There are several elements of reclamation in the Lake A area that are outlined below, followed by impact analysis.

Diversion Structure

A diversion structure from the ADV to Lake A capable of conveying up to 500 cubic feet per second (cfs) would be installed in the southeast corner of Lake A. The diversion from ADV to Lake A would consist of an intake (fitted with a screen to prevent fish capture or trapping), a low-head diversion dam to control water levels in the channel, a bypass structure for fish passage, a flow control structure, and a conduit into Lake A. The diversion would also feature an infiltration bed concept that includes a 100-foot-wide (extending in the horizontal direction perpendicular to the stream bank) by 200-foot-long gravel infiltration bed to be constructed along the north bank of ADV. The diversion structure would convey up to 500 cfs through an 84-inch-diameter pipe into Lake A. In addition, the diversion structure would require electrical power (to be supplied from a power pole or manhole near the east end of the property) to operate the slide gate, as well as the flow measurement and/or water level instruments. The diversion structure would be operated by Zone 7 in the future (see page 13 of Appendix B-1).

Installation of Berms Between the ADV and Lake A

Berms would be installed between Lake A and the ADV to reduce the potential for the ADV to overtop and for flood waters to flow into Lake A during reclamation operations and in future reclaimed conditions (see page 13 of Appendix B-1).

Minor Excavations to Convert an In-situ Berm to an Island

Two small drainage slots would be excavated to convert a small in-situ berm at the western end of the lake to a small island to promote water flow across the lake. The excavations would be conducted to a bottom elevation of 405 feet msl (about 12 feet below existing ground) with a bottom excavation width of approximately 80 feet. The island would also provide habitat value for wildlife (see page 13 of Appendix B-1).

Installation of a Water Conveyance Pipeline from Lake A to Future Lake C

As envisioned in the LAVQAR Specific Plan, future Lake C would be located off-site, west of Isabel Avenue and generally north of Lake B (see Figure 2-3) (mine site leased and operated by Vulcan Materials). Conduits would be constructed between Lake A and future Lake C and Lake B and future Lake C, consistent with the original SMP-23. In addition, CEMEX would provide a turnout from Lake A into Lake B as part of the Lake A to Lake C conveyance. The pipeline from Lake A to Lake C would be 84 in diameter to provide a conveyance capacity of 500 cfs. The conduit to Lake C would be stubbed and capped at CEMEX's property lines until such time that future Lake C is developed. The pipeline would be operated by Zone 7 in the future (see page 13 of Appendix B-1).

Installation of an Overflow Outlet

An overflow outlet would be created in the crest of the berm installed along the southwest end of Lake A to allow water to flow back into ADV when water levels are high to prevent flooding in the localized area. The outlet would consist of a 270-feet wide shallow rock-line spillway that slopes south toward ADV at 3H:1V(see page 14 of Appendix B-1).

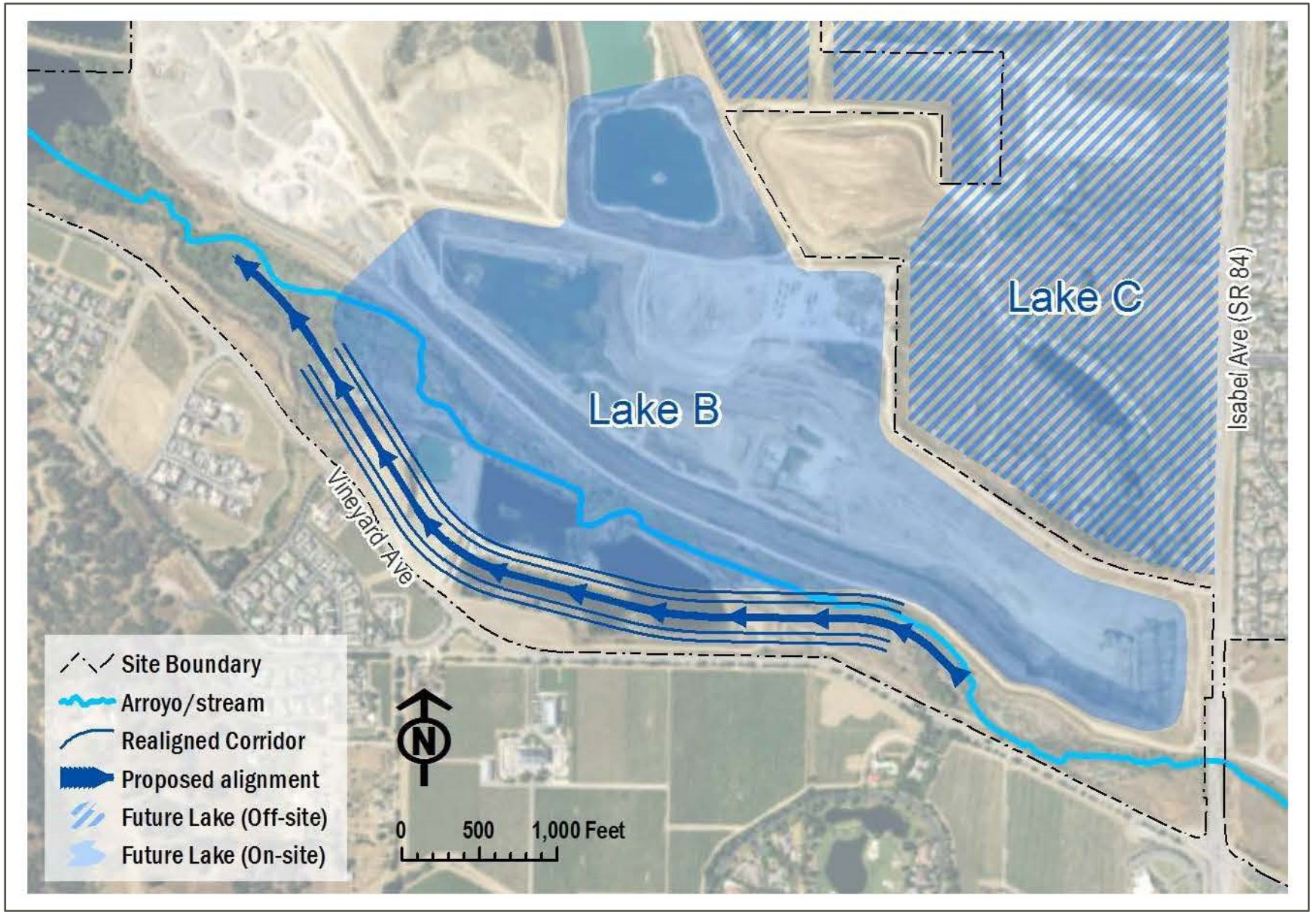
Implementation of a Landscape Plan

The proposed project also includes an updated landscape plan for Lake A that features California native drought tolerant tree, shrub, and grass species that are well-adapted to Alameda County. The species chosen for inclusion in the seed mixes are intended to be self-sustaining without dependence on irrigation, or ongoing applications of soil amendments or fertilizers, provided that planting takes place in the fall and subsequent rainfall is not abnormally low. As such, irrigation should not be needed. See Appendix B-2, "Lake A Landscape Plan," and B-3, "Lake A Landscape Plan Functions and Values Memo" for full list of species and their proposed locations as part of restoration. Table 4 in Appendix B-2 also provides a detailed list of the seed mix for revegetation. Some elderberry bushes (not occupied by valley elderberry longhorn beetle) are located in the Lake A area near the access road (see Figure 4.3-1), but these bushes would remain and are not located in an area that would be impacted by project activities. The Landscape Plan also includes planting and temporary irrigation of approximately 2,500 trees and shrubs and hydroseeding 53 acres of land in the Lake A area. The plan features a low maintenance, low water use design that is exempt from State of California Model Water Efficient Landscape Ordinance requirements and was designed specifically to ensure compatibility with the reclaimed end use of water management to be operated by Zone 7 (see page 14 of Appendix B-1) (Helix 2020a). Furthermore, the Lake A landscaping plan uses current revegetation methods and standards to update the approved reclamation plan with a low maintenance, low water use design (CEMEX 2019).

Pedestrian and Bike Trail

CEMEX has developed a pedestrian and bike trail roughly parallel to Vineyard Avenue on the south side of Lake A, which is within the project boundary and would remain as part of reclamation.

Table 4.3-5, above, notes which existing biological communities, as characterized in Section 4.3.1.4, would be impacted by Lake A reclamation activities (also compare Figure 4.3-1 to Figure 4.3-2, "Proposed Southerly Progression of Lake B and ADV Realignment," and Figure 2-3). Many of these impacted communities provide habitat for numerous wildlife species including various amphibians and reptiles and provide potential foraging habitat for raptors.



SOURCE: Brown & Caldwell 2019, Hydraulic Design Study Figure 5-8; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

Proposed Southerly Progression of Lake B and ADV Realignment
ELIOT QUARRY SMP-23 SEIR
Figure 4.3-2

BENCHMARK RESOURCES

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Vegetation within this community also provides potential nesting habitat for various bird species (Foothill Associates 2019). Therefore, Lake A reclamation activities would result in a loss of habitat for special status species which potentially reside in these communities.

Although these elements would result in some habitat and surface disturbance, the disturbance or removal would overall enhance wildlife habitat by providing substantial new landscaping with native species to compensate for any existing habitat removal, the majority of which is comprised of non-native species. Furthermore, the diversion structure, including the intake (fitted with a screen to prevent fish capture or trapping), a low-head diversion dam to control water levels in the channel, a bypass structure for fish passage, a flow control structure, a conduit into Lake A, and the infiltration bed would be subject to Mitigation Measure 4.3-1a, "Obtain Regulatory Entitlements and Authorizations," which requires the Applicant to obtain regulatory entitlements and authorizations from the USACE, RWQCB, and CDFW. Finally, impacts on special status wildlife and plant species resulting from reclamation activities would be further reduced to a less than significant level with Mitigation Measures 4.3-1b through 4.3-1h, each of which provide more than one avoidance or minimization measure specific to the group of species or habitat in question. Therefore, this impact would be less than significant with mitigation incorporated.

Level of Significance: Potentially Significant

Mitigation Measures:

Mitigation Measure 4.3-1a: *Obtain Regulatory Entitlements and Authorizations*

The Applicant shall obtain regulatory entitlements and authorizations from the US Army Corps of Engineers ("USACE"), U.S. Fish and Wildlife Service ("USFWS"), National Marine Fisheries Service ("NMFS"), California Regional Water Quality Control Board ("RWQCB"), and California Department of Fish and Wildlife ("CDFW") as needed for reclamation activity.

Mitigation Measure 4.3-1b: *Special Status Amphibian and Reptile Species*

To avoid and minimize impacts to special status amphibian and reptile species, including western pond turtle, Alameda whipsnake (striped racer), California red-legged frog, California tiger salamander, coast horned lizard, San Joaquin whipsnake, and western spadefoot, the following shall apply:

1. *No more than 48 hours prior to the commencement of reclamation-related ground disturbing activity (i.e. clearing, grubbing, or grading) associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or other areas, a qualified biologist shall conduct a pre-construction survey of suitable habitat in the project reclamation area. The survey shall include aquatic habitat and adjacent uplands surrounding aquatic habitat within the project reclamation area. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.*
2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity.*
3. *Construction personnel shall receive worker environmental awareness training prior to the commencement of ground disturbing activity. This training instructs workers how to recognize special status amphibian and reptiles species and their habitat.*

4. *If a special status amphibian or reptile species is encountered during construction, then all construction shall cease until the animal has moved out of the construction area on its own or has been relocated by a qualified biologist in coordination with the California Department of Fish and Wildlife (CDFW). If the animal is injured or trapped, a qualified biologist shall move the animal out of the construction area and into a suitable habitat area. CDFW shall be notified within 24-hours that a special status amphibian or reptile species was encountered.*
5. *Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to amphibian and reptile species. If there is a conflict between the terms of mitigation items 1 through 4 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.*

Mitigation Measure 4.3-1c: *Nesting Raptors*

To avoid and minimize impacts to nesting raptors, including bald eagle, golden eagle, American peregrine falcon, prairie falcon, white-tailed kite, Cooper's hawk, ferruginous hawk, and northern harrier, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable nesting habitat during the nesting season (e.g., March 1-Sept. 15), then a qualified biologist shall conduct a pre-construction survey for raptor nests. The survey shall cover all potential tree and ground nesting habitat on-site and off-site up to a distance of 500 feet from the construction activity. The survey shall occur within 30 days of the date that reclamation/construction would encroach within 500 feet of suitable habitat. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.*
2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no active nests are found during the survey, then no further mitigation would be required.*
3. *If any active nests are found, then the Planning Department and the California Department of Fish and Wildlife (CDFW) shall be contacted to determine appropriate avoidance and minimization measures. The avoidance and minimization measures shall be implemented prior to the commencement of construction within 500 feet of an identified nest.*
4. *Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to nesting raptors. If there is a conflict between the terms of mitigation items 1, 2, or 3 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.*

Mitigation Measure 4.3-1d: *Nesting Birds*

To avoid and minimize impacts to great blue heron and other migratory nesting birds, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of nesting habitat between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for active migratory*

nests within 14 days prior to the commencement of ground disturbing activity. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.

2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no active nests are found during the survey, then no further mitigation would be required.*
3. *If active nests are found in the survey area, then a non-disturbance buffer of a size determined by a qualified biologist shall be established and maintained around the nest to prevent nest failure. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged, or until September 1, unless otherwise approved by the Planning Department and CDFW.*

Mitigation Measure 4.3-1e: *Loggerhead Shrike*

To avoid and minimize potential impacts to loggerhead shrike, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 200 feet of suitable nesting habitat during the nesting season (February 15-August 31), then a qualified biologist shall conduct a pre-construction survey for loggerhead shrike nests in all suitable shrubs and trees that are within 200 feet from the construction activities. The survey shall occur within 3 days prior to the commencement of ground disturbing activities. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.*
2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no active nests are found during the survey, then no further mitigation would be required.*
3. *If nesting individuals are found, then an exclusion zone shall be established within 200 feet of the active nest(s) until a qualified biologist determines that the young of the year are no longer reliant upon the nest.*
4. *Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with the California Department of Fish and Wildlife for project reclamation activities, as applicable to the loggerhead shrike. If there is a conflict between the terms of mitigation items 1, 2, or 3 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.*

Mitigation Measure 4.3-1f: *Tricolored Blackbird*

To avoid and minimize potential impacts to tricolored blackbird, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable nesting habitat during the nesting season (March 1-July 31), then a qualified biologist shall conduct a pre-construction survey for nesting tricolored blackbirds in suitable habitats that are within 300 feet from the project activities. The survey shall occur within 30 days prior to the commencement of ground disturbing activities. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas.*

2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no tricolored blackbirds are found during the survey, then no further mitigation would be required.*
3. *If an active tricolored blackbird colony is found within 300 feet of reclamation activity, the applicant may avoid impacts to tricolored blackbird by establishing a 300-foot temporary setback, with fencing that prevents any project activity within 300 feet of the colony. A qualified biologist shall verify that setbacks and fencing are adequate and will determine when the colonies are no longer dependent on the nesting habitat (i.e. nestling have fledged and are no longer using habitat). The breeding season typically ends in July.*
4. *Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to tricolored blackbird. If there is a conflict between the terms of mitigation items 1, 2, or 3 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.*

Mitigation Measure 4.3-1g: *Burrowing Owl*

To avoid and minimize potential impacts to western burrowing owl, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 500 feet of suitable owl burrow habitat, then a qualified biologist shall conduct a pre-construction survey for burrowing owl. The survey shall occur within 30 days prior to the date that reclamation activities will encroach within 500 feet of suitable habitat. Adjacent parcels under different land ownership will be surveyed only if access is granted or if the parcels are visible from authorized areas. Surveys shall be conducted in accordance with the following:*
    a. *A survey for burrows and owls shall be conducted by walking through suitable habitat over the entire reclamation construction site and in areas within 500 feet of the project disturbance area.*
    b. *Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters, and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. Surveyors should maintain a minimum distance of 50 meters from any owls or occupied burrows.*
    c. *If no occupied burrows or burrowing owls are found in the survey area, then the biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department and no further mitigation is necessary.*
    d. *If occupied burrows or burrowing owls are found, then a complete burrowing owl survey is required. This consists of a minimum of four site visits conducted on four separate days, which must also be consistent with the Survey Method, Weather Conditions, and Time of Day sections of Appendix D of the California Department of Fish and Wildlife (CDFW) "Staff Report on Burrowing Owl Mitigation" (March 2012). The applicant shall then submit a survey report to the Planning Department which is consistent with the CDFW 2012 Report.*
    e. *If occupied burrows or burrowing owls are found during the complete burrowing*

owl survey, then the applicant shall contact the Planning Department and consult with CDFW prior to construction, and will be required to submit a Burrowing Owl Mitigation Plan (subject to the approval of the Planning Department and CDFW). This plan must document all proposed measures, including avoidance, minimization, exclusion, relocation, or other measures, and include a plan to monitor mitigation success. The CDFW "Staff Report on Burrowing Owl Mitigation" (March 2012) should be used in the development of the mitigation plan.

2. *Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to burrowing owl. If there is a conflict between the terms of mitigation item 1 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.*

Mitigation Measure 4.3-1h: *Special Status Bats*

To avoid and minimize potential impacts to special status bats, including hoary bat, pallid bat, and Yuma myotis, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 300 feet of suitable bat habitat during the winter hibernaculum season (e.g., November 1 through March 31), then a qualified biologist shall conduct a pre-construction survey within 300 feet of the reclamation project footprint on the CEMEX property to determine if a potential winter hibernaculum is present, and to identify and map potential hibernaculum sites.*
2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor and survey results) to the Planning Department prior to the commencement of ground disturbing activity. If no winter hibernaculum sites are found during the survey, then no further mitigation would be required.*
3. *If potential hibernaculum sites are found, then the applicant shall avoid all areas within a 300-foot buffer around the potential hibernaculum sites until bats have vacated the hibernaculum. Winter hibernaculum habitat shall be considered fully avoided if reclamation-related activities do not impinge on a 300-foot buffer established by the qualified biologist around an existing or potential winter hibernaculum site. The qualified biologist will determine if non-maternity and nonhibernaculum day and night roosts are present on the project site. If necessary, a qualified biologist will use safe eviction methods to remove bats if direct impacts to non-maternity and non-hibernaculum day and night roosts cannot be avoided. If a winter hibernaculum site is present, then reclamation activities shall not occur until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to CDFW.*

Significance after Mitigation: Less than significant.

Impact 4.3-1b: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Species: ADV Realignment

Construction activity and direct removal of existing vegetation and soil associated with the realignment of the ADV at Lake B and Lake A reclamation would result in a loss of existing habitat on the site. While the existing habitat in the project area, including the ADV, is highly disturbed due

to non-native species takeover, urban development, gravel extraction, and operations of Del Valle Dam, proposed project impacts would be potentially significant. Table 4.3-6, "Natural or Semi-Natural Wetland Communities in ADV Footprint," provides a summary of the proposed project's impacts to habitats located in the ADV.

TABLE 4.3-6
NATURAL OR SEMI-NATURAL WETLAND COMMUNITIES IN ADV FOOTPRINT

Aquatic Vegetation Community	Impact Acreage	Mitigation Acreage at Mitigation Ratio of 2:1	Notes
Riverine Seasonal Marsh	0.08	0.16	None.
Willow Riparian Wetland	8.87	17.74	Community dominated by willow (*Salix* sp.). Invasive species can be present in this community.
Giant Reed-Willow Riparian Wetland	13.46	26.92	Community dominated by invasive giant reed (*Arundo donax*) with willows as a secondary component
TOTAL	**22.41**	**44.82**	

In its coordination with resource agencies, the Applicant has developed proposed mitigation based on enhancement and restoration within and adjacent to the project boundary. Table 4.3-7, "Proposed Wetland Community Re-Establishment and Restoration Acreage" provides and tabular summary of the project mitigation.

TABLE 4.3-7
PROPOSED WETLAND COMMUNITY RE-ESTABLISHMENT AND RESTORATION ACREAGE

Vegetation Community	Re-established Acreage within Project Boundary	Restored and Protected Offsite Acreage	Total Acreage Restored or Re-established	Notes
Backwater Wetland	3.11	0	3.11	To be established as part of stream re-alignment, with permanent protection
Riparian Wetland	1.47	12.47	13.94	Removal of invasive species and replanting with native riparian species, with permanent protection.
Riparian Scrub	10.85	0	10.85	Established as part of stream re-alignment with permanent protection.
Riparian Woodland	9.36	3.73	13.94	Both re-establishment and restoration of upstream and downstream woodland, with permanent protection.
Riverine Seasonal Marsh	0	0.91	13.09	Removal of invasive species and replanting with native marsh species, with permanent protection.
Giant Reed Willow Riparian Wetland	0	8.81	0.91	Removal of giant reed and replanting with native riparian species, with permanent protection.
TOTAL	**24.79**	**25.92**	**50.71**	

Implementation of the proposed mitigation specified in Table 4.3-7 is anticipated to reduce wetland impacts to a less than significant level. However, the Applicant would be required to also comply

with Mitigation Measure 4.3-1a. To the extent that regulatory permits require additional or different mitigation, those permits and associated conditions of approval would take precedence.

The southern and western portions of the project area immediately adjacent to and within the ADV were previously impacted by early mining activity, but the existing vegetation in these areas have since had time to re-establish and broadly consists of more perennial, riparian plant species (Helix 2020).

Temporary displacement of species along the ADV realignment footprint would be a potentially significant impact relating to loss of habitat. However, Mitigation Measures 4.3-1a through 4.3-1h, provided above, would reduce the impacts to a less than significant level. In addition, based on the project design and requirement to implement resource agency requirements during the implementation of the ADV realignment, the habitat of the ADV after the project would be a beneficial impact when comparing the proposed projects to the existing conditions of the ADV.

Biological Communities

Table 4.3-5, above, notes which existing biological communities, as characterized in Section 4.3.1.4, would be impacted by the ADV realignment (also compare Figure 4.3-1 to Figure 4.3-2 and Figure 2-3). The ADV realignment includes revegetation and planting of more native, diverse, and water-efficient species (Helix 2020a)

The following existing biological communities would be removed by the southerly progression of Lake B (compare Figure 4.3-1 to Figure 4.3-2); however, loss and removal of this habitat is associated with approved and vested mining activity, not reclamation (the proposed project):

- Giant reed-willow riparian wetland
- Giant reed
- Gravel bar
- Willow riparian wetland
- Quarry pond
- Ruderal grassland

Despite the loss of habitat associated with the realignment of the ADV, the proposed project's revegetation and landscaping plans would result in more diverse and native habitat than existing conditions. The existing degraded stream and artificial impoundments would be replaced by a complex mosaic of riparian wetlands within a floodplain. Furthermore, the ADV realignment would create a new perennial stream channel containing a low-flow channel, backwater wetlands, riparian wetlands, riparian scrub, riparian woodland, as well as upland habitats. In effect, the ADV realignment project would be a long-term beneficial impact in that it would restore these portions of the ADV to a more natural state with a significant uplift in ecological functions and values. Once restored and mining is complete in Lake B, the realigned ADV is anticipated to be placed under a conservation easement for the permanent protection of restored habitats. Realignment of the ADV would also increase the size of Lake B by about 43 acres (as compared to existing conditions), and this expanded portion of Lake B would likely be considered a jurisdictional water of the U.S. and/or State in the future following reclamation. This acreage provides an additional offset to potential project impacts.

As discussed in Impact 4.3-1a, the Lake A landscape planting design restores native species to the area and encourages native regrowth by optimizing the number of proposed plants on site and spacing plant material to allow for natural infill. Table 4.3-8 "Geomorphic Diversity and Habitat Design Features" and Figure 4.3-3, "Proposed Realigned Channel and Floodplain with Habitat and Diversity Features," below describes the proposed habitat features and their function and/or benefit.

Finally, the ADV realignment and Lake A 500 cfs diversion structure design would support steelhead trout recovery and passage that would not occur if the project is not implemented (Brown and Caldwell 2020).

The LAVQAR EIR states that "the most significant adverse impact of the Plan on biota would result from replacing the existing ADV channel with an artificial channel," which would also apply to the proposed project (Alameda County 1980). However, the existing ADV is already an artificial, realigned channel pursuant to the prior 1602 permit and the proposed realigned ADV would include construction of a channel as close to the original appearance and function as possible, including habitat, except where non-native species have taken over. Planting design would be more water efficient and conducive to more native riparian growth. However, as stated in Impact 4.3-1a, above, reclamation activities that would remove habitat could also have adverse temporary impacts to nesting raptors and birds, including direct removal of habitat and noise disturbance.

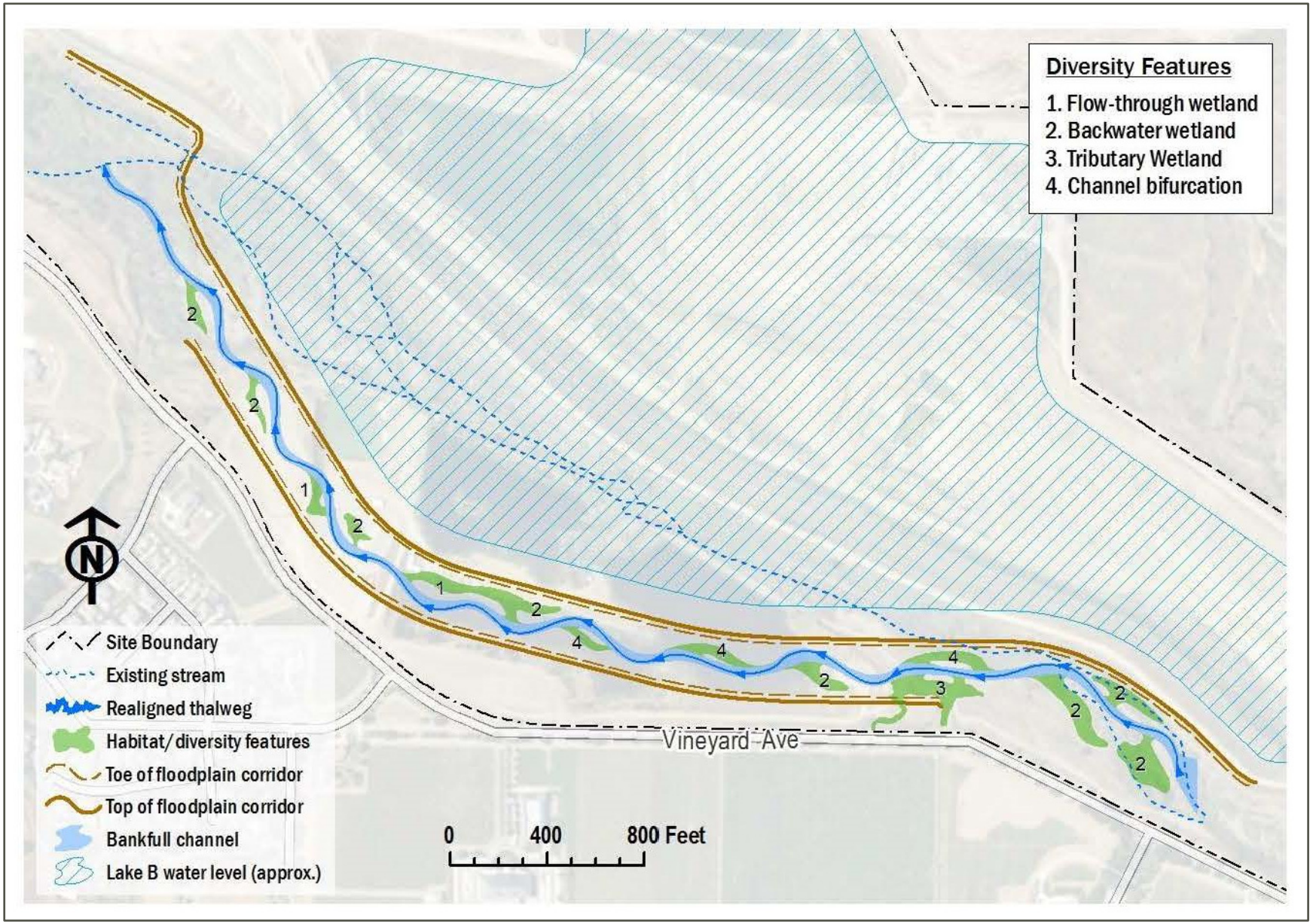
Implementation of the project would only involve reclamation activities and movement of the ADV does not include ongoing mining activities. Existing sensitive habitat areas that would be removed would largely be a result of approved and vested mining activity, not reclamation. As previously stated, sensitive habitat in the Lake A and Lake B areas that would be impacted by the proposed project, not by vested mining activity, currently have reduced biological value resulting from non-native growth and previous disturbance.

The ADV realignment would be subject to Mitigation Measure 4.3-1a, "Obtain Regulatory Entitlements and Authorizations," which requires the Applicant to obtain regulatory entitlements and authorizations from the USACE, USFWS, NMFS, RWQCB, and CDFW. To the extent that regulatory permits require additional or different mitigation, those permits and associated conditions of approval would take precedence. Finally, impacts resulting from disturbing reclamation activities on special status wildlife and plant species would be further reduced to a less than significant level with Mitigation Measures 4.3-1b through 4.3-1h, each of which provide more than one avoidance or minimization measure specific to the group of species in question. Therefore, this impact would be less than significant with mitigation incorporated.

Level of Significance before Mitigation: Significant

Mitigation Measure: Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, and 4.3-1h (see Impact 4.3-1a).

Significance after Mitigation: Less than significant.



SOURCE: Brown & Caldwell 2019, Hydraulic Design Study Figure 5-20; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Proposed Realigned Channel and Floodplain with Habitat and Diversity Features

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Figure 4.3-3

BENCHMARK RESOURCES

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TABLE 4.3-8
GEOMORPHIC DIVERSITY AND HABITAT DESIGN FEATURES—ADV REALIGNMENT

Feature Number	Description	Objective	Function/Benefit	Design Criteria
1	Flow-through wetland	Create off-channel willow riparian habitat that allows surface water to flow through and inundate areas for a prolonged period (at least 14 days) during the growing season.	Supports willow riparian wetland habitat and provides area for wetland mitigation.	• Wetland will be inundated by overflow from stream channel a minimum of 14 days per year in and average year, based on historical post-dam stream flow frequency. • Wetland should not have enclosed depressions greater than approximately 12 inches; however, microtopography will be created (field fit) with roughly 6–12 inches of variation to slow flow. • Entry and exit angles should be relaxed to avoid acute bends and sharp changes in flow direction.
2	Backwater wetland	Create off-channel willow riparian wetland that that is inundated by intermediate flows through a backwater channel, occurring about once a year on average.	Supports willow riparian wetland habitat and provides area for wetland mitigation.	• Wetland will be inundated by overflow from stream channel a minimum of 14 days per year in and average year, based on historical post-dam stream flow frequency. • Wetland should not have enclosed depressions greater than approximately 12 inches; however, microtopography will be created (field fit) with roughly 6–12 inches of variation to slow flow.
3	Tributary wetland	Create willow riparian wetland areas near tributary confluences utilizing tributary flows where possible.	Supports willow riparian wetland habitat and provides area for wetland mitigation.	• Wetland will be inundated by overflow from stream channel a minimum of 14 days per year in and average year, based on historical post-dam stream flow frequency. • Wetland should not have enclosed depressions greater than approximately 12 inches; however, microtopography will be created (field fit) with roughly 6–12 inches of variation to slow flow. • Entry and exit angles should be relaxed to avoid acute bends and sharp changes in flow direction.
4	Channel bifurcation	Increase stream channel complexity by creating a bifurcated section where a secondary channel can be activated by a wide range of flows.	Allows for a more dynamic and active fluvial system while still maintaining a controlled and relatively stable condition.	• Secondary channel should have similar geometry to bankfull channel such that it could become the preferred flow path at a future time. • Low-flow channel will be directed preferentially into the main channel by design.

Source: Brown and Caldwell 2020, Table 5-5
Notes: See Figure 4.3-3.

Impact 4.3-1c: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Species: Berms and Outflow Between ADV and Lake B

Berms would be installed between Lake B and the ADV to reduce the potential for ADV to overtop and for flood waters to flow into Lake B during reclamation operations and in future reclaimed conditions. The grade along the existing berm alignments would be raised where necessary to prevent overtopping of the ADV into the lake during the 100-year flood.

In addition, an overflow outlet would be created in the crest of the berm installed along the west end of Lake B to allow water to flow back into ADV through a controlled and stable pathway. The outlet would consist of an armored trapezoidal weir and chute, with an armored outlet apron. The outlet crest would be 60 feet wide perpendicular to the flow with 4H:1V side slopes, and the trapezoid would be at least 5 feet deep, thus resulting in a top width of 60 feet for the trapezoidal section. The outlet crest is 120 feet wide in the direction of the flow. The outlet flow path would be lined with riprap to mitigate the potential for erosion to occur (see Figure 2-3 and Appendix B-2).

Impacts to habitat for special status species resulting from berms and Lake B overflow outlet along the ADV would be similar to those discussed in 4.3-1b, above. The construction of berms and the Lake B would be subject to Mitigation Measure 4.3-1a, above, which requires the Applicant to obtain regulatory entitlements and authorizations from the USACE, USFWS, NMFS, RWQCB, and CDFW.

Table 4.3-5, above, notes which existing biological communities, as characterized in Section 4.3.1.4, would be impacted by the ADV realignment and reclamation activity at Lake B (also compare Figure 4.3-1 to Figure 4.3-2 and Figure 2-3), which includes the construction of berms and Lake B overflow outlet structure. Despite the loss of habitat associated with the realignment of the ADV, the proposed project's revegetation and landscaping plans would result in more diverse and native habitat than existing conditions.

The Lake B overflow outlet and berms along the ADV would be subject to Mitigation Measure 4.3-1a, "Obtain Regulatory Entitlements and Authorizations," which requires the Applicant to obtain regulatory entitlements and authorizations from the USACE, USFWS, NMFS, RWQCB, and CDFW. Finally, impacts resulting from disturbing reclamation activities on special status wildlife and plant species would be further reduced to a less than significant level with Mitigation Measures 4.3-1b through 4.3-1h, each of which provide more than one avoidance or minimization measure specific to the group of species in question. Therefore, this impact would be less than significant with mitigation incorporated.

Level of Significance before Mitigation: Significant

Mitigation Measure: Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, and 4.3-1h (see Impact 4.3-1a).

Significance after Mitigation: Less than significant.

Impact 4.3-1d: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Species: Northern Reclamation Area

Reclamation of the Northern Reclamation Area includes reclaiming the Lake J excavation (not part of the Chain of Lakes), processing plant sites, process water ponds, and Ponds C and D, which includes grading, revegetation, and a return to open space and/or agriculture. Reclamation treatment for

other disturbed areas, including the Lake J excavation (not part of the Chain of Lakes), processing plant sites, and process water ponds will generally involve backfills and/or grading for a return to open space and/or agriculture. The final bottom mining elevation of Lake J will be 130 feet msl. However, upon the completion of mining, Lake J is planned to be repurposed as a silt pond and will ultimately be backfilled to approximate elevations ranging from 360 to 380 feet msl. Ponds C and D in the North Reclamation Area may also be repurposed as silt ponds. For these ponds, silts may be deposited up to elevation 330 feet msl. Ultimately, these ponds will either be reclaimed as independent open water bodies with a projected water surface elevation of 370 feet msl; or merged with the larger future Lakes C and D to be developed by Vulcan.[1]

The vegetation within the actively mined portions of the project boundary is predominantly limited to locations around mining infrastructure, between and alongside roads utilized to access the active quarry, relatively undisturbed piles of sand and gravel, and other areas that have remained undisturbed for sufficient periods of time to allow colonization by primarily annual non-native plant species. Reclamation activity would not impact the existing willow riparian area in the western portion of the Northern Reclamation Area because mining would not occur in this area, resulting in no need for grading and fill associated with reclamation (compare Figure 4.3-1 to Figure 4.3-4, "North Area Reclamation Plan").

Following reclamation, the North Reclamation Area would continue to be owned and maintained by CEMEX, with the exception of Pond A that will be dedicated to Zone 7 as it will be encompassed within the ultimate footprint of Lake B after the design drainage notch is installed and water surface elevations rise in Lake B to the projected water surface elevation of 369 feet msl. Ponds C and D will also be dedicated to Zone 7. As this area is highly disturbed, reclamation activities in the Northern Reclamation Area will have less than significant impacts associated with the loss of habitat for special-status species.

Level of Significance: Less than Significant

Mitigation Measure: None required.

Impact 4.3-2a: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Lake A Reclamation and Diversion Structure Construction

There are several elements of Lake A reclamation that are outlined below.

- Diversion Structure;
- Installation of Berms Between the ADV and Lake A;
- Minor Excavations to Convert an In-situ Berm to an Island;
- Installation of a Water Conveyance Pipeline from Lake A to Future Lake C;
- Installation of an Overflow Outlet;
- Implementation of a Landscape Plan; and
- Pedestrian and Bike Trail

[1] The Pond D water surface will remain lower than the northern berm elevation 347 feet msl while Vulcan is mining and dewatering future Lake D.

Impact 4.3-1a, above, provides a detailed description of these elements. As stated in Impact 4.3-1a, these elements would enhance wildlife habitat and be beneficial impacts of the proposed project. The diversion structure, including the intake (fitted with a screen to prevent fish capture or trapping), a low-head diversion dam to control water levels in the channel, a bypass structure for fish passage, a flow control structure, a conduit into Lake A, and the infiltration bed would be subject to Mitigation Measure 4.3-1, which requires the Applicant to obtain regulatory entitlements and authorizations from the USACE, RWQCB, and CDFW.

Riparian Habitat

As previously discussed in Impact 4.3-1, some loss of riparian habitat would occur with installation of the berm and diversion structure at Lake A. However, any existing riparian habitat lost in the Lake A area as a result of the proposed project, discussed in Impact 4.3-1, would be replaced and improved as a result of the proposed project's revegetation and landscaping plans, resulting in more diverse and native habitat than existing invasive-choked conditions. Although some of the riparian habitat features discussed above are federally protected, impacts to federally protected wetlands are discussed separately under Impact 4.3-3, below.

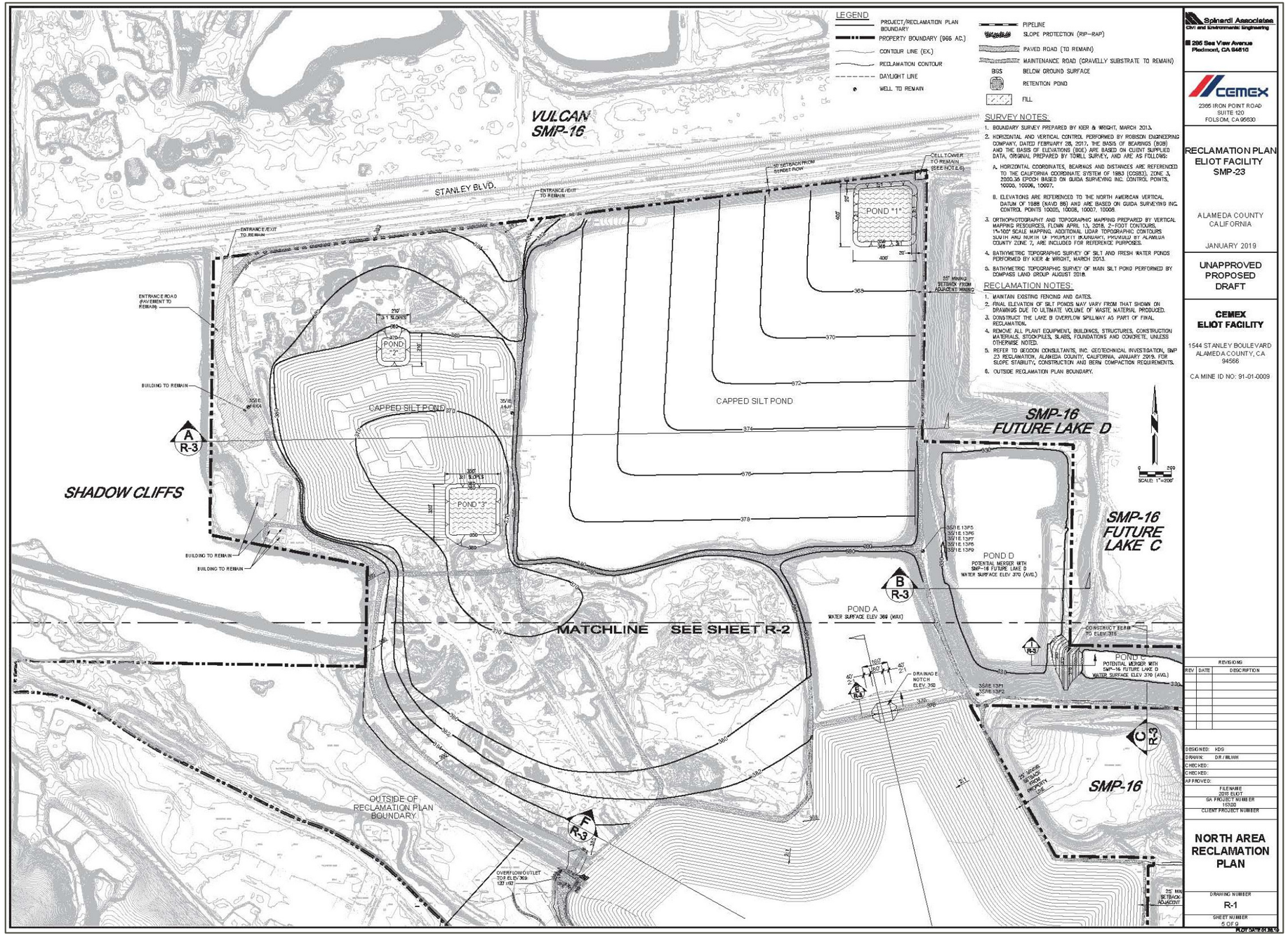
See Table 4.3-6 above for a summary of impact acreage to natural or semi-natural wetland communities. Table 4.3-7 above provides a summary of the proposed mitigation based on restoration and enhancement occurring within the project boundary, as well as, upstream and downstream of the project boundary. Communities within the "Restored and Protected Offsite Acreage" category would involve removal of invasive species, long-term monitoring and management of these areas according to an agency-approved wetland mitigation plan with measurable success criteria for the restoration areas, and placement of a conservation easement over the restoration area.

Table 4.3-7 also shows that a total of 50.71 acres of wetland habitats would be re-established or restored. This is at a ratio of 2.26:1 as compared to the proposed projects impacts to existing riparian habitats resulting from re-alignment of the Arroyo. In addition, post-reclamation Lake B would increase waters by an additional 43-acres. Finally, Table 4.3-8 and Figure 4.3-3 describe or show the proposed habitat features and their function and/or benefit.

Special-Status Plant Species

No special-status plant species were documented within the project site during field surveys conducted in 2017, 2018, and 2019 (Foothill Associates 2019; Helix 2020b). In addition, based on the absence of suitable habitat noted during field surveys and documented occurrences in the region, no special-status plant species are considered to have a high potential to occur within the project site. However, the following three plant species are considered to have a low potential to occur within the Project site:

- *Centromadia parryi* (Greene) Greene ssp. congdonii (Rob. & Greenm.) B.G. Baldwin (Congdon's tarplant)
- *Eriogonum truncatum* (Mt. Diablo buckwheat)
- *Calochortus pulchellus* (Mt. Diablo fairy-lantern)



SOURCE: CEMEX 2019, Reclamation Plan, Sheet R-1; modified by Benchmark Resources in 2020.
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While the likelihood of any of these special status plant species occurring on the site is low, Mitigation Measures 4.3-1a (above), 4.3-2a, "Special Status Plants," and 4.3-2b, "Riparian Habitat," (below) would reduce impacts to a less than significant level in the event that one or more of these species exist on site by enforcing avoidance and minimization of impacts on special status plants and riparian habitat. To the extent that regulatory permits require additional or different mitigation, those permits and associated conditions of approval would take precedence.

Level of Significance before Mitigation: Significant

Mitigation Measures:

Mitigation Measure: *Implement Mitigation Measure 4.3-1a, "Obtain Regulatory Entitlements and Authorizations."*

Mitigation Measure 4.3-2a: *Special Status Plants*

To avoid and minimize potential impacts to special status plants, including Congdon's tarplant, Mt. Diablo buckwheat, and Mt. Diablo fairy-lantern, the following shall apply:

1. *Prior to the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) in areas identified as having potential special status plant species in the project biological resources assessment report, a qualified botanist or biologist shall conduct a pre-construction survey for special status rare plant occurrences. The survey shall occur within 30 days prior to commencement of ground-disturbing activity.*
2. *If rare plant occurrences that are listed under the ESA or CESA are found and avoidance is not feasible, then the applicant shall notify the California Department of Fish and Wildlife (CDFW) and/or (as applicable) the U.S. Fish and Wildlife Service (USFWS) for any federally-listed species and comply with any permit or mitigation requirements stipulated by those agencies.*
3. *Comply with the mitigation requirements and conditions of any Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW for project reclamation activities, as applicable to rare plant occurrences. If there is a conflict between the terms of mitigation items 1 and 2 above and the Agreement, then the Applicant shall abide by the terms of the Agreement.*

Mitigation Measure 4.3-2b: *Riparian Habitat*

Within one year of the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or other areas identified as riparian habitat in the project biological resources assessment report, the applicant shall mitigate for any permanent riparian impacts at a minimum 1:1 ratio. The implementation of mitigation for the loss of riparian habitat may be addressed separately for each phase of reclamation (e.g., Lake A diversion structure or realigned Arroyo del Valle). Exact acreage per phase shall be determined in consultation with CDFW. Mitigation shall be accomplished by complying with the following:

1. *Enter into and comply with the mitigation requirements and conditions of a Section 1600 Lake and Streambed Alteration Agreement (Agreement) with CDFW.*
2. *If the Agreement results in less than a 1:1 mitigation ratio for loss of riparian habitat, then*

the applicant shall demonstrate that the riparian habitat which went unmitigated/uncompensated as a result of permitting has been mitigated through other means. Acceptable methods include purchase of credits from a mitigation bank or creation/preservation of on-site or off-site riparian habitats through the establishment of a permanent conservation easement, subject to the approval of the Planning Department.

Significance after Mitigation: Less than significant.

Impact 4.3-2b: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: ADV Realignment

As stated in Impact 4.3-2a, above, no special-status plant species were documented or considered to have a high potential to occur within the project site. However, three plant species (Congdon's tarplant, Mt. Diablo buckwheat, and Mt. Diablo fairy-lantern) are considered to have a low potential to occur within the project site, as noted above.

Riparian Habitat

As previously discussed in Impact 4.3-1, some loss of riparian habitat would occur with the southerly progression of Lake B into the existing ADV alignment. However, any existing riparian habitat lost as a result of the proposed project, discussed in Impact 4.3-1, would be replaced and improved as a result of the proposed project's revegetation and landscaping plans resulting in more diverse and native habitat than existing invasive-choked conditions.

See Table 4.3-6 above for a summary of impact acreage to natural or semi-natural wetland communities. Table 4.3-7 above provides a summary of the proposed mitigation based on restoration and enhancement occurring within the project boundary, as well as upstream and downstream of the project boundary. Communities within the "Restored and Protected Offsite Acreage" category would involve removal of invasive species, long-term monitoring and management of these areas according to an agency-approved habitat mitigation plan with measurable success criteria for the restoration areas, and placement of a conservation easement over the restoration area.

Table 4.3-7 also shows that a total of 50.71 acres of wetland habitats would be re-established or restored. This is at a ratio of 2.26:1 as compared to the proposed projects impacts to existing riparian habitats resulting from re-alignment of the Arroyo. Finally, Table 4.3-8 and Figure 4.3-3 describe or show the proposed habitat features and their function and/or benefit.

In addition, realignment of the ADV would increase the size of Lake B by about 43 acres (as compared to existing conditions), and this expanded portion of Lake B would likely be considered a jurisdictional water of the U.S. and/or State in the future, and provide additional habitat value, following reclamation. This acreage provides an additional offset to potential project impacts.

Sensitive Natural Community

As noted in Impact 4.3-2a, above, no special-status plant species were documented or considered to have high potential to occur within the project site. However, the three plant species (listed above) are considered to have a low potential to occur.

Despite the loss of habitat associated with the realignment of the ADV, the proposed project's revegetation and landscaping plans would result in more diverse and native habitat than existing conditions, as discussed above (CEMEX 2019). Furthermore, modification of the ADV requires 404/401 and streambed alteration permits issued by the USACE, USFWS, NMFS, RWQCB, and

CDFW. The Applicant has and will continue to consult with these agencies relating to the realignment of the ADV to ensure that adverse impacts of stream alteration on fish and wildlife would be less than significant. Mitigation Measures 4.3-1a, "Obtain Regulatory Entitlements and Authorizations," 4.3-2a, "Special Status Plants," and 4.3-2b, "Riparian Habitat" are recommended to reduce any potentially significant impacts to a less than significant level. With mitigation requiring compliance with permits and relevant conditions of approval and implementing avoidance and minimization of impacts on special status plants and riparian, impacts to riparian habitat and other sensitive natural communities resulting from the proposed project would be less than significant.

Level of Significance: Potentially Significant

Mitigation Measures: Implement Mitigation Measures 4.3-1a, 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-2a, and 4.3-2b.

Significance after Mitigation: Less than significant.

Impact 4.3-2c: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Berms and Overflow Outlet Between ADV and Lake B

As noted in Impact 4.3-2a, above, no special-status plant species were documented or considered to have high potential to occur within the project site. However, the three plant species (listed above) are considered to have a low potential to occur.

Despite the loss of habitat associated with the realignment of the ADV, the proposed project's revegetation and landscaping plans would result in more diverse and native habitat than existing conditions, as discussed above (CEMEX 2019). Furthermore, construction of berms and the Lake B overflow outlet along the ADV requires 404/401 and streambed alteration permits issued by the USACOE, RWQCB, and CDFW. The Applicant has and will continue to consult with these agencies relating to the realignment of the ADV to ensure that adverse impacts of stream alteration on fish and wildlife would be less than significant. Mitigation Measures 4.3-1a, "Obtain Regulatory Entitlements and Authorizations," 4.3-2a, "Special Status Plants," and 4.3-2b, "Riparian Habitat" are recommended to reduce any potentially significant impacts to a less than significant level. With mitigation requiring compliance with permits and relevant conditions of approval and implementing avoidance and minimization of impacts on special status plants and riparian, impacts to riparian habitat and other sensitive natural communities resulting from the proposed project would be less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measures: Implement Mitigation Measures 4.3-1a, 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-2a, and 4.3-2b.

Significance after Mitigation: Less than Significant

Impact 4.3-2d: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: North Reclamation Area

Reclamation of the Northern Reclamation Area is described in Impact 4.3-1d above. As shown in Figure 4.3-1, some riparian habitat and sensitive natural community is located in the southwest

corner of area A1, located in the Northern Reclamation Area. This area would remain and not be a part of areas to be filled, graded, or otherwise disturbed, as shown in Figure 4.3-4.

The vegetation within the actively mined portions of the project boundary is predominantly limited to locations around mining infrastructure, between and alongside roads utilized to access the active quarry, relatively undisturbed piles of sand and gravel, and other areas that have remained undisturbed for sufficient periods of time to allow colonization by primarily annual non-native plant species.

As this area is highly disturbed and the only area featuring riparian habitat or sensitive natural community will not be disturbed, reclamation activities in the Northern Reclamation Area will have less than significant impacts associated with the loss of riparian habitat or other sensitive natural communities.

Level of Significance: Less than Significant

Mitigation Measure: None required.

Impact 4.3-3a: The Project Would Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Lake A Reclamation and Diversion Structure Construction

Wetlands delineated within the project area include depressional seasonal marsh, riverine seasonal marsh, willow riparian wetland, and seasonal excavated basin. Other aquatic resources mapped within the project area include intermittent streams, perennial stream, ephemeral drainage, breached quarry pond, quarry ponds, silt ponds, percolation ponds, and excavated basin. The U.S. Fish and Wildlife Wetland Inventory Mapper has mapped five (5) wetland communities within the project area, including Freshwater Forested/Shrub Wetland, Riverine habitat, Lake, Freshwater Pond, and Freshwater Emergent Wetland (USFWS 2019, as cited in Helix 2020a). A total of 318.98 acres of aquatic resources were mapped within the project area (Helix 2020a). Table 4.3-2, above, characterizes aquatic resources in the project area.

Of the 318.98 acres of aquatic resources delineated in the project area, 0.06, 0.09, and 2.69 acres are potentially jurisdictional depressional seasonal marsh, riverine seasonal marsh, and willow riparian wetland, respectively. All three of these protected wetland areas are located at the southern end of Lake A, in the vicinity of the proposed diversion structure (Helix 2020a). Therefore, construction of the diversion structure at Lake A would constitute a potentially significant impact to state and federally protected wetlands.

Implementation of Mitigation Measure 4.3-3 would reduce these potential impacts to a less than significant level by replacing directly and indirectly impacted wetlands at a 1:1 ratio. With mitigation, impacts to state or federally protected wetlands would be less than significant.

Level of Significance before Mitigation: Significant

Mitigation Measure 4.3-3: 1:1 Wetland Compensation Ratio

Prior to the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or in other areas identified as containing wetlands in the project aquatic resource delineation report, the applicant shall mitigate for direct and indirect wetland impacts at a 1:1 ratio. The implementation of mitigation for the loss of wetlands may be addressed separately for each phase of

reclamation (e.g., Lake A diversion structure or realigned Arroyo del Valle). Exact acreage per phase shall be determined prior to initiating that phase based on the verification of the preliminary jurisdictional determination by the USACE. Mitigation shall be accomplished by complying with the following:

a) Obtain and comply with the mitigation requirements and conditions of a Section 404 Permit(s) and Section 401 Water Quality Certification(s) for reclamation activities, as applicable.

b) If regulatory permitting processes result in less than a 1:1 compensation ratio for loss of wetlands, then the applicant shall demonstrate that the wetlands which went unmitigated/uncompensated as a result of permitting have been mitigated through other means. Acceptable methods include purchase of credits from a mitigation bank or creation/preservation of on-site or off-site wetlands through the establishment of a permanent conservation easement, subject to the approval of the Planning Department.

Significance after Mitigation: Less than Significant

Impacts 4.3-3b: The Project Would Have a Substantial Adverse Effect on State or Federally Protected Wetlands: ADV Realignment and the Construction of Berms and Overflow Outlet Between ADV and Lake B

As noted above in Impact 4.3-3a, of the 318.98 acres of aquatic resources delineated in the project area, 0.06, 0.09, and 2.69 acres are potentially jurisdictional depressional seasonal marsh, riverine seasonal marsh, and willow riparian wetland, respectively. All three of these wetland areas are located at the southern end of Lake A, in the vicinity of the proposed diversion structure (Helix 2020a). Therefore, impacts to state or federally protected wetlands as a result of the proposed project would be less than significant for activities associated with the ADV realignment, construction of berms along the ADV and Lake B overflow outlet, or reclamation in the Northern Reclamation Area.

Level of Significance: Less than Significant

Mitigation Measure: None required.

Impact 4.3-3c: The Project Would Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Northern Reclamation Area

Reclamation of the Northern Reclamation Area is described in Impact 4.3-1d above. Appendix D-3, Aquatic Resources Delineation," indicates no state or federally protected wetlands are located in the Northern Reclamation Area. Therefore, impacts to state or federally protected wetlands as a result of the proposed project would be less than significant for activities associated with reclamation in the Northern Reclamation Area.

Level of Significance: Less than Significant

Mitigation Measure: None required.

Impact 4.3-4: The Project Could Interfere Substantially With The Movement Of Any Native Resident Or Migratory Fish Or Wildlife Species Or With Established Native Resident Or Migratory Wildlife Corridors, Or Impede The Use Of Native Wildlife Nursery Sites

While impacts analyses associated with protected species and their habitats, riparian habitat or other sensitive natural communities, and protected wetlands were broken down in Impacts 4.3-1, 4.3-2, and 4.3-3 to look at each element of the proposed project, this impact statement evaluates the project as a

whole regarding whether the project could substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Fish, Amphibian, and Reptile Passage

The ADV is a wildlife movement corridor that would be considered significant on a regional basis. It is a tributary stream to Alameda Creek, which has historically been a spawning area for fish species, including central California coastal rainbow trout/steelhead (*Oncorhynchus mykiss*) and coho salmon (*Oncorhynchus kisutch*) (SFEI 2013, as cited in Brown and Caldwell 2020). Fish barriers currently exist on ADV downstream of the project site; however, in recent years numerous fish passage projects were constructed on Alameda Creek and its tributaries to remove barriers to, and encourage anadromous fish migration into, the upper creek system (Brown and Caldwell 2020). As part of its 404 permit process, the permittee would also undergo consultation with the NMFS (thru the USACE) relating to potential listed fisheries.

The proposed project's diversion system was designed to meet CDFW requirements for anadromous fish passage and screening. These criteria include:

- **Fish passage**: Cross-channel structures should include a passable flow bypass structure, and off channel flow diversions should include return flow channels to avoid trapping.
- **Bypass flows**: Zone 7 requested that the ADV diversion allow for controlled diversion bypass flows of up to 40 cfs in winter/spring and 15 cfs in summer/fall (email from Colleen Winey, geologist at Zone 7 to Nathan Foged, engineer at BC dated August 16, 2013).
- **Fish screening**: CDFW criteria require fish screens to be sized such that the approach velocity entering the screen does not exceed 0.33 foot per second (ft/s) for all self-cleaning screens located in on-stream installations. For screens without automatic cleaning, the approach velocity is limited to one-fourth of the self-cleaning screens. Fish screens are typically sized by dividing the desired diversion flow (e.g., 500 cfs) and the limiting approach velocity (e.g., 0.33 ft/s), which results in the minimum area of fish screen required. For example, a 500 cfs diversion limited to 0.33 ft/s approach velocity would require at least 1,515 square feet (ft2) of fish screen. The U.S. Bureau of Reclamation (USBR) recommends the use of a 10 percent safety factor, which would increase the required area in this example to 1,667 ft2 (USBR 2006, as cited in Brown and Caldwell 2020).

The ADV diversion system would consist of the following interrelated components, which are also shown in Figure 4.3-5, "Schematic Representation of Diversion System"):

1. Intake and fish exclusion: This component diverts water away from the ADV channel through an intake structure that incorporates a device (e.g., screen) to prevent fish capture or trapping.
2. Hydraulic grade control: This component raises upstream water levels to create the hydraulic head required for lateral diversions, and to limit bypass flows in the ADV.
3. Fish passage and/or bypass: This component allows fish to move upstream past any physical barriers created by the hydraulic grade control structure, and includes structures that will measure and control bypass flows that continue downstream in the ADV.
4. Diverted flow control structure: This structure controls flow through the intake, and will include a device to adjust release rates, and a device to measure the diverted discharge.

5. Conduit into Lake A: This component consists of a pipe to convey diverted water into Lake A.
6. Conduit from Lake A to Lake C: This component consists of a pipeline to convey water from Lake A to Lake C, and allows for an optional turnout to Lake B (Brown and Caldwell 2020).

The proposed project would allow for fish passage that would otherwise not occur. However, the proposed project involves some interference with the possibility for fish to pass. Many of the impacted communities noted in Table 4.3-5, above, provide habitat for numerous wildlife species, including various amphibians and reptiles. Therefore, mitigation measures 4.3-1a, which requires the Applicant to obtain agency permits and comply with any conditions of approval required by those permits, and 4.3-1b, which protects amphibian and reptile movement, must be implemented to reduce any potential impacts on the movement of migratory or resident wildlife and fish to less than significant levels.

Nesting Birds

Table 4.3-5, above, notes which existing biological communities, as characterized in Section 4.3.1.4, would be impacted by the proposed project (also compare Figure 4.3-1 to Figure 4.3-2 and Figure 2-3). Many of these impacted communities include wetland vegetation provides potential nesting habitat for various bird species (Foothill Associates 2019). Therefore, the proposed project would result in a loss of habitat for special status species residing in these communities. However, with the implementation of Mitigation Measures 4.3-1c and 4.3-1d potential project impacts would be less than significant.

Diversion Structure

Under LAVQAR and the approved reclamation plan, the permittee is required to divert the first 500 cfs from the ADV into Lake A. Absent the ability to keep a low flow channel that ensures that a minimum amount of water is retained in the ADV, there could be adverse impacts to habitat by reducing or eliminating flows downstream for the Diversion Structure. However, the project description requires that a minimum flow be retained in the ADV so the first 500 cfs of diversion would only occur if the minimum flow is retained. In addition, Mitigation Measure 4.3-1a requires the applicant to obtain agency permits. Resource agencies would require conditions of approval that would ensure that any impacts to wildlife and fisheries be reduced to a less than significant level.

Level of Significance before Mitigation: Potentially Significant

Mitigation Measures: Implement Mitigation Measures 4.3-1a, "Obtain Regulatory Entitlements and Authorization, 4.3-1b, "Special Status Amphibian and Reptile Species," 4.3-1c, "Nesting Raptors," and 4.3-1d, "Nesting Birds."

Significance after Mitigation: Less Than Significant

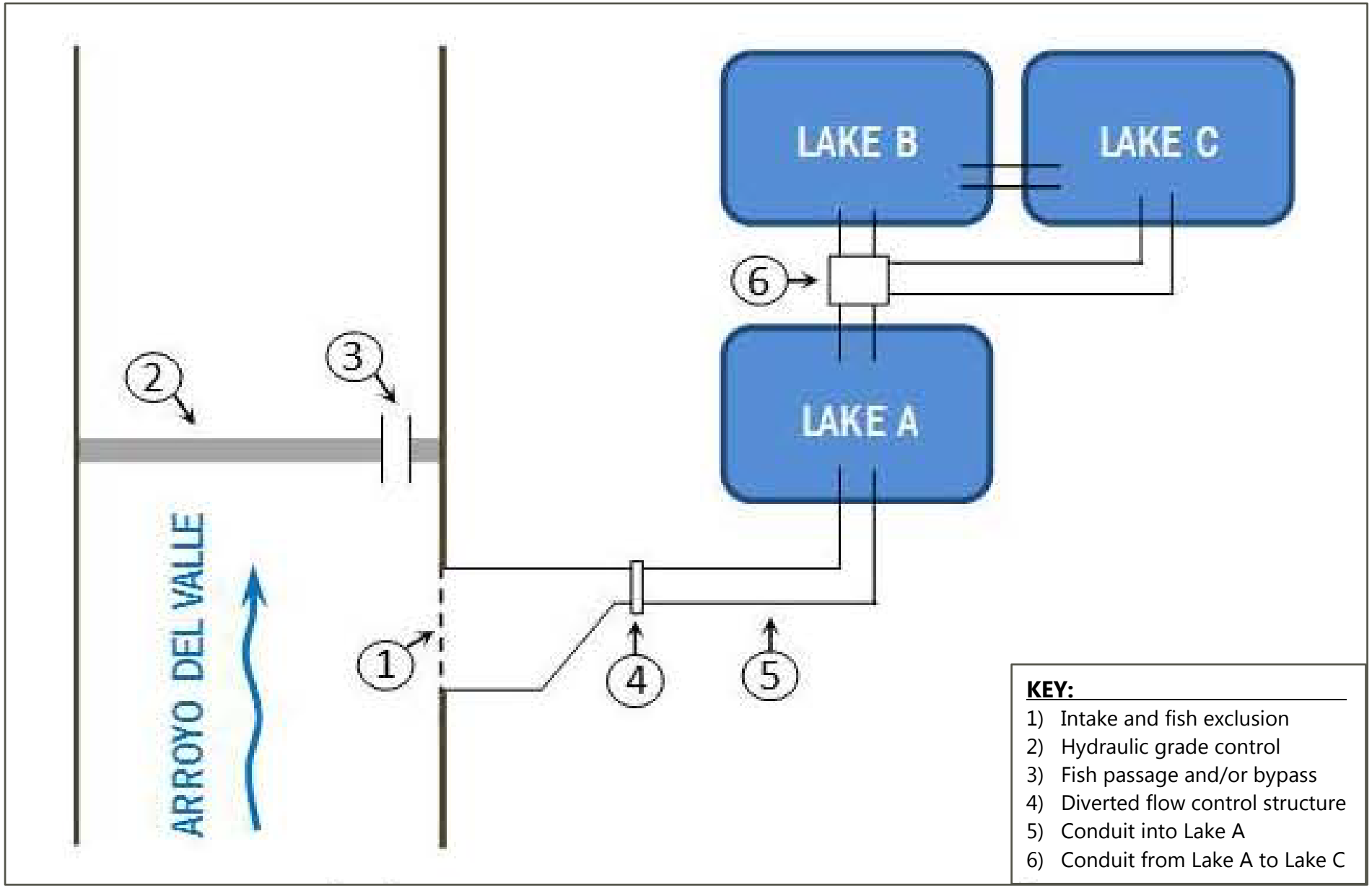
Impact 4.3-5: The Project Could Conflict with Local Policies or Ordinances Protecting Biological Resources

The proposed project's consistency with local policies or ordinances protecting biological resources are addressed in detail in Table 4.7-1, "Project Consistency With Local Planning Documents," in Section 4.7, Land Use and Planning. Of particular note among these policies is Policy 129 of the EACP, which is quoted in Section 4.3.2.3, above. Policy 129 requires protection of existing riparian woodland habitat present along the ADV, except where Policies 128 and 164 apply. Policies 128 and

164 apply to the proposed project, which is a reclamation plan for a quarry to include an end use of open space, appropriate biological restoration, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees. Therefore, the proposed project is consistent with these policies, in addition to those outlined in Table 4.7-1, resulting in a less than significant impact regarding conflicts with local regulations to protect biological resources.

Level of Significance: Less than Significant

Mitigation Measure: None required.



SOURCE: Brown & Caldwell 2019, Hydraulic Design Study Figure 5-2; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

Schematic Representation of Diversion System
ELIOT QUARRY SMP-23 SEIR
Figure 4.3-5

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4.4—GEOLOGY AND SOILS

This section of the subsequent environmental impact report (SEIR) describes the local and regional geologic, soils, and seismic conditions that occur in the vicinity of the project site. These conditions are described and evaluated to ensure that project facilities or personnel would not be significantly affected by seismic hazards, such as ground rupture or ground shaking caused by seismic activity, and that quarry slopes would not present physical hazards as a result of ground shaking or landslides.

The information in this section is based on applicant-prepared studies and publicly available sources. The applicant-prepared studies used are:

- *Geotechnical Investigation SMP-23 Reclamation, Alameda County California* (Geocon 2019a) (Appendix E-1, "Geotechnical Investigation SMP-23 Reclamation," of this SEIR) and
- *Geotechnical Investigation/Slope Stability Analysis, Cemex Eliot—Arroyo Del Valle Realignment at Lake B, Alameda, California* (Geocon 2019b) (Appendix E-2, "Geotechnical Investigation/Slope Stability Analysis for ADV," of this SEIR).

Questa Engineering Corporation (Questa) was retained by the County to peer review the two Geocon reports. Questa peer reviewed the reports in April 2019, requesting revisions and additional information, to which Geocon responded by preparing "Response to Comments for Geotechnical Investigations, CEMEX Eliot Quarry (SMP 23)" and revised reports (see Appendix E) dated December 31, 2019. In March of 2020, Questa found that the Response to Comments provided adequate information, and the revised reports addressed comments as presented in the April 2019 memorandum.

4.4.1 Geological and Soil Conditions at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) describes quarrying at the project site as limited to the upper layer of gravel deposits, the first (uppermost) aquifer, to protect groundwater in the lower aquifers. In most of the area north of Stanley Boulevard, a deep mantle of sedimentary soils known as overburden must be removed to reach the sand and gravel deposit. South of Stanley Boulevard, little overburden and no substantial clay layers were present at the time of the certification of the LAVQAR EIR.

The LAVQAR EIR also describes sedimentary soils overlying the Quarry Area as generally deep, well-drained, and gently sloping. In the project area, the undisturbed land surface elevation increased from 350 feet on the west to 400 feet on the east. Furthermore, about 1,750 acres of the 3,820-acre Quarry Area were considered prime agricultural soils. About 500 acres, mostly along Arroyo del Valle (ADV), were classified as Riverwash, coarse gravelly material not suited to cultivation. Another 970 acres were gravel pits, most of which were formerly covered with prime agricultural soils. The remaining 500 acres consisted of various types of nonprime soils. Most of these non-prime soils (about 400 acres) were of the Livermore Series, uniquely suited for growing grapes for the production of white wine (Alameda County 1980: 7-8, 18).

4.4.2 Environmental Setting

Eliot Quarry is located in Alameda County, California, at latitude 37E39'19" north, longitude 121E48'20" west in the U.S. Geological Survey (USGS) 7.5-minute Altamont quadrangle map. Surface elevations along Lakes A, B, and the North Reclamation Area vary between approximately 380 feet and 450 feet mean sea level (msl). Mining has occurred below these elevations down to approximately elevation 251

feet msl in the Lake J area (CEMEX 2019). The pit slopes are generally bare and partially covered with light vegetation.

4.4.2.1 Site Lithology

The original surficial soil mapping was completed by the U.S. Soil Conservation Service (SCS) in 1957, which determined that the site consisted of mostly Holocene with some Pleistocene and Pliocene Alluvium (see Figure 4.4-1, "Site Geology Map"). The Holocene and Pleistocene epochs are the most recent geologic time periods.

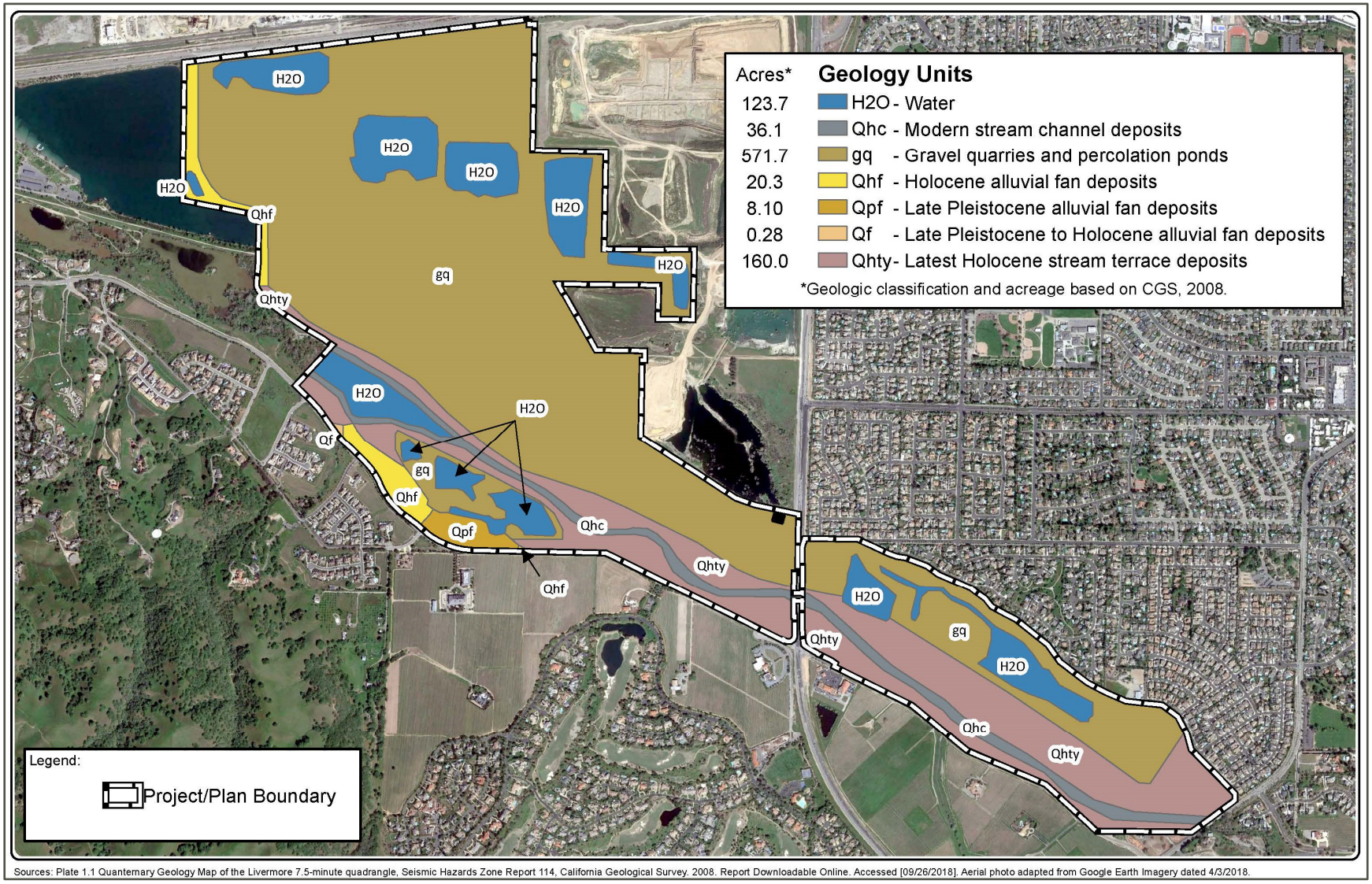
Alluvium is a geologic term for material that has been deposited by flowing water, usually caused by large storm events, and often contains clay, silt, sand, and gravel. Flowing water transports the sediment from high to low topographic areas, where the stream energy is dissipated, depositing the sediment. Geologic deposits are described by their age relative to surrounding earth materials.

The California Department of Water Resources (DWR) (1966) performed a detailed investigation of groundwater in the Livermore and Sunol Valleys. The report notes that the site contains Upper and Lower Livermore gravels and an overlying Quaternary Alluvium. A high percentage of the alluvium was eroded and transported to the Upper Livermore sediment, which is why it was often difficult to differentiate between the two.

More recent studies conducted in the Livermore Valley identified three units within the Livermore Formation: the Lower Livermore, Upper Livermore, and Quaternary Alluvium. At the Eliot Quarry, CEMEX is mining Quaternary Alluvium and possibly the Upper Livermore gravels that underlie much of the Livermore Valley.

The Lower Livermore unit contains deposits ranging in age from middle Pliocene to lower Pleistocene, with measured surface stratigraphy containing approximately 50 percent sand, 40 percent silt and mud, and 10 percent pebble- to cobble-sized gravel. Tuff-bearing beds are also interlayered throughout (USGS 1989a, cited in EMKO 2020). These beds are well defined by their grain size, indicating a change in energy of the depositional environment, and in this case, a stream. The type of stream present at the time of deposition was a Platte-type braided stream flowing from the southwest, with the gravel source generally being the Altamont area (USGS 1989a, cited in EMKO 2020).). This braided stream was the cause of the repeating, discontinuous, sedimentary beds, which lead to lenses of silt, sand, clay, and gravel. During the constant deposition and erosion of the Lower Livermore, there was volcanic activity to the north, which resulted in discontinuous ash deposits. Subsequently, a gentle uplifting developed in the Livermore Valley caused by regional tectonics. This uplifting caused the stream flow to change direction, with the source in the Coast Range, south of the Altamont area. This change in provenance marks the base of the Upper Livermore bed, which is marked by an abrupt change in lithology accompanied by an erosional unconformity at the top of the Lower Livermore bed.

The Upper and Lower Livermore units were deposited during the early Pleistocene by braided streams of various energy levels. The source area for the Upper Livermore is believed to be the Franciscan Complex to the south and east of the Livermore Valley. The clasts present in the strata consist of a high percentage of greywacke (USGS 1989a, cited in EMKO 2020). Repeating and discontinuous clay, silt, sand, and gravel beds present within the unit provide the evidence of a braided stream depositional environment. These features are similar to those in the Lower Livermore, but less clay and silt is present in the Upper Livermore. Although it may appear superficially gravelly, close examination reveals an abundance of impermeable fines.



SOURCE: CEMEX 2019, Reclamation Plan, Figure 8; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Site Geology Map

ELIOT QUARRY SMP-23 SEIR

Figure 4.4-1

BENCHMARK RESOURCES

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The USGS investigators used the gravels around Livermore to construct a geologic history of the area. USGS reviewed previous geological maps and studies, conducted field work, and compiled results in an open-file USGS report (USGS 1989b). The report detailed braided stream depositional environments, tuff deposits, discontinuities by means of erosional surfaces, an unconformity seen by an abrupt lithology change between the Upper and Lower Livermore units, and overbank deposits. No mention of lacustrine deposits was included in the report.

4.4.2.2 Site Hydrogeology

The information presented in this section has been summarized primarily from Alameda County Flood Control and Water Conservation District, Zone 7 (2011), Jones and Stokes (2005, cited in EMKO 2020), and other Zone 7 data. Additional interpretation is also provided based on borehole data obtained by CEMEX in coordination with Zone 7 in 2018. An overview of the project site geology is provided in Figure 4.4-1.

The project site is located within the Livermore-Amador Valley, an east-west trending inland alluvial basin located in northeastern Alameda County. An alluvial basin is a valley that has been filled with sediments deposited predominantly by streams and rivers. The basin is surrounded primarily by north-south trending faults and hills of the Diablo Range. The Livermore-Amador Valley encompasses approximately 42,000 acres, is about 14 miles long (east to west), and varies from 3 to 6 miles wide (north to south). The Livermore Valley Groundwater Basin is located in the central part of the Livermore-Amador Valley. The Main Basin is a part of the Livermore Valley Groundwater Basin that contains the highest yielding aquifers and the best groundwater quality. Lake A and Lake B are located within the southeast corner of the Main Basin.

The Livermore-Amador Valley is partially filled with alluvial fan, stream, and lake deposits, collectively referred to as alluvium. The alluvium in the valley consists of unconsolidated gravel, sand, silt, and clay. Alluvial fans occur where streams and rivers from hilly or mountainous areas enter a valley and deposit very coarse sediment, primarily sand and gravel. The silt and clay were deposited in floodplain areas or lakes that developed at different times across the basin. The alluvium is relatively young from a geologic perspective, being deposited during the Pleistocene and Holocene geologic epochs (younger than 1.6 million years old). In the west-central area of the basin, the alluvium is up to 800 feet thick, but thins along the margins of the valley.

The southeastern and central parts of the Main Basin area contain the coarsest alluvial fan deposits. These alluvial fan deposits were formed by the ancestral and present ADV and Arroyo Mocho. The coarse alluvial fan deposits are economically important aggregate deposits, which has resulted in the widespread aggregate mining in the Main Basin area. Recent investigations conducted on behalf of Zone 7 (2011) have been used to refine the interpretation of subsurface conditions based on specific stratigraphic depositional sequences, or the specific layering of the sediments that occur from changes in the conditions at the time the aggregate material was deposited. Drill-hole data and aquifer pumping tests conducted by Zone 7 (2011) show that in parts of Lake B and in the Lake J area, clay layers are generally not present, consistent with the alluvial fan depositional environment.

The aggregate materials present in the southeastern part of the Amador subbasin were deposited by ancestral streams that flowed in the same areas from which the ADV and Arroyo Mocho currently originate within the Livermore highlands to the south (DWR 1966). While lakes formed intermittently in the central and western parts of the basin, the area south of Stanley Boulevard, in the current area of

Lakes B, C, and D of the Chain of Lakes, and Lake J, was part of a large alluvial fan system emanating from the hills to the south (Alameda County 1980).

The ancestral stream channels for the ADV and Arroyo Mocho were identified by DWR (1966). In the area south of Stanley Boulevard and west of Isabel Avenue, the ancestral channel of the ADV deposited approximately 90 feet of coarse-grained aquifer material within the 100-foot interval between 100 to 200 feet below ground surface (bgs). The ancestral ADV channel is located along the northern and northeastern sides of Lake B. The Quaternary Alluvium is not present in this depth interval east of Isabel Avenue and south of Alden Lane, in the area of Lake A.

Deposition associated with the ancestral ADV channel within the depth interval down to 100 feet bgs extends east of Vallecitos Road. In the western part of Lake A, the eastern part of Lake B, along the north side of Lake B, and through Lake J, the coarse-grained aquifer deposits comprise over 90 percent of the material deposited by the ancestral ADV. It is also important to note that, while the ancestral stream channel follows the current stream channel in the Lake A area, the ancestral channel turned to the north in the Lake B area and then paralleled the current location of Stanley Boulevard.

See Appendices E-1 and E-2 for details on the drill hole data.

4.4.2.3 Surface Fault Rupture

The project site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone designated by the California Geological Survey (CGS). The nearest fault is the Las Positas Fault, located approximately 3 miles to the southeast. The site is not within a currently established State of California Earthquake Fault Zone for surface fault rupture hazards (Geocon 2019a).

4.4.2.4 Liquefaction Potential

Soil liquefaction is a phenomenon that occurs when saturated, cohesionless soil layers lose strength during cyclic loading, as caused by earthquakes. During the loss of strength, the soil acquires "mobility" sufficient to permit both horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean, loose, saturated, uniformly graded, fine-grained sands that lie below the groundwater table within a depth usually considered to be about 50 feet. The factors known to influence liquefaction potential include soil type and depth, grain size, density, groundwater level, degree of saturation, and both the intensity and duration of ground shaking. The portion of the project site located east of Isabel Avenue (the Lake A area) and a southern portion of Lake B is mapped as having the potential for liquefaction (Parrish 2008).

4.4.2.5 Ground Lurching and Seismically Induced Landsliding

Ground lurching is the horizontal movement of ground located adjacent to slope faces caused by seismic forces exerted during an earthquake. It can occur in areas underlain by soft or weak deposits and often results in permanent displacement and longitudinal cracking parallel to the slope face at some distance setback from the top of the slope. In steep slope areas, significant ground shaking may cause landslides or rock slope failures. The northwestern portion of the side is mostly flat; however, the sloped areas of the mined excavations on-site are mapped as areas mapped as having the potential for landslides (see Figure 4.4-1) (Parrish 2008).

4.4.2.6 Lateral Spreading

Seismically induced lateral spreading involves lateral movement of earth materials due to ground shaking. Lateral spreading is characterized by near-vertical cracks with predominantly horizontal movement of the soil mass involved along potentially liquefiable layers. The potential for lateral spread on the project site is low because no faults are on-site.

4.4.2.7 Soils and Soil Hazards

Multiple soil types occur on the project site; they are described below (see Figure 4.4-2, "Soils") (SCS 1966):

Gravel pit: The land type consists of deep excavations that have water in the bottom in most places. They are usually clear of plant growth.

Livermore gravelly loam: The soil is finer textured throughout and has less gravel than Livermore very gravelly course sandy loam. Most areas of this soil are nearly level and have slopes of 3 percent or less. Some areas, however, are gently sloping and have slopes as much as 7 percent. The available water holding capacity is low. The soil is somewhat excessively drained.

Livermore very gravelly coarse sandy loam: This soil is mostly in large bodies and is nearly level to gently sloping (0 to 7 percent). A few areas are moderately steep. The texture of the surface soil ranges from very gravelly coarse sandy loam to very gravelly loam or gravelly loam. The soil is somewhat excessively drained and has rapid permeability. Runoff is very slow to slow, and the available water holding capacity is very low. The soil has low fertility. The erosion hazard is slight when the soil is cultivated.

Pleasanton gravelly loam, 0 to 3 percent slopes: Most of this soil is in large bodies on nearly level terraces or fans. The color of the surface soil is light brownish gray, grayish brown, pale brown, or yellowish brown. The texture ranges from gravelly loam or loam to light clay loam. In areas transitional to the Rincon soils, substratum is slightly calcareous. The permeability of the subsoil is moderately slow. Runoff is slow, and the available water holding capacity is moderate. If the soil is cultivated, the erosion hazard is slight.

Pleasanton gravelly loam, 3 to 12 percent slopes: Except for steeper slopes, this soil is similar to Pleasanton gravelly loam, 0 to 3 percent slopes. It is generally gently sloping to rolling, but in places it is moderately steep. Runoff is slow to medium, and the erosion hazard is slight to moderate.

Positas gravelly loam, 2 to 20 percent slopes: This soil primarily consists of deep and very deep, moderately well drained soils that formed in alluvial material from mixed rock sources. The surface soil is brown, medium acid gravelly loam. It is underlain by reddish-brown, medium acid to mildly alkaline clay subsoil. Most of this soil is in large bodies on smooth, gently sloping to strongly sloping high terraces. Runoff is slow to medium, and the available water holding capacity is low. The erosion hazard is slight to moderate on cultivated areas.

Riverwash: This land type occurs throughout the valleys. The areas are typically very gravelly or stony. The vegetation consists mainly of patches of annual grasses and scattered oaks.

Yolo loam, 0 to 3 percent slopes: This soil occurs mostly in large bodies on nearly level valley floors. The color of the surface soil ranges from dark grayish brown or grayish brown to brown. The texture ranges from fine sandy loam to light clay loam. The depth to lime ranges from 24 inches to 5 feet or more. A small area of this soil has a dark-gray, clayey substratum at 24 to 36 inches. Also, some small areas are gravelly throughout the profile. In a few places an intermittent water table is within a depth

of 5 fret, and the substratum has common, fine, distinct, rust-colored mottles. This soil is well drained and moderately permeable. Runoff is very slow to slow and the available water holding capacity is high. The erosion hazard is slight in cultivated areas.

Yolo sandy loam, 0 to 3 percent slopes: Except for coarser texture, this soil is similar to Yolo loam, 0 to 3 percent slopes. Permeability is moderately rapid, and the available water holding capacity is moderate.

Yolo loam over gravel, 0 to 3 percent slopes: This soil occurs in narrow stringers on nearly level valley floors. It is underlain by loose, porous gravelly sand at a depth of 24 to 36 inches. The available water holding capacity is moderate to low. A few small areas have a gravelly loam surface layer.

Zamora silt loam, 0 to 4 percent slopes: Except for coarser texture, this soil is similar to Zamora silty clay loam, 0 to 3 percent slopes, which is described as occurring mostly in large bodies on nearly level floodplains. The surface soil ranges from grayish brown or dark grayish brown to dark brown. The texture ranges from heavy silt loam or silty clay loam to clay loam. In areas transitional to Rincon series, the subsoil is more distinct and slightly finer textured. The substratum ranges from brown to yellowish brown in color. In some areas it is noncalcareous. This soil is well drained. Permeability is moderately slow. Runoff is slow, and the available water holding capacity is high.

Geologic hazards associated with soil characteristics include erosion, expansion ("shrink-swell" patterns), and settlement and subsidence, as described below.

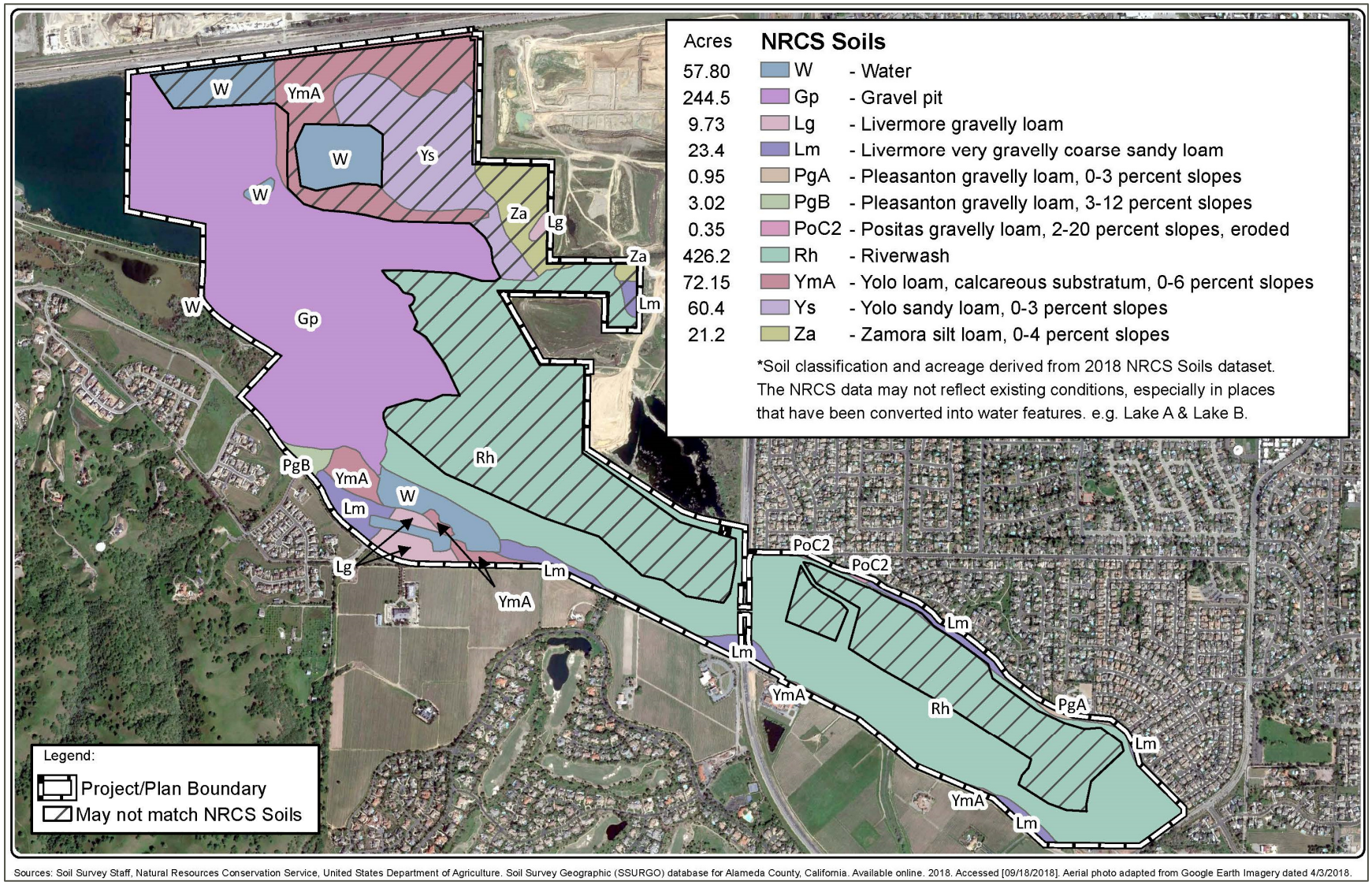
Erosion: Soil erosion occurs when surface materials are worn away from the earth's surface because of land disturbance and/or natural factors such as wind and precipitation. The potential for soil erosion is determined by characteristics including texture and content, surface roughness, vegetation cover, and slope grade and length. Wind erosion typically occurs when fine-grained noncohesive soils are exposed to high-velocity winds. Water erosion tends to occur when loose soils on moderate to steep slopes are exposed to high-intensity storm events. Surface soils on the project site generally comprise gravel, sand, clay, and silt.

Within the project site, erosion is an ongoing process that will continue primarily within the ADV and washes where periodic flooding and sedimentation (transport) occur during and following periods of intense rainfall.

Expansion: Soils that expand and contract in volume ("shrink-swell" pattern) are considered expansive and may cause damage to infrastructure as a result of density changes that shift overlying materials. Fine-grain clay sediments are most likely to exhibit shrink-swell patterns in response to changing moisture levels.

Seismically Induced Settlement and Subsidence: Earthquake-induced settlement is compression of the underlying loose soils caused by liquefaction or densification that occur during strong ground shaking and causes uneven settlement of the ground surface. The potential for soil liquefaction exists on portions of the site, and accordingly, the potential for liquefaction-induced settlement exists on those portions of the site (see Figure 4.4-1).

The risk of settlement caused by earthquakes from densification of the dry alluvium material is considered to be low to medium. The Quaternary Alluvium consists of stream- and lake-deposited sediments including various mixtures of gravel, sand, silt, and clay. It is largely unconsolidated and overlies the Livermore Formation in the valleys. The Quaternary Alluvium has been eroded and redeposited in some areas within the site location.



SOURCE: CEMEX 2019, Reclamation Plan, Figure 10; modified by Benchmark Resources in 2020.

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In areas of Quaternary Alluvium the risk of settlement is medium. The Livermore Formation consists of unconsolidated to semi-consolidated beds of gravel, sand, silt, and clay. Limey concretions are fairly common in the Livermore Formation's lower portion, and tuffaceous beds are present at its base. Thus, the risk of settlement related to the Livermore Formation is considered to be low.

4.4.2.8 Paleontological Resources

Paleontological sensitivity is a qualitative assessment based on the paleontological potential of the stratigraphic units present, the local geology and geomorphology, and other factors relevant to fossil preservation and potential yield. According to the Society of Vertebrate Paleontology (SVP) (2010), standard guidelines for sensitivity are (1) the potential for a geological unit to yield abundant or significant vertebrate fossils or to yield a few significant fossils, large or small, vertebrate, invertebrate, or paleobotanical remains and (2) the importance of recovered evidence for new and significant taxonomic, phylogenetic, paleoecological, or stratigraphic data. Definitions of SVP paleontological sensitivity ratings are provided below.

- **High Sensitivity**. Indicates fossils are currently observed on site, localities are recorded within the study area, and/or the unit has a history of producing numerous significant fossil remains.
- **Moderate Sensitivity**. Fossils within the unit are generally not unique, or are so poorly preserved as to have only moderate scientific significance.
- **Low Sensitivity**. Indicates significant fossils are not likely to be found because of a random fossil distribution pattern, extreme youth of the rock unit, and/or the method of rock formation, such as alteration by heat and pressure.
- **Marginal Sensitivity**. Indicates the limited probability of the geologic unit composed of either pyroclastic or metasedimentary rocks conducive to the existence and/or preservation of fossils.
- **Zero Sensitivity**. Origin of the geologic unit renders it not conducive to the existence of organisms and/or preservation of fossils, such as high-grade metamorphic rocks, intrusive igneous rocks, and most volcanic rocks.
- **Indeterminate Sensitivity**. Unknown or undetermined sensitivity indicates that the geologic unit has not been sufficiently studied, or lacks good exposures to warrant a definitive rating. An experienced, professional paleontologist can often determine whether the stratigraphic unit should be categorized as having high or low sensitivity after reconnaissance surveys, including observations of road cuts, stream banks, and possible subsurface testing, such as augering or trenching.

4.4.3 Regulatory Setting

The following sections discuss federal, state, and local regulations pertaining to geology and soils.

4.4.3.1 Federal

U.S. Geological Survey Landslide Hazard Program

To fulfill the requirements of Public Law 106-113, USGS created the National Landslide Hazards Program to reduce long-term losses from landslide hazards by improving understanding of the causes of ground failure and suggesting mitigation strategies. The Federal Emergency Management Agency is the responsible agency for the long-term management of natural hazards.

4.4.3.2 State

Alquist-Priolo Earthquake Fault Zone Act

The project site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone (Geocon 2019a). The State Alquist-Priolo Earthquake Fault Zoning Act of 1972 (Alquist-Priolo Act) was passed to mitigate the hazards associated with surface faulting in California. Administered by the California Department of Conservation (DOC), the Alquist-Priolo Act prevents construction of buildings used for human occupancy on the surface traces of active faults. Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults.

Seismic Hazards Mapping Act

The 1990 Seismic Hazards Mapping Act and related regulations establish a statewide minimum public safety standard for mitigation of earthquake hazards. The purpose of this act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure as well as other hazards caused by earthquakes. This act provides the minimum level of mitigation needed to reduce the risk of a building collapse. Under this act, the lead agency can withhold permits until geologic investigations are conducted and mitigation measures are incorporated into building plans. In addition, the act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability. The program and actions mandated by this act closely resemble those of the Alquist-Priolo Act by requiring:

- the State Geologist to delineate various "seismic hazard zones" and
- cities, counties, and/or other local permitting authority to regulate certain development "projects" within these zones by withholding the development permits for a site until the geologic and soil conditions are investigated and appropriate mitigation measures (if required) are incorporated into development plans.

California Building Code

The California Building Code (CBC), known as Title 24, CCR, Part 2, specifies the acceptable design and construction requirements associated with various facilities or structures. The CBC is administered and updated by the California Building Standards Commission. The CBC specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in the State. The CBC augments the International Building Code (IBC) and provides information for specific changes to various sections in it. The seismic building requirements under the CBC are more stringent than the IBC. The design and construction of engineered facilities in the state of California must comply with the requirements of the IBC (International Code Council 2018) and the adoptions to that code by the CBC.

Surface Mining and Reclamation Act

Mineral Resource Zones

California's Surface Mining and Reclamation Act of 1975 (SMARA) requires the State Geologist to classify land into Mineral Resource Zones (MRZs) based on the known or inferred mineral resource potential of that land. The process is based solely on geology, without regard to existing land use or land ownership. The primary goal of mineral land classification is to help ensure that the mineral resource potential of lands is recognized and considered in the land-use planning process. The project site is classified as MRZ-2, which is defined as "Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood of their presences exists" (Stinson et al 1982).

Slope Stability

SMARA is flexible with respect to addressing geotechnical slope stability for final reclamation slopes. SMARA does not specify a minimum factor of safety for slope stability. However, CCR Section 3502(b)(3) indicates that final reclaimed slopes shall be flatter than the critical gradient, which implies that static factors of safety should be greater than 1.0. The section further states:

> Whenever final slopes approach the critical gradient for the type of material involved, regulatory agencies shall require an engineering analysis of the slope stability. Special emphasis on slope stability and design shall be necessary when public safety or adjacent property may be affected.

CCR Section 3502(b)(4) states that:

> Areas mined to produce additional materials for backfilling and grading, as well as settlement of filled areas, shall be considered in the reclamation plan. Where ultimate site uses include roads, building sites, or other improvements sensitive to settlement, the reclamation plans shall include compaction of the fill materials in conformance with good engineering practice.

CCR Section 3704(d) states that:

> Final reclaimed fill slopes, including permanent piles or dumps of mine waste rock and overburden, shall not exceed 2:1 (horizontal:vertical), except when site-specific geologic and engineering analysis demonstrate that the proposed final slope will have a minimum slope stability factor of safety that is suitable for the proposed end use, and when the proposed final slope can be successfully revegetated.

CCR Section 3704(f) states that:

> Cut slopes, including final highwalls and quarry faces, shall have a minimum slope stability factor of safety that is suitable for the proposed end use and conform with the surrounding topography and/or approved end use.

4.4.3.3 Local

East County Area Plan

The site is located in a portion of the County where the *East County Area Plan* serves as the applicable general plan document. The following goals and policies contained within the *East County Area Plan* and pertain to geology and soils. The project's consistency with the goals and policies is evaluated in Section 4.7, "Land Use and Planning," of this SEIR.

Soil and Slope Stability

Goal: To minimize the risks to lives and property due to soil and slope instability hazards.

Goal: To minimize the risks to lives and property due to seismic and geologic hazards.

Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation (1981)

As part of LAVQAR (Alameda County 1981), quarry operators in the Livermore-Amador Valley are required to excavate basins for future use by Zone 7 for groundwater storage, conveyance, and recharge facilities collectively and commonly known as the "Chain of Lakes." LAVQAR requires the mining operators to dedicate to Zone 7 all excavated basins within the LAVQAR area. The following aspects of LAVQAR relate to geology and soils:

Policy 17: Final side slopes of pits shall be governed by provisions of the Alameda County Surface Mining Ordinance.

Alameda County Code of Ordinances

The Alameda County Surface Mining Ordinance (Chapter 6.80) includes the following provisions related to geology and soils:

6.80.210—Mining

A. Slopes.

1. Finished slopes shall conform to the requirements of Section 6.80.240E.
2. Temporary slopes steeper than the finished slopes, in areas where finished slopes are to occur, shall be constructed and maintained in accordance with the recommendations, as approved by the director of community development or the deputy director designee, of a soil engineer or a civil engineer registered in the state or an engineering geologist registered and certified in the state. Temporary slopes shall not be created or maintained in a manner that will interfere with the construction of finished slopes conforming to subsection (A)(1) of this section, and the soil engineer or engineering geologist shall make specific recommendations for the conversion of such temporary slopes to finished slopes.

H. Erosion, Sedimentation and Pollutant Discharge.

1. During the period mining operations are being conducted, and prior to final reclamation of mined lands, the operator shall take measures to prevent erosion of adjacent lands from water discharged from the site of mining operations and the off-site discharge of sediment. Such measures may include the construction of properly designed retarding basins, settling ponds and other water treatment facilities, ditches, diking and revegetation of slopes. No discharge of sediment to off-site bodies of water shall be permitted that will result in higher concentrations of silt than existed in off-site waters prior to mining operations.
2. Stockpiles of overburden and minerals shall be managed to minimize water and wind erosion.
3. The removal of vegetation and overburden in advance of surface mining shall be kept to a minimum.

J. Salvage of Topsoil

Topsoil suitable for use in revegetation shall be stockpiled at the site of mining operations in an amount up to that necessary for future reclamation.

6.80.240—Reclamation and Reclamation Plans

C. Drainage, Erosion and Sediment Control.

1. Any temporary stream or watershed diversion shall be restored in final reclamation unless determined unnecessary by the planning commission based on recommendation of the county flood control and water conservation district and/or public works agency.
2. Regrading and revegetation shall be designed and carried out to minimize erosion, provide for drainage to natural outlets or interior basins designed for water storage, and to eliminate potholes and similar catchments that could serve as breeding areas for mosquitoes.
3. Silt basins which will store water during periods of surface runoff shall be equipped with sediment control and removal facilities and protected spillways designed to minimize erosion when such basins have outlet to lower ground.

4. Final grading and drainage shall be designed in a manner to prevent discharge of sediment above natural levels existent prior to mining operations.
5. Upon reclamation, no condition shall remain that will or could lead to the degradation of water quality below applicable standards of the regional water quality control board or any other agency with authority over water quality.

E. Final Slope Gradient.

Final slopes shall be of such gradient as necessary to provide for slope stability, maintenance of required vegetation, public safety, and the control of drainage, as may be determined by engineering analysis of soils and geologic conditions and by taking into account probable future uses of the site. Final slopes shall not be steeper than two feet horizontal to one foot vertical (2:1) unless the applicant can demonstrate to the satisfaction of the planning commission that any such steeper slope will not:

1. Be incompatible with the alternate future uses approved for the site;
2. Be hazardous to persons that may utilize the site under the alternate future uses approved for the site; and
3. Reduce the effectiveness of revegetation and erosion control measures where such are necessary.

In no event shall the steepness of slopes exceed the critical gradient as determined by an engineering analysis of the slope stability.

F. Backfilling and Grading.

Backfilled and graded areas shall be compacted to avoid excessive settlement and to the degree necessary to accommodate anticipated future uses. If future use of the site contemplates structures for human occupancy, fill placement shall conform to the Uniform Building Code except that alternate methods of backfilling and grading may be utilized when incorporated in the approved reclamation plan. Material used in refilling shall be of a quality suitable to prevent contamination and pollution of groundwater.

G. Resoiling.

Resoiling shall be accomplished in the following manner: coarse, hard material shall be graded and covered with a layer of finer material or weathered waste and a soil layer then placed on this prepared surface. Where quantities of available soils are inadequate to provide cover, native materials should be upgraded to the extent feasible for this purpose.

4.4.4 Significance Thresholds and Analysis Methodology

4.4.4.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to geology and soils if it would:

a) directly or indirectly cause potential substantial adverse effects, involving the risk of loss, injury, or death involving;
   - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area or based on other substantial evidence of known fault (Refer to Division of Mines and Geology Special Publication 42),

- strong seismic ground shaking,
- seismic-related ground failure, including liquefaction, or
- landslides;

b) result in substantial soil erosion or the loss of topsoil;

c) be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;

d) be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to the life or property;

e) have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or

f) directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Regarding threshold e, as described in Appendix A-1, "Initial Study," the project would not include supporting the use of septic tanks or changes to the existing waste water disposal systems; therefore, this issue requires no further consideration.

4.4.4.2 Analysis Methodology

Evaluation of the geology and soils impacts in this section is based on information from published maps, reports, and other documents that describe the geologic, seismic, and soil conditions of the project area, and on professional judgment. The analysis assumes that the project proponents will conform to the latest CBC standards, County General Plan, LAVQAR, *East County Area Plan*, seismic safety standards, county grading ordinance, and National Pollutant Discharge Elimination System requirements.

Regarding the slope stability analysis for SMP-23 and the ADV realignment (Geocon 2019a and 2019b), a Factor of Safety (FS) was used to determine the stability of a slope. FS is the ratio of the resistance that can be mobilized to the driving forces that would cause a failure. Rocks and soil have an inherent strength called shear strength to resist failure. Characteristics in slopes that govern the driving forces are the weight of the materials, slope and strata angles, the presence of water, and accelerations caused by a seismic event. For slope stability in general, a Factor of Safety of 1.5 for static and 1.0 for seismic conditions are accepted as standard-of-practice minimum values. A Factor of Safety higher than the minimum is not a guarantee that slope failure is impossible. However, it does indicate that the possibility has been found from experience to be negligible.

Geocon evaluated slope stability (see Appendix E-1) using the computer program SLOPE/W (Version 7.23 by Geo- Slope International). The analysis for the slope adjacent to the realigned ADV considered circular failure modes, which were determined in previous studies to be the most critical slope failure mode (versus polygonal or wedge failures) under static and seismic conditions. Geocon also analyzed the stability of block failure modes for the Lake B Southeast slope adjacent to Isabel Avenue (State Route 84). The analysis was performed in general accordance with CGS Special Publication 117A and an earlier, related guidance document published by the Southern California Earthquake Center (SCEC). Per the procedures recommended by SCEC, the analysis used Spencer's Method. Spencer's Method satisfies both force and moment equilibrium conditions and SCEC recommends it be used for the analysis of failure surfaces of any shape.

For seismic conditions, a pseudo-static approach is used in which the weight of the material is increased by a seismic coefficient to simulate the effects of additional ground acceleration. The standard of practice is described in *2008 Guidelines for Evaluating and Mitigating Seismic Hazards in California*, Special Publication 117A (CGS 2008, cited in Geocon 2019). A seismic coefficient of 0.21 was prescribed for Lake A and 0.16 for Lake B. Because of Lake J's proximity to Stanley Boulevard, the conservative 0.21 seismic coefficient was used for the analyses. For subsurface conditions pertinent to the ADV realignment and adjacent Lake B mining pit, Geocon reviewed selected exploratory borings performed as part of the 2015 KANE Slope Stability Evaluation (Kane 2015). The borings were performed in April 2013 using a Becker Hammer drill rig. Table 3.2A of Appendix E-1 summarizes the details of the borings. To supplement this subsurface information, Geocon excavated ten exploratory test pits (TP1 through TP10) on December 22, 2016 using Komatsu 240 and Caterpillar 325 excavators equipped with 36-inch-wide buckets. Geocon also performed a detailed site reconnaissance on December 22 and 23, 2016. In addition, Geocon performed two borings (Borings B3 and B4) as part of the 2019 geotechnical investigation for the SMP 23 Reclamation Plan Amendment project (see Appendix E-1).

Questa Engineering Corporation (Questa) was retained by the County to peer review the two Geocon reports. Questa peer reviewed the reports in April 2019, requesting revisions and additional information, to which Geocon responded by preparing "Response to Comments for Geotechnical Investigations, CEMEX Eliot Quarry (SMP 23)" and revised reports (see Appendix E) dated December 31, 2019. In March of 2020, Questa found that the Response to Comments provided adequate information and the revised reports addressed comments as presented in the April 2019 memorandum.

4.4.5 Project Impacts and Mitigation Measures

4.4.5.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, geology and soils impacts were determined to be less than significant with mitigation or less than significant without the need to incorporate mitigation; however, paleontological resources were not addressed. The approved 1981 project included disturbing and reclaiming significantly more surface area compared to the proposed project, due to the proposed ADV realignment and reduced Lake A and B surface area, as described in the project description. The 1981 project included "capped settling ponds," in which 5 to 10 feet of overburden material was proposed to be placed over water saturated fine sand and silt. (Alameda County 1980: 8)

The approved 1981 project includes the following mitigation of impacts to geology and soils:

- Ability of capped settling ponds to support structures should be clearly demonstrated through extensive soil and geotechnical investigations at the time such structures may be proposed. The Alameda County Surface Mining Ordinance requires that fill placement in backfilled and graded areas conforms to the Uniform Building Code "except. that alternate methods of backfilling and grading may be utilized when incorporated in the approved reclamation plan." It is not expected that the forthcoming detailed reclamation plans for each operator will propose specific structural uses for these areas, but if so, then methods as specified in the Surface Mining Ordinance should be detailed and subject to approval by the Building Official. A program for inspection of fill placement, which is often difficult due to the size and staging nature of quarry operations, should also be presented at that time. Until demonstrated otherwise, it should be assumed that the capped settling pond areas are not suitable for structures. Recreation and open space uses would remain as options. (Alameda County 1980: 8)

- A drainage system would need to be designed to ensure adequate drainage of below-grade filled areas. Loss of prime and unique agricultural soils is due to the quarrying operations and not the Reclamation Plan, but the Plan should be responsible for mitigation of this impact. The Plan does propose that a 5 to 10-foot layer of soil be used to cover settling ponds. This measure should be made a requirement in Reclamation Plan implementation, and it should be ensured that the top few feet of soil replaced consists of the richest topsoil. Uncapped settling ponds may also be viable for intensive agricultural use. Alameda County has recognized the loss of prime and unique agricultural soils as being an unavoidable adverse impact of quarrying but has determined that the sand and gravel resource is of sufficient economic importance to the County and region as to outweigh this impact. (Alameda County 1980: 9)
- The Alameda County Surface Mining Ordinance provides some mitigation in that it requires topsoil to be stockpiled at the site of mining operations in amounts necessary for future reclamation and also specifies how resoiling is to take place; however, it only applies to new permits and not existing operations. (Alameda County 1980: 9)
- Agricultural use of many of the reclaimed land areas is proposed by the Plan. If topsoil is required to be replaced, then all reclaimed land areas could probably support intensive agriculture if deemed more desirable than urban uses at the conclusion of quarrying in 2030. Agricultural use will continue over many undisturbed areas of the site while quarrying is still taking place and is compatible with adjacent or nearby mining use. (Alameda County 1980: 9)

Project Revisions

The LAVQAR EIR assessed the realigned ADV to flow through Lake B. The 1981 project also included a Lake A with a final surface area of 208 acres and Lake B with a surface area of 243 acres. Under the proposed project, approximately 5,800 linear feet of the ADV would be realigned to flow around, rather than through, Lake B. Reclamation of Lake A would involve limited earthmoving, with a reduction in final surface area from 208 acres to 81 acres. Reclamation of Lake B would also involve a reduction in final surface area from 243 acres to 208 acres. Furthermore, the proposed project will adjust reclamation boundaries and contours. These design changes would be substantial and may create a new or increased significant impact.

Changed Circumstances

Since 1981, new residential subdivisions have been developed to the north of Lake A (e.g., Pulte Oaks and Kristopher Ranch) and to the south of Lake B (e.g., Ruby Hills) These sensitive land uses are changed circumstances that could create a new or increased significant impact.

In 1989–1992, CEMEX's predecessor purchased four parcels of land from Pleasanton Gravel Co. and Jamieson Co., which parcels are herein collectively referred to as the Jamieson Parcels (see Figure 2-1, "Vested Mining Permits"). Jamieson Parcels 1 and 2 were within the scope of Q-76, while Jamieson Parcels 3 and 4 were within the scope of Q-4 initially granted to California Rock and Gravel Company in 1957. The Jamieson Parcels also have vested mining rights. The Jamieson Parcels were acquired by CEMEX's predecessors after the County had approved SMP-23 in 1987; therefore, those parcels were not included within the currently approved SMP-23 reclamation plan boundary.

As required by Condition No. 16 of the Planning Commission's 1992 5-Year Periodic Review, CEMEX (RMC Lonestar at the time) also submitted drawings prepared by Spinardi Associates to Alameda County in June 1993 entitled Lake A Grading Plan showing the specific mining plan for the Lake A area. The Spinardi Associates plan showed the proposed mining footprint, slopes, landscaping, berms, a trail

system along the southern side, and a Zone 7 maintenance road along the northern side. These improvements were constructed, and the ADV reach within Lake A was realigned closer to Vineyard Avenue around 1994. Substantial mining began north of the ADV until 2005, at which time Cemex discontinued mining to address neighborhood concerns due to a potential subsurface slide. To remediate the potential slide issue, a Corrective Action Plan was developed by CEMEX and approved by the County. Construction activities under the Corrective Action Plan were completed in 2008. No further commercial mining is planned for Lake A, but some limited surface disturbances still need to occur to prepare the lake for installation of water conveyance facilities for future dedication to Zone 7.

New Information

Extensive new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the LAVQAR EIR was adopted. In addition to existing publicly-available data and reports, aerial photos, and field observations discussed above, there are two applicant-prepared studies that have been peer reviewed and incorporated into this SEIR as the following appendices:

- *Geotechnical Investigation SMP-23 Reclamation, Alameda County California* (Geocon 2019a) (Appendix E-1 of this SEIR) and
- *Geotechnical Investigation/Slope Stability Analysis, Cemex Eliot—Arroyo Del Valle Realignment at Lake B, Alameda, California* (Geocon 2019b) (Appendix E-2 of this SEIR).

Significance Determination

Based on project revisions and changed circumstances that may create a new or increased significant impacts, the County has amplified and augmented the analysis contained in the 1980 EIR. This evaluation is provided in the following impact analysis.

4.4.5.2 Subsequent Environmental Analysis

Impact 4.4-1: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Rupture of a Known Fault

The project site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone (Geocon 2019a). No faults are on-site, and the nearest fault is 3 miles southeast of the site. The project area is in a seismically active area, with the potential for moderately strong ground shaking from sources such as the Greenville Fault. The project includes changes to the design of approved structures (e.g., spillways, underground conveyance pipes, berms). However, no new structures are proposed and no structures would be located on a fault; thus, no new risk would be introduced.

In addition, per the slope stability analysis (see Appendix E-1), the proposed slopes on-site would achieve the required factors of safety under static and seismic conditions (Geocon 2019a). Therefore, the project's potential to introduce substantial adverse effects as a result of rupture of a known fault is less than significant and no mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-2: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Strong Seismic Ground Shaking

As discussed in Impact 4.4-1, above, no new structures are proposed and the proposed slopes on-site would achieve the required factors of safety under static and seismic conditions (Geocon 2019a); thus, no new risk would be introduced. Therefore, this impact is considered less than significant, and no mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-3: Exposure of People or Structures to Seismic-Related Ground Failure, Including Liquefaction, or Landslides

Portions of the site are mapped as having either the potential for liquefaction or landslides. As described in Impact 4.4-1, the project includes no new structures, and the proposed slopes on-site would achieve the required factors of safety under static and seismic conditions (Geocon 2019a and Geocon 2019b). Therefore, this impact would be less than significant, and no mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-4: Result in Substantial Soil Erosion or the Loss of Topsoil

Slopes in the mining areas and along the project alignment of the ADV would be susceptible to erosion and surficial degradation when exposed to rain and surface runoff. Thus, soil erosion in the realigned ADV and at Lake B would be potentially significant.

Erosion on-site is controlled through compliance with the requirements of the County's stormwater quality management plan. In addition, the on-site mine excavations drain internally and, per the slope stability analyses (see Appendices E-1 and E-2), the proposed on-site slopes would be stable as designed (Geocon 2019a and 2019b).

Silt and fined-grained materials that are washed from the aggregate would be deposited in several areas of the project site, including Lake J, Pond C, and Pond D, which could affect the potential for increased stormwater runoff and therefore erosion and sediment transport. In addition, approximately 2.1 million cubic yards of dry silt and overburden may be placed in the east end of Lake B, as shown on Sheets R-2 and R-3 of Appendix B-1, "Proposed Reclamation Plan Amendment." The lowest elevation of silt would be at approximately 220 ft msl, whereas the top elevation would be 340 ft msl, which is 29 feet below the anticipated water surface elevation in Lake B of 369 ft msl. The width of the top silt elevation would be approximately 630 feet.

Furthermore, approximately 6.4 million cubic yards of backfill materials (silts and overburden) would be placed in Lake J, to an elevation of 360 ft msl to 380 ft msl, and be contoured in to the final reclaimed ground surface, as shown on Sheets R-1 and R-3. Silts and overburden may be blended as backfill occurs. The lowest elevation of silt would be at approximately 130 ft msl while the anticipated post-mining groundwater elevation at Lake J is anticipated to be 330 ft msl, coincident

with the water level in the Shadow Cliffs Lake to the west. Thus, the silt backfill would extend 30 feet to 50 feet above the groundwater surface after reclamation. The width of the top of the silt backfill at the groundwater surface elevation would be approximately 1,450 feet, in the direction perpendicular to groundwater flow. The width of the silt at the bottom of Lake J, at 130 ft msl, would be about 200 feet.

This impact would be reduced to a less than significant level with implementation of Mitigation Measures 4.4-1, 4.4-2, 4.4-3, and 4.4-4. Mitigation Measure 4.4-1 implements an erosion control plan to prevent significant erosion or loss of topsoil relating to the realignment of the ADV. Mitigation Measure 4.4-2 calls for proper surface drainage facilities directing runoff away from slopes, vegetation, additional erosion control measures, and best management practice (BMP) devices to be maintained to reduce long-term slope degradation from erosion. Periodic inspections would be performed on a regular basis to identify and address maintenance needs under Mitigation Measure 4.4-2. Mitigation Measure 4.4-3 would require embankment fill slopes to be constructed with an inclination of 2:1 or flatter. Mitigation Measure 4.4-4 would require implementation of one of two options for cut slopes at Lake B adjacent to the ADV. Impacts to erosion and loss of topsoil as a result of the proposed project would be less than significant with mitigation incorporated.

Level of Significance before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.4-1: *Erosion Control Plan*

The Applicant, and its contractors shall adhere to the Erosion Control Plan for the ADV realignment and Lake A diversion structure prepared by Brown and Caldwell, which shall be incorporated by reference into the conditions of approval for the project.

Mitigation Measure 4.4-2: *Berm and Embankment Grading*

The Applicant shall implement the following measures to control erosion related to berm and embankment grading:

a) All earthwork operations shall be observed, and all fills tested for recommended compaction and moisture content by a representative from a County-approved geotechnical specialist.

b) Prior to commencing grading, a pre-construction conference with representatives from the Permittee, its grading contractor, if applicable, and a County-approved geotechnical specialist shall be held at the site. Site preparation, soil handling and/or the grading plans shall be discussed at the pre-construction conference.

c) Prior to commencing grading within embankment and slope areas, surface vegetation shall be removed by stripping to a sufficient depth (2 to 4 inches) to remove roots and organic-rich topsoil. Material generated during stripping that is not suitable for use as embankment or reclamation slope fill shall be stockpiled for future use as topsoil. Any existing trees and associated root systems shall be removed. Roots larger than 1 inch in diameter shall be completely removed. Smaller roots may be left in-place as conditions warrant and at the discretion of on-site field monitor.

d) To increase stability and to provide a stable foundation for the berm embankments, the full length of the embankments shall be provided with embankment-width keyways. The keyways shall have a minimum embedment depth of 3 feet into firm, competent, undisturbed soil. The actual depth of the keyway shall be evaluated during construction by

a County-approved geotechnical specialist. Keyway back-slopes shall be no flatter than 1 horizontal (H):1 vertical (V).

e) Where fill is placed on sloping ground steeper than 5H:1V, the fill shall be benched into the adjacent native materials as the fill is placed. Benches shall roughly parallel slope contours and extend at least 2 feet into competent material. In addition, a keyway shall be cut into the slope at the base of the fill. Keyways shall be at least 15 feet wide and extend at least 2 feet into competent material. Bench and keyway criteria may need revision during construction based on the actual materials encountered and grading performed in the field.

f) Pipe penetrations through the planned berms and embankments shall be avoided, if feasible. If pipe penetrations are unavoidable, the Permittee shall provide concrete cut-off collars at the penetration point to reduce potential for seepage. Reinforced concrete cut-off collars shall completely encircle the pipe and should be sized such that they are 12 to 18 inches larger than the nominal outside diameter of the pipe. Thickness shall be at least 6 inches. Water-tight filler shall be used between collars and pipes.

g) Bottoms of keyways and areas to receive fill shall be scarified 12 inches, uniformly moisture conditioned at or above optimum moisture content and compacted to at least 90% relative compaction. Scarification and recompaction operations shall be performed in the presence of a County-approved geotechnical specialist to evaluate performance of the subgrade under compaction equipment loading.

h) Engineered fill consisting of onsite or approved import materials shall be compacted in horizontal lifts not exceeding 8 inches (loose thickness) and brought to final subgrade elevations. Each lift shall be moisture-conditioned at or above optimum and compacted to at least 90% relative compaction at least 2% above optimum moisture content. Fills for the eastern Lake B fill embankments and Pond C/D separation shall be compacted to at least 95% relative compaction above optimum moisture content.

i) Fill slopes shall be built such that soils are uniformly compacted to at least 90% relative compaction at least 2% above optimum moisture content to the finished face of the completed slope. Fill slopes for the eastern Lake B fill embankments and Pond C/D separation shall be compacted to at least 95% relative compaction above optimum moisture content.

The Alameda County Community Development Agency shall be responsible for ensuring compliance.

***Mitigation Measure 4.4-3:** Embankment Fill Slope Geometry*

Fill slopes for the proposed embankment between Silt Pond C and Silt Pond D, the embankment for overburden and silt storage at the east end of Lake B, and the "shark's fin" embankment of Lake B should be constructed at an inclination of 2:1 or flatter. Mid-height bench(es) should be considered for fill slopes exceeding 50 feet in height to provide access for slope maintenance.

***Mitigation Measure 4.4-4:** Cut Slope of Lake B Adjacent to Realigned ADV*

The Permittee, or its contractor, shall implement one of the following two configurations for the cut slope of Lake B below and adjacent to the realigned ADV:

1) 2.25:1 slope; or

2) 40-foot horizontal bench at elevation 260 feet msl within a 2:1 slope.

Significance after Mitigation: Less than significant.

Impact 4.4-5: Be Located on a Geologic Unit or Soil That Is Unstable, or That Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse

Impact 4.4-3, above, discusses the potential for the project to result in impacts associated with liquefaction and landslides and concludes that these potential impacts are less than significant. Further, the risk of settlement caused by earthquakes by densification of dry alluvium material at the site is considered to be low because the existing alluvial materials are generally dense, consolidated, and somewhat cemented. As discussed at Impact 4.4-1, the proposed slopes on-site would achieve the required factors of safety under static and seismic conditions (Geocon 2019a and Geocon 2019b). Therefore, this impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-6: Be Located on Expansive Soil, as Defined in Table 18-1-B of the Uniform Building Code (1994), Creating Substantial Risks to Life or Property

The soil at the project site contains a small amount of clay (Figure 4.4-1), which is an expansive soil; however, the end use includes water management because the soil is considered porous and beneficial to recharging groundwater. The end use also does not include buildings; thus, no structures on-site would create a substantial risk to life or property. In addition, this project does not differ from the approved reclamation plan in any way that would increase risks related to expansive soil. Therefore, this impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-7: Directly or indirectly destroy a unique paleontological resource or site or unique geological feature

Reclamation activities proposed in the reclamation plan amendment would be less intensive than the mining activities that immediately precede reclamation and would not disturb more acreage (laterally or vertically) than those areas of the site that will be mined under existing approvals. Therefore, no new impacts to paleontological resources associated with reclamation activities would occur under the reclamation plan amendment. CEMEX would be required to adhere to the existing conditions of approval and mitigation measures related to protection of archaeological resources, which would apply to paleontological resources as well:

- "If, however, archaeological finds are made during excavation, work in the area should halt pending consultation of a qualified archaeologist, whose recommendations should be followed. Work could continue in other areas not near the site" (Alameda County 1980).
- "Operations shall cease in the vicinity of any suspected archaeological resource until an archaeologist is consulted and his or her recommendations followed, subject to approval by the Planning Director" (Resolution No. 87-18, Condition of Approval 13).

Therefore, impacts to paleontological resources would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

4.5—GREENHOUSE GAS EMISSIONS

This section of the subsequent environmental impact report (SEIR) documents potential impacts associated with greenhouse gas (GHG) emissions and plans for reducing GHG emissions that would occur as a result of the project.

The information in this section is based on a peer review of an applicant-prepared study and publicly available sources. The applicant-prepared study used is:

- *Air and Greenhouse Gas Emissions Study, Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (Compass Land Group 2019) (Appendix C-1, "Air Quality and Greenhouse Gases Report," of this SEIR)

This analysis was peer reviewed by the County-retained Yorke Engineering, LLC in May of 2019. The peer review letter reports are on file with the County. The applicant revised the referenced analysis and provided responses to the peer reviewer comments, which are also on file with the County. Appendix C-1, dated December 2019, adequately addressed the peer reviewer's comments and questions.

4.5.1 Greenhouse Gas Conditions at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) did not evaluate or discuss greenhouse gas. Air quality conditions at the time of the LAVQAR EIR are discussed in Section 4.2, "Air Quality."

4.5.2 Environmental Setting

This section discusses GHGs and climate change issues to provide a context for the analysis of project impacts associated with GHG emissions. It also provides a discussion of the actions and phenomena that contribute to climate change and puts into context global, national, and state emissions of GHGs. The term "climate change" is often used interchangeably with the term "global warming;" however, "climate change" is the preferred term because it helps convey that there are other changes in addition to rising temperatures (NAS 2005).

4.5.2.1 The Greenhouse Effect and Greenhouse Gases

GHGs trap heat in the atmosphere. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), are associated with certain industrial products and processes. The major GHGs emitted by human activities remain in the atmosphere for periods ranging from decades to centuries; therefore, it is expected that atmospheric concentrations of GHGs will continue to rise over the next few decades (EPA 2020d).

Human activity has been increasing the concentration of GHGs in the atmosphere (mostly carbon dioxide from combustion of coal, oil, and gas, and a few other trace gases). Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

A warming trend from anthropogenic emissions, or human activity, from the pre-industrial period to the present is predicted to persist for centuries to millennia and continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts. Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions, hot extremes in most inhabited regions, heavy precipitation in several regions, and the probability of drought and precipitation deficits in some regions (IPCC 2018).

The effect each GHG has on climate change is measured as a combination of the volume or mass of its emissions, plus the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of "carbon dioxide equivalent" (CO_2e).

4.5.2.2 Contributions to Greenhouse Gas Emissions

Global

Anthropogenic GHG emissions worldwide in 2010 totaled approximately 44,542 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (CAIT 2014). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that $MMTCO_2e$ = (million) metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that emissions of 1 million metric tons of methane are equivalent to emissions of 21 million metric tons of CO2. Six countries—China, the U.S., the Russian Federation, India, Japan, and Brazil—and the European Community accounted for approximately 66 percent of the total global emissions, approximately 28,943 $MMTCO_2e$ (CAIT 2014). Anthropogenic GHG emissions worldwide in 2011 totaled approximately 43,816 $MMTCO_2e$.

United States

In 2012, the United States produced 6,676 million metric tons (MMT) of CO_2 (EPA 2020b). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 81 percent of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93 percent of the CO_2 emissions. Since 1990, gross U.S. greenhouse gas emissions have increased by 3.7 percent. From year to year, emissions can rise and fall due to changes in the economy, the price of fuel, and other factors. In 2018, U.S. greenhouse gas emissions increased compared to 2017 levels. The increase in CO_2 emissions from fossil fuel combustion was a result of multiple factors, including increased energy use due to greater heating and cooling needs due to a colder winter and hotter summer in 2018 compared to 2017 (EPA 2020d).

State of California

According to the 2019 GHG inventory data compiled by California Air Resources Board (CARB) for the California Greenhouse Gas Inventory for 2000—2017, California emitted 424 $MMTCO_2e$ of GHGs, including emission resulting from out-of-state electrical generation (CARB 2019). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2017 are presented in Table 4.5-1, "GHG Sources in California."

TABLE 4.5-1
GHG SOURCES IN CALIFORNIA

Source	Percent of Total[a]
Agriculture	7.6%
Commercial Uses	3.6%
Electricity Generation	14.7%[b]
Industrial Uses	21.1%
Recycling and Waste	2.1%
Residential Uses	6.1%
Transportation	40.1%
High GWP Substances	4.7%
TOTAL[c]	**100%**

Source: CARB 2019
Notes:
a. Percentage of total has been rounded.
b. Includes emissions associated with imported electricity, which account for 44.07 MMT CO_2e annually.
c. Totals may not sum due to rounding.

4.5.2.3 Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources though uncertain impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Estimated global warming from human activity is currently increasing at 0.2°C (likely between 0.1°C and 0.3°C) per decade due to past and ongoing emissions (IPCC 2018).

The 2014 *Safeguarding California: Reducing Climate Risk* report prepared by the California Natural Resources Agency (CNRA) identified anticipated impacts to California due to climate change through extensive modeling efforts. The Intergovernmental Panel on Climate Change's Working Group II Report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, also describes anticipated impacts on a global scale. Collectively, the two reports indicate general climate changes in California may include the following the following events:

- Increasing evaporation;
- Rearrangement of ecosystems as species and ecosystems shift northward and to higher elevations;
- Increased frequency, duration, and intensity of conditions conducive to air pollution formation (particularly ozone);
- Reduced precipitation, changes to precipitation and runoff patterns, reduced snowfall (precipitation occurring as rain instead of snow), earlier snowmelt, decreased snowpack, and increased agricultural demand for water;
- Increased experiences of heat waves;
- Increased growing season and increased growth rates of weeds, insect pests and pathogens;
- Inundation by sea level rise, and exacerbated shoreline erosion; and
- Increased incidents and severity of wildfire events and expansion of the range and increased frequency of pest outbreaks (CNRA 2014 and IPCC 2007).

Changes described above are based on the results of several models prepared under different climatic scenarios; therefore, discrepancies may occur between projections and interpretations.

4.5.3 Regulatory Setting

Climate change has relatively recently become widely recognized as a threat to the global climate, economy, and population. As a result, the climate change regulatory setting – at the federal, state and local levels– is complex and evolving. This section identifies key legislation, executive orders, and seminal court cases related to climate change that are germane to the project's GHG emissions.

4.5.3.1 Federal

In 2002, President George W. Bush set a national policy goal of reducing the GHG emission intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18% by 2012. The goal did not establish any binding reduction mandates. Rather, the United States Environmental Protection Agency (EPA) began to administer a variety of voluntary programs and partnerships with GHG emitters in which the EPA partners with industries that produce and utilize synthetic gases to reduce emissions of particularly potent GHGs.

The Bush Administration's approach to addressing climate change was challenged in *Massachusetts et al. v. Environmental Protection Agency*, 549 U.S. 497 (2007). In this decision, the U.S. Supreme Court held that the EPA was authorized by the Clean Air Act to regulate CO2 emissions from new motor vehicles. The Court did not mandate that the EPA enact regulations to reduce GHG emissions, but found that the only instances in which the EPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

On December 7, 2009, the EPA issued an endangerment finding under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to greenhouse gas pollution. These findings provide the basis for adopting new national regulations to mandate GHG emission reductions under the federal Clean Air Act.

The following four sections summarize EPA's recent regulatory activities with respect to various types of GHG sources.

Stationary Sources

Mandatory Greenhouse Gas Reporting Rule

Congress passed the Consolidated Appropriations Act of 2008 (HR 2764) in December 2007, which includes provisions requiring the establishment of mandatory GHG reporting requirements. On September 22, 2009, EPA issued a final rule to require reporting of GHG emissions from all sectors of the United States economy. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO_2e per year are required to report GHG emissions data to EPA annually. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to EPA in 2011. This program covers approximately 85 percent of the nation's GHG emissions and applies to roughly 10,000 facilities. USEPA's reporting system provides a better understanding of GHG sources and will guide development of the best possible policies and programs to reduce emissions. The data also allows the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective methods to reduce emissions in the future.

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The Clean Air Act established the Prevention of Significant Deterioration (PSD) and Title V programs, which apply to stationary sources that emit certain levels of regulated air pollutants (generally those pollutants for which USEPA has established ambient air quality standards and their precursors or has established emission standards). The PSD applicability thresholds are up to 250 tons per year (tpy) of an attainment pollutant, while the Title V applicability thresholds are up to 100 tpy of a regulated air pollutant. On June 3, 2010, EPA published a final rule that tailors the applicability criteria that determine whether stationary sources and modification projects become subject to permitting requirements for GHG emissions under the PSD and Title V programs of the Clean Air Act (tailoring rule). Under the tailoring rule, only the largest sources of GHGs (i.e., those responsible for 70 percent of the GHG pollution from stationary sources) would be subject to these GHG permitting requirements.

In 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146), finding that the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a permit pursuant to the "Clean Air Act's Prevention of Significant Deterioration" or "Title V" operating permit programs. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT). The U.S. EPA's Greenhouse Gas Reporting Program requires facilities that emit 25,000 MTCO2e. or more of GHG to report their GHG emissions to the U.S. EPA to inform future policy decisionmakers (EPA 2020f).

Mobile Sources

EPA and NHTSA Joint Rulemaking for Vehicle Standards

In response to the Massachusetts v. EPA U.S. Supreme Court ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the EPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. EISA reinforces the energy reduction goals for federal agencies put forth in Executive Order 13423, as well as introduces more aggressive requirements. The three key provisions enacted are the Corporate Average Fuel Economy Standards, the Renewable Fuel Standard (RFS), and the appliance/lighting efficiency standards. The law includes an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. (EPA 2020e). On March 31, 2020, the National Highway and Traffic Safety Administration (NHTSA) and EPA finalized CAFE and carbon dioxide emissions standards for model years 2021-2026 (NHSTA 2020).

On June 30, 2009, the EPA granted a waiver for California for its greenhouse gas emission standards for motor vehicles. In August 2016, the USEPA and the NHTSA adopted Phase 2 of the Heavy Duty Vehicle National Program. Phase 2 aims to set performance-based standards that would be met through wider deployment of existing and advanced technologies. For diesel engines, the proposed standards began for model year 2018 engines and phase in through 2027. Phase 2 is expected to reduce GHG emissions by an additional 10 percent.

However, EPA withdrew the waiver on September 19, 2019 and announced "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." NHTSA also proposed

regulatory text implementing its statutory authority to set nationally applicable fuel economy standards that made explicit that California's programs would also be preempted under NHTSA's authorities. The SAFE Vehicles Rule sets fuel economy and carbon dioxide standards that increase 1.5% in stringency each year from model years 2021 through 2026. These standards apply to both passenger cars and light trucks (NHSTA 2020). However, California and twenty three other states and the Cities of Los Angeles and New York have challenged the legality of the SAFE program in federal court.

Additional GHG Rules and Policies

In addition to the rules and regulations developed with respect to stationary and mobile sources, discussed above, other federal developments have aimed to reduce GHGs from other sources, including land use activities.

Energy Independence and Security Act

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007 (EISA). Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory RFS requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by Model Year 2020; directs National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Partnership for Sustainable Communities

On June 16, 2009, the DOT, US Department of Housing and Urban Development, and USEPA announced the creation of the Partnership for Sustainable Communities (Partnership). The Partnership was formed to help improve access to affordable housing and transportation choices, and to lower transportation costs while protecting the environment. In order to achieve these goals, the Partnership agencies have and will continue to incorporate the following six livability principles into federal funding programs, policies and legislative proposals:

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate and leverage federal policies and investment.
- Value communities and neighborhoods.

Since 2009, the Partnership awarded more than $4 billion in grants to support livability investments, provided recommendations for the sustainable siting of federal facilities, and participated in various forums to encourage sustainable housing and transportation strategies. Going forward, the Partnership plans to continue to work with existing grantees to encourage economic growth and implementation of livability principles, and leverage off of these efforts to provide additional communities with lessons learned from these experiences, as well as improving the federal government's ability to provide additional communities with more streamlined access to Partnership programs (EPA 2014).

CEQ NEPA Guidelines on GHGs

On June 26, 2019, the Council on Environmental Quality (CEQ) published draft guidance on how National Environmental Policy Act (NEPA) analysis and documentation should address greenhouse gas (GHG) emissions and climate change. It recommends agencies attempt to quantify a proposed action's projected direct and reasonably foreseeable indirect GHG emissions when the amount of those emissions is substantial enough to warrant quantification, and when it is practicable to quantify them using available data and GHG quantification tools. When an agency determines that the tools, methods, or data inputs necessary to quantify a proposed action's GHG emissions are not reasonably available, or it otherwise would not be practicable, the agency should include a qualitative analysis and explain its basis for determining that quantification is not warranted.

The draft guidance provides reporting tools and instructions on how to assess the effects of climate change. The draft guidance does not apply to land and resource management actions, nor does it propose to regulate greenhouse gases. The CEQ extended the comment period on the draft guidance, which was scheduled to close on July 26, 2019, for 31 days until August 26, 2019. Although CEQ has not yet issued final guidance, various NEPA documents are beginning to incorporate the approach recommended in the draft guidance (CEQ 2019).

4.5.3.2 Regional

Western Regional Climate Action Initiative

The Western Regional Climate Action Initiative (WCI) is a partnership among seven states, including California, and four Canadian provinces to implement a regional, economy-wide cap-and-trade system to reduce global warming pollution. The WCI will cap GHG emissions from the region's electricity, industrial, and transportation sectors with the goal to reduce the heat trapping emissions that cause global warming to 15% below 2005 levels by 2020. When the WCI adopted this goal in 2007, it estimated that this would require 2007 levels to be reduced worldwide between 50% and 85% by 2050. California is working closely with the other states and provinces to design a regional GHG reduction program that includes a cap-and-trade approach. California Air Resources Board's (CARB) planned cap and-trade program, discussed below, is also intended to link California and the other member states and provinces.

California

California has adopted various administrative initiatives and enacted legislation relating to climate change, much of which sets aggressive goals for GHG emissions reductions within the state. However, none of this legislation provides definitive direction regarding the treatment of climate change in environmental review documents prepared under CEQA. In particular, the amendments to the CEQA Guidelines do not require or suggest specific methodologies for performing an assessment or thresholds of significance, and do not specify greenhouse gas reduction mitigation measures. Instead, the CEQA amendments continue to rely on lead agencies to choose methodologies and make significance determinations based on substantial evidence, as discussed in further detail below.

Consequently, no State agency has promulgated binding regulations for analyzing GHG emissions, determining their significance, or mitigating any significant effects in CEQA documents.

The discussion below provides a brief overview of CARB and Office of Planning and Research (OPR) documents and of the primary legislation that relates to climate change that may affect the emissions associated with the proposed project. It begins with an overview of the primary regulatory acts that have driven GHG regulation in California, which underlie many of the GHG rules and regulations that have been developed.

Executive Order S-3-05 (Statewide GHG Targets)

California Executive Order S-03-05 (June 1, 2005) mandates a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. Although the 2020 target is the core of AB 32, and has effectively been incorporated into AB 32, the 2050 target remains the goal of the Executive Order only.

Assembly Bill 32 and Senate Bill 32 (Statewide GHG Reductions)

The California Global Warming Solutions Act of 2006, Assembly Bill (AB) 32, was signed into law in September 2006 after considerable study and expert testimony before the Legislature. The law instructs CARB to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The Act directed CARB to set a GHG emission limit of approximately 28.5% below "business-as-usual" predictions of year 2020 GHG emissions, based on 1990 levels, to be achieved by December 31, 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner, and required CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. SB 32 and Executive Order B-30-15 requires the state to reduce emissions by 40 percent below 1990 levels by 2030.

On December 11, 2008, CARB adopted the initial Scoping Plan to achieve the goals of AB 32. The Scoping Plan established an overall framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of approximately 29% below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business as usual"). The 2008 Scoping Plan evaluated opportunities for sector-specific reductions, integrated all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identified additional measures to be pursued as regulations, and outlined the role of a cap-and-trade program. In a report prepared on September 23, 2010, CARB indicated 40 percent of the reduction measures identified in the Scoping Plan had been secured. Although the cap-and-trade program began on January 1, 2012 (after CARB completed a series of activities dealing with the registration process, compliance cycle, and tracking system), covered entities did not have an emissions obligation until 2013.

In July 2011, CARB revised its "business as usual" GHG emission estimate for 2020, in order to account for the recent economic downturn in its emission projections. The estimate presented in the scoping plan (596 million metric tons CO_2e) was based on pre-recession, 2007 data from the Integrated Energy Policy Report. CARB also updated the projected "business as usual" 2020 GHG emissions to 545 million metric tonnes CO_2e at this time. The Scoping Plan was reapproved in August 2011 with the program's environmental documentation.

On February 10, 2014, CARB released the public draft of the "First Update to the Scoping Plan." "The First Update" built upon the 2008 Scoping Plan with new strategies and recommendations, and

identified opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. "The First Update" defined CARB's climate change priorities over the next five years, and set the groundwork to reach post-2020 goals set forth in Executive Orders S-3-05 and B-16-12. It also highlighted California's progress toward meeting the 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. "The First Update" evaluated how to align the State's long-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. "The First Update" to the Scoping Plan was approved by the Board on May 22, 2014 (CARB 2020).

The second update to the scoping plan, the *2017 Climate Change Scoping Plan* update (CARB 2017), was adopted by CARB in December 2017. The primary objective for the *2017 Climate Change Scoping Plan* is to identify the measures required to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030) established under Executive Order B-30-15 and SB 32. The 2017 Climate Change Scoping Plan identifies an increased need for coordination among State, Regional, and local governments to realize the potential for GHG emissions reductions that can be gained from local land use decisions. It notes that emissions reductions targets set by more than one hundred local jurisdictions in the State could result in emissions reductions of up to 45 $MMTCO_2e$ and 83 $MMTCO_2e$ by 2020 and 2050, respectively. To achieve these goals, the 2017 Scoping Plan Update includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons by 2050. The major elements of the 2017 Climate Change Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks;
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030);
- Implementation of SB 350, which expands the Renewable Portfolio Standard (RPS) to 50 percent and doubles energy efficiency savings by 2030;
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks;
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH4 (methane) and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030;
- Continued implementation of SB 375;
- Post-2020 Cap-and-Trade Program that includes declining caps;
- 20 percent reduction in GHG emissions from refineries by 2030;
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink (CARB 2017).

Energy Conservation Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, of the California Code of Regulations [CCR], known as "Title 24") were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Since that time, Title 24 has undergone several revisions. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated

periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards, referred to as "CALGreen". The California Green Building Standards Code (Title 24, proposed Part 11) was adopted as part of the California Building Standards Code (24 CCR). Part 11 which adopts certain mandatory standards for residential and nonresidential development and imposes a number of requirements on California buildings, including those with respect to planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and indoor environmental quality. The California Green Building Standards Code also contains a variety of voluntary measures, which local governments can choose to require and which would enable buildings to qualify for special recognition. In part, the purpose of the California Green Building Code is to reduce greenhouse gas emissions from buildings.

CALGreen contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning (i.e. bringing into operation and ensuring quality) of projects over 10,000 square feet. Two tiers of voluntary measures apply to non-residential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, which were adopted May 9, 2018 and went into effect on January 1, 2020, improve upon existing standards, focusing on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and Indoor Air Quality (IAQ) requirements; and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 standards also propose several smaller improvements in energy efficiency, such as lighting controls and improvements for water heating systems.

Mobile Sources

Senate Bill 375 (Sustainable Communities and Climate Protection Act)

In January 2009, California SB 375, known as the Sustainable Communities and Climate Protection Act, went into effect. SB 375 provides for a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 includes provisions for streamlined CEQA review for some infill projects such as transit oriented development. SB 375 also requires Metropolitan Planning Organizations (MPOs) relevant to the project area (including the Association of Bay Area Governments [ABAG]) to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans (RTPs) that will achieve GHG emission reduction targets set by CARB. The applicable SCS for the project area is called Plan Bay Area 2040 (see Section 4.5.2.4).

The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs to be adopted in September 2010. The proposed reduction targets for the Bay Area region were seven percent by year 2020 and 15 percent by year 2035. On February 15, 2011, CARB's Executive Officer approved the final targets. CARB filed a Notice of Decision two days later on February 17, 2011.

SB 375 also required CARB to appoint a Regional Targets Advisory Committee (RTAC) by January 31, 2009, to recommend factors for CARB to consider and methodologies for it to use in setting GHG emission reduction targets for each region. The RTAC must include representation from the League of California Cities, the California State Association of Counties,

MPOs, developers, planning organizations, and other stakeholders. In January 2009, CARB appointed 21 members to the RTAC, from a variety of constituencies. On September 29, 2009, the RTAC released its recommendations to CARB, representing a key step in the establishment of regional targets for inclusion in sustainable community strategies. The RTAC recommendations focus largely on the manner in which CARB staff should interact with various stakeholders during the target-setting process, and how staff should use empirical studies and modeling in establishing regional GHG targets.

Senate Bill 743

Traditionally, transportation impacts have been evaluated pursuant to CEQA by examining whether the project is likely to cause automobile delay at intersections and congestion on nearby individual highway segments, and whether this delay will exceed a certain amount (this is known as Level of Service or LOS analysis). SB 743, which was signed into law in 2013, initiated an update to the CEQA Guidelines to change how lead agencies evaluate transportation impacts, with the goal of better measuring the actual transportation-related environmental impacts, including greenhouse gas emissions, of any given project.

According to the Legislature: "New methodologies under the California Environmental Quality Act [were] needed for evaluating transportation impacts that are better able to promote the state's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations."

Starting on July 1, 2020, agencies analyzing the transportation impacts of new projects must look at a metric known as vehicle miles traveled (VMT) instead of LOS. VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto roads, the project may cause a significant transportation impact.

Agencies have used VMT as a concept and metric for some time. Prior to SB 743, VMT was already being used in CEQA to study other potential impacts such as greenhouse gas, air quality, and energy impacts.

Assembly Bill 1493 (Mobile Source Reductions)

AB 1493 required CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model year 2009 and after. The bill required the California Climate Action Registry (CCAR) to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by CARB in granting emission reduction credits. The bill authorized CARB to grant emission reduction credits for reductions of GHG emissions prior to the date of the enforcement of regulations, using model year 2000 as the baseline for reduction.

In 2004, CARB applied to the EPA for a waiver under the Federal Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the EPA in December 2007. In January 2008, the State Attorney General filed a lawsuit against the EPA challenging the denial of California's request for a waiver to regulate and limit GHG emissions from

these vehicles. In January 2009, President Barack Obama issued a directive to the EPA to reconsider California's request for a waiver, which the EPA granted on June 30, 2009, as discussed further below. As part of this waiver, the EPA specified that CARB may not hold a manufacturer liable or responsible for any noncompliance caused by emission debits generated by the manufacturer for the 2009 model year. The waiver was later withdrawn on September 19, 2019 under the "SAFE Vehicles Rule Part One: One National Program," discussed above. As noted above, the withdrawal of the waiver and implementation of SAFE are currently undergoing suit by California and several other states and cities.

Low Carbon Fuel Standard (LCFS)

Executive Order S-01-07 (January 18, 2007) requires a 10% or greater reduction (from current transportation fuels) in the average fuel carbon intensity for CARB-regulated transportation fuels in California. CARB identifies the Low Carbon Fuel Standard as a Discrete Early Action item under AB 32, and the final resolution (09 31) was issued on April 23, 2009. CARB is currently in the process of updating its Carbon Intensity Lookup Tables to add new pathways to calculate emissions from fuel sources.

CEQA Guidelines

Senate Bill 97 (CEQA Guidelines)

SB 97 required OPR to prepare amended CEQA Guidelines for submission to the CNRA regarding GHG analysis and feasible mitigation of the effects of GHG emissions as required by CEQA. The CNRA was required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. These amendments became effective as of March 18, 2010. The adoption of SB 97 and subsequent CEQA amendments are widely recognized as confirmation that lead agencies are required to include an analysis of climate change impacts in CEQA documents.

CEQA Amendments

Pursuant to SB 97, OPR developed proposed amendments to the CEQA Guidelines (CEQA Amendments) for the feasible mitigation of GHG emissions and their effects, which it first submitted to the Secretary of the CNRA on April 13, 2009. After a public review and comment period, on December 30, 2009, the CNRA adopted the CEQA Amendments, which became effective on March 18, 2010.

The CEQA Amendments for Greenhouse Gas Emissions state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Amendments note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards." Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent a project may increase or reduce GHG emissions as compared to the environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

In addition, Section 15064.7(c) of the CEQA Amendments specifies that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." Similarly, the revision to CEQA Appendix G, "Environmental Checklist Form," which is often used as a basis for lead agencies' selection of significance thresholds, does not prescribe specific thresholds. Rather, Appendix G asks whether the project would conflict with a plan, policy or regulation adopted to reduce GHG emissions; or generate GHG emissions that would significantly affect the environment, indicating that the determination of what is a significant effect on the environment should be left to the lead agency.

Accordingly, the CEQA Amendments do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Amendments emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA.

The CEQA Amendments indicate that lead agencies should consider all feasible means, supported by substantial evidence and subject to monitoring and reporting, of mitigating the significant effects of GHG emissions. As pertinent to the project, these potential mitigation measures, set forth in Section 15126.4(c), may include (1) measures in an existing plan or mitigation program for the reduction of GHG emissions that are required as part of the lead agency's decision; (2) reductions in GHG emissions resulting from a project through implementation of project design features; (3) off-site measures, including offsets, to mitigate a project's emissions; and (4) carbon sequestration measures.

Among other things, the CNRA noted in its Public Notice for these changes that impacts of GHG emissions should focus on the cumulative impact on climate change. The Public Notice states:

> While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before [CNRA] indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project's incremental contribution of greenhouse gas emissions is cumulatively considerable.

Thus the CEQA Amendments continue to make clear that the significance of greenhouse gas emissions is most appropriately considered on a cumulative level.

Other State GHG Activities

Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08 instructing California agencies to assess and prepare for the impacts of rising sea level associated with climate change. Rising sea levels could have devastating effects on California's infrastructure, such as threatening the state's water supply, highways, and airports. Pursuant to S-13-08, by June 30, 2009, the CNRA must have assessed California's vulnerability to climate change impacts and outlined solutions to climate change problems. The CNRA released the 2009 Climate Adaptation Strategy on August 3, 2009. The report summarizes the latest science on how climate change could impact the state and provides recommendations on how to manage against those threats in seven sector areas. The report is to be reviewed every two years.

Executive Order S-13-08 also required the CNRA to request that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea Level Rise Assessment Report by December 1, 2010. In October 2010, the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Action Team released the State of California Sea-Level Rise Interim Guidance Document. The final report from the National Academy of Sciences, *Sea-Level Rise for the Coasts of California, Oregon, and Washington*, was released in June 2012. The final report was updated in 2013, and again in 2017 in response to Governor Brown's Executive Order B-30-15, establishing a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. The current 2017 version of the report is published under the name *Rising Seas in California: An Update on Sea-Level Rise Science.* The updated guidance incorporates new information presented in the NAS Report to reflect recent advances in ice loss science and projections of sea-level rise.

Renewable Power Requirements

A major component of California's Renewable Energy Program is the Renewable Portfolio Standard (RPS) established under SBs 1078 (Sher), 107 (Simitian), and 2X (Simitian). Under the RPS, certain retail sellers of electricity are required to increase the amount of renewable energy each year by at least one percent until they reach twenty percent by December 31, 2010, with a final goal of 33 percent by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from the project because electricity production from renewable sources is generally considered "carbon neutral." For purposes of this analysis, it is assumed that the production of electricity from these renewable sources does not produce any net emissions of CO_2.

Vehicle Emissions Standards/Improved Fuel Economy

AB 1493 (Pavley) and the Low Carbon Fuel Standard (LCFS) is a clean-car standard that reduces GHG emissions from new passenger vehicles (light duty auto – medium duty vehicle [LDAMDV]) from 2009 through 2016, and is anticipated to reduce GHG emissions from passenger vehicles by 30% in 2016.. The LCFS requires a reduction of 2.5% in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10% by 2020.

For on-road vehicle CO_2 emissions, California Emissions Estimator Model (CalEEMod) applies AB 1493 and LCFS reductions to the appropriate vehicle classes for scenario years 2011 and after, based on CARB's EMFAC model and associated post processors.

4.5.3.3 Local

Bay Area Air Quality Management District Policies

The Bay Area Air Quality Management District (BAAQMD) is the primary agency responsible for comprehensive air pollution control in the entire San Francisco Bay Area Air Basin. BAAQMD adopted its CEQA significance thresholds for greenhouse gas emissions on June 2, 2010, and presents these thresholds along with methods for evaluating compliance in its guidance document entitled, "California Environmental Quality Act Air Quality Guidelines (Updated May 2017)."

Permitted stationary source emissions of GHG are subject to a 10,000 metric tonne/year significance threshold. This is based upon a determination that approximately 95 percent of all GHG emissions from new permit applications for stationary sources in the San Francisco Bay Area would be captured by this threshold.

BAAQMD's significance thresholds for land use development projects (e.g. residential and nonresidential building energy use, mobile sources, area sources, and indirect sources associated with water usage) are based primarily upon a determination of what GHG-emission reductions are required from land use development projects in order to achieve AB 32's emission-reduction mandates. BAAQMD presents three different criteria for determining significance of a project's GHG emissions. Compliance with any one of these three options is sufficient to demonstrate compliance with the significance threshold; it is not necessary for a project to meet all three criteria. The first option was determined based upon an assessment of the "appropriate share" required of a land use development project under BAAQMD's jurisdiction in order to achieve AB 32's emission-reduction goals. After conducting a "gap analysis" to determine what reductions would be necessary after accounting for legislatively-mandated reductions, BAAQMD determined that a "bright line" threshold of 1,100 metric tonnes CO_2e per year was appropriate for non-stationary operational emission sources. BAAQMD recognizes, however, that this threshold is based upon conservative assumptions about what GHG-emission-reduction requirements will be in place and that, in particular, as AB 32 and SB 375 are implemented, a higher threshold may be appropriate.

The second option is also based on reductions necessary to achieve AB 32's requirements. An efficiency metric based on the service population (the residential population plus the number of jobs associated with the land-uses) was determined such that, on a per service population basis, a project would be consistent with AB 32's mandates. This efficiency threshold is 4.6 tonnes per service population per year for non-stationary operational emissions.

The third option is compliance with a Qualified GHG Reduction Strategy that includes enforceable measures to reduce GHG emissions consistent with AB 32 goals or Executive Order S-03-05 targets. Such Qualified GHG Reduction Strategies must meet the requirements provided in Section 15183.5 of the State CEQA Guidelines. BAAQMD's guidance also recognizes, consistent with Section 15183.5(c) of the State CEQA Guidelines that for projects located within an area covered by an adopted Sustainable Communities Strategy or Alternative Planning Strategy under SB 375, emissions from cars and light duty trucks need not be analyzed in the environmental analysis.

Plan Bay Area 2040

As discussed above, SB 375 is intended to help achieve AB 32's goals by coordinating land use and transportation planning, and funding priorities. SB 375 requires each MPO in California to develop an SCS as part of its RTP that will achieve the GHG-reduction targets required by AB 32. As required by SB 375, the MTC and ABAG adopted its previous plan, Plan Bay Area, in July 2013. As the Bay Area's first regional transportation plan to include an SCS, the original Plan Bay Area charted a course for reducing per-capita greenhouse gas emissions through the promotion of more compact, mixed-use residential and commercial neighborhoods near transit. Plan Bay Area supported Priority Development Areas (PDAs) selected and approved by city and county governments with planning grants, technical assistance, and prioritization for regional and state transportation and affordable housing funds.

Plan Bay Area 2040 is a limited and focused update that builds upon the growth pattern and strategies developed in the original Plan Bay Area but with updated planning assumptions that incorporate key economic, demographic and financial trends from the last four years.

SB 375 requires that the SCS developed by each MPO provide a strategy for achieving the reduction targets established by CARB. For Plan Bay Area 2040, the regional GHG emissions reduction targets for cars and light-duty trucks, on a per-capita basis, is 15 percent for 2040.

San Francisco Bay Conservation and Development Commission

The San Francisco Bay Conservation and Development Commission (BCDC) was first established as a temporary state agency by the McAteer-Petris Act. The Commission was charged with preparing a plan for the long-term use of the Bay and regulating development in and around the Bay while the plan was being prepared. The San Francisco Bay Plan, which was completed in January 1969, includes policies on issues critical to the wise use of the Bay ranging from ports and public access to design and transportation. The Bay Plan also contains maps of the entire Bay which designate shoreline areas that should be reserved for water-related purposes like ports, industry, public recreation, airports, and wildlife refuges.

In August 1969, the McAteer-Petris Act was amended to make BCDC a permanent agency and to incorporate the policies of the Bay Plan into state law. In 1977 the Commission's authority was expanded to provide special protection of the Suisun Marsh. The BCDC is also the federally-designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This designation empowers the BCDC to use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are consistent with the policies of the Bay Plan and state law.

On October 6, 2011, the BCDC approved amendments to the Bay Plan. The amendments address climate change by updating several sections of the Bay Plan, including Safety of Fills, Tidal Marshes and Tidal Flats, Shoreline Protection, and Public Access, and by adding a new climate change section with new findings and policies. There are five policy goals for the approved amendments:

1. Update language on sea level rise. This current policy language recommends that new development not be approved in low-lying areas that are in danger of flooding now or in the future unless the development is elevated above possible flood levels. The amended policies allow protection from flooding, encourage innovative means of dealing with flood danger, and make it clear that local governments will determine how best to deal with development proposals inland of the Commission's jurisdiction.
2. Encourage a variety of types of projects that have regional benefits. Proposed new development will continue to be evaluated by the Commission on a case-by-case basis to determine if the benefits of a project outweigh the risk from flooding and to ensure steps are taken to deal with the flooding danger.
3. Continue to protect the Bay and other valuable natural resources within BCDC's jurisdiction.
4. Continue to protect existing tidal wetlands and, where appropriate, expand them. To accomplish this, resource protection and habitat enhancement in undeveloped low-lying areas will be encouraged, but development will not be absolutely prohibited in these areas.
5. Work with its regional partners, local governments, businesses, labor, environmentalists, investors, insurers, and the general public to develop a comprehensive regional strategy that deals with all the impacts of climate change.

Alameda County

Community Climate Action Plan

In February 2014, Alameda County Board of Supervisors approved the final draft of the Alameda County (Unincorporated Areas) Community Climate Action Plan, which would apply to several communities including Sunol. The plan outlines measures to reduce County wide greenhouse gas emissions by more than 15 percent by 2020, through initiatives involving land use, transportation choices, water conservation, waste diversion, energy use, and green infrastructure. The plan is

incorporated into the Countywide General Plan as the Community Climate Action Plan Element. The County is planning to begin the process to update its Community Climate Action Plan beginning in the third quarter of Calendar Year 2021. As the public review period of this SEIR is anticipated to occur well before this time, the potential for discovery of new information that might require updating the Final SEIR is unlikely.

4.5.4 Analysis Methodology and Significance Criteria

The following sections discuss the methods for evaluating project emissions of greenhouse gasses.

4.5.4.1 Significance Criteria

Appendix G of the CEQA Guidelines identifies the following impact issues in Greenhouse Gas Emissions tables of the Appendix G Environmental Checklist, asking whether the project would:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

4.5.4.2 Methodology

Emissions associated with a project are subject to two types of GHG emission thresholds: one specifically for BAAQMD permit-requiring stationary sources and one for other non-permit, land use development-related sources. Stationary sources are subject to a significance threshold of 10,000 metric tonnes of CO_2e per year; however, the proposed project does not propose any stationary sources as the existing plants on the site are not part of the project. The project's annual emissions inventory (i.e., excluding stationary source emissions) was compared against the "bright line" threshold of 1,100 metric tonnes CO_2e /year. It was also used to determine the project's compliance with BAAQMD's efficiency-based significance threshold of 4.6 metric tonnes CO_2e/service population/year, where service population is the sum of the project's employees (the service population can also include residents, however for this project there are no residents). In addition, consistent with BAAQMD guidance, one-time construction emissions were quantified and evaluated for compliance with AB32 GHG reduction goals; however, BAAQMD does not provide significance thresholds for construction-related GHG emissions.

Units of Measurement: Tonnes of CO_2 and CO_2e

The term "GHGs" refers to gases that contribute to the natural greenhouse effect, such as CO_2, CH_4, N_2O, and water; and to gases that are man-made and emitted through the use of modern industrial products, such as HFCs and CFCs. The most important greenhouse gas in human-induced global warming is CO_2. While many gases have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for 85% of the GWP of all GHGs emitted by the United States.

The effect each of these gases has on global warming is a combination of the volume of their emissions and their GWP. GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming relative to how much warming would be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent than CO_2, with GWPs of 21 and 310, respectively. GHG emissions are typically measured in terms of mass of CO_2e. CO_2e are calculated as the product of the mass of a given GHG and its specific GWP.

In many sections of the air report, including the final summary sections, emissions are presented in units of CO_2e either because the GWPs of CH_4 and N_2O were accounted for explicitly, or the CH_4 and N_2O are assumed to contribute a negligible amount of GWP when compared to the CO_2 emissions from that particular emissions category.

In Appendix C-1, tonnes are used to refer to metric tonnes (1,000 kilograms). Tons will be used to refer to short tons (2,000 lbs.). Additionally, exact totals presented in all tables and report sections may not equal the sum of components due to independent rounding of numbers.

Overall Calculation Methodology

GHG emissions were estimated in accordance with the BAAQMD CEQA guidelines and the CARB Local Government Protocols (LGOP). Emissions from indirect energy use were quantified based on a combination of LGOP emission factors and publicly available data from the local utility, PG&E. A combination of vendor-provided data and EPA AP-42 emission factors were used to quantify emissions from existing stationary sources and certain mobile sources. CARB's equipment emissions models, Emission Factor Model (EMFAC) and Off-Road Emissions Inventory Program model (OFFROAD), were used to estimate emissions from on-road employee and vendor vehicles and off-road construction equipment. CARB engine certificate emission factors were used for mobile pumps. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

Alameda County defaults were used in the EMFAC and OFFROAD model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by EMFAC and OFFROAD can be found in their User's Guides and associated appendices.

Development of GHG Emissions Inventory

The project is located within the Bay Area Air District, and the emissions inventory has been developed in accordance with BAAQMD guidelines. As recommended in the BAAQMD CEQA guidelines, the project emissions inventory considers the following categories of GHG emissions, as applicable:

- emissions from construction activities,
- stationary source emissions,
- non-stationary off-road equipment emissions,
- indirect energy use emissions,
- mobile source emissions,
- emissions associated with water and wastewater
- emissions due to land use (vegetation) changes, and
- area source emissions, from sources such as landscaping equipment, consumer products, or architectural coatings.

GHG emissions were quantified in accordance with the BAAQMD CEQA guidelines and the CARB LGOP based on a combination of site-specific data, electricity generation emission factor from Pacific Gas and Electric (PG&E), and emission estimation software programs developed by CARB, including EMFAC and OFFROAD models. EMFAC compiles real fleet data on the county-level for the state of California, and provides emission factors based on the project's vehicle fleet and year of use. OFFROAD estimates

the activity and emissions of off-road mobile emissions sources, such as construction equipment, based on the project's equipment fleet and year of use.

The GHG emissions estimates contained in Appendix C-1 incorporate reductions in emissions from electricity generation that will occur between now and full buildout as a result of promulgated regulations. Specifically, the emissions estimated for electricity consumption assumes that there will be an increase in energy production from renewables or non-GHG producing sources given the requirements of the RPS. Direct energy consumption resulting from the proposed project would largely be limited to the operation of the low flow diversion pumps for the ADV realignment, which were modeled by the air consultant by hand using CARB emissions factors for pumps.

Emissions Inventory Scope, Assumptions and Limitations

Simplifying and conservative assumptions regarding energy use were applied during the development of this GHG inventory. BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. In the absence of a BAAQMD-adopted construction GHG threshold, the Air Quality and Greenhouse Gases Study compared project emissions to BAAQMD's operational threshold as a reasonable proxy for furthering AB 32 GHG reduction goals. BAAQMD's operational thresholds are used to determine significance of long-term operation of land uses and developments, often with far greater GHG emissions potentials than that of the proposed project.

Existing operations emissions estimates are provided in Appendix C-1 for informational purposes and evaluated using a 5-year annual averaging period for production between 2013 through 2017. In order to evaluate these sources, the air consultant primarily relied upon CalEEMod for mining-related emissions, EPA AP-42 emission factors and BAAQMD regulation emissions standards for processing plant related emissions, and the CARB's 2017 EMFAC 1 model for mobile source emissions. For GHG emissions estimates, the air consultant used emission factors developed by Pacific Gas & Electric Company, the EPA (AP-42), and the Climate Registry (Compass Land Group 2019). Lastly, legislation and rules regarding climate change, as well as scientific understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventory in Appendix C-1 is a reflection of the guidance and knowledge currently available.

4.5.5 Project Impacts and Mitigation Measures

4.5.5.1 LAVQAR EIR Impact Analysis

As previously described under Section 4.2, "Air Quality," air quality impacts were determined to be less than significant with implementation of mitigation. The 1981 project included the on-site operation of mobile equipment related to the excavation, grading, and transportation of materials on-site; the processing of mined materials; the backfill of slopes, and revegetation activities (Alameda County 1980: 40-41).

The approved project includes the following mitigation of air quality impacts:

- Availability of reclaimed land for higher intensity land uses does not necessarily mean that the land would actually be put to such uses. The potential impact on air quality would be eliminated by adherence to environmental policies which do not allow large scale development which would measurably deteriorate air quality.

However, greenhouse gas emissions were not analyzed in the LAVQAR EIR.

Project Revisions

As described under Section 4.2, "Air Quality," previously, the project involves revisions to approved reclamation activities and does not involve evaluation of permitted mining or processing activities. The activities and equipment used would be similar to the equipment that was evaluated in the LAVQAR EIR, except that the proposed project would not include processing mined materials, which would reduce emissions compared to the 1981 project. In addition, the equipment used today is more efficient and produces fewer emissions than the equipment proposed to be used as part of the 1981 project.

Changed Circumstances

No changed circumstances related to the project would create a new or increased significant impact to greenhouse gas emissions.

New Information

Since the date of the certification of the LAVQAR EIR, various state laws have been adopted to require the reduction of greenhouse gas emissions. CEMEX has submitted the *Air and Greenhouse Gas Emissions Study*, which has been peer reviewed by the County (see Appendix C-1). The evaluation below focuses on emissions associated with reclamation activities and does not quantify emissions associated with ongoing mining. Emissions estimates for existing mining and processing uses are presented in Appendix C-1 for informational purposes only. The analysis quantifies estimated greenhouse gas emissions associated with reclamation activities under existing conditions (baseline or environmental setting) and under the proposed SMP-23 reclamation plan amendment, as these potential impacts were not considered in the LAVQAR EIR and this is new information.

4.5.5.2 Subsequent Environmental Analysis

Impact 4.5-1: Gas emissions generated by reclamation activities could have a significant impact on global climate change.

BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. Instead, to provide a conservative analysis of potential project-related GHG emissions, modeled GHG emissions are presented in relation to BAAQMD's operational thresholds of significance. The modeling results indicate that Project GHG emissions are below applicable BAAQMD operational thresholds of significance for CEQA. In contrast to operational GHG emissions, project GHG emissions are temporary in nature and will cease when reclamation is complete Table 4.5-2, "Greenhouse Gas Emissions Analysis," presents the GHG emissions analysis.

TABLE 4.5-2
GREENHOUSE GAS EMISSIONS ANALYSIS (MT/YEAR)[2]

Emissions Category	CO_2e
Project Emissions	1,069.88
BAAQMD CEQA Significance Threshold[3]	1,100
Exceeds Threshold (Yes/No)?	**No**

Source: Compass Land Group 2019

Notes:

1. MT= metric tons. CO2e = carbon dioxide equivalent.
2. Proposed project emissions are reported for model year 2022, which is the highest emitting model year for CO2e. See Appendix A-1 of the Air and Greenhouse Gas Emissions Study (Appendix C-1 of this SEIR) for detail.
3. BAAQMD thresholds from Table 4.2-2 of Section 4.2, Air Quality, for operational emissions.

Table 4.5-2 only reports emissions for model year 2022 because emissions for remaining model years (2023, 2028, 2030, and 2049) were significantly below the BAAQMD CEQA significance threshold. In addition, project emissions for year 2022 also constitutes a reduction in GHG emissions compared to existing conditions. With existing mining operations (not part of the project), existing GHG emissions are approximately 9,790 tons of CO_2e per year (Compass Land Group 2019). A complete summary of project emissions and detailed modeling inputs and outputs are included in Appendix C-1.

In the absence of adopted construction thresholds, the BAAQMD CEQA Guidelines state that the County should quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals. BAAQMD encourages lead agencies to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable. Sources of construction-related GHGs only include exhaust; therefore, construction best management practices should focus on direct and indirect exhaust emissions reductions. Best management practices may include but are not limited to: using alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet; using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials.

In the absence of a BAAQMD-adopted construction GHG threshold, the *Air and Greenhouse Gas Emissions Study* compared project emissions to BAAQMD's operational threshold as a reasonable proxy for furthering AB 32 GHG reduction goals. BAAQMD's operational thresholds are used to determine significance of long-term operation of land uses and developments, often with far greater GHG emissions potentials than that of the proposed project. However, given that modeled GHG emissions are at about 97 percent of the operational threshold, it is possible that the project could result in a cumulatively considerable contribution of GHG emissions. Air quality and GHG emissions models are imperfect (like other models) as they are based on a set of assumptions used at the time of modeling. These assumptions (e.g., the duration of a construction activity or the vehicle miles traveled by construction contractors and vendors) are subject to change and actual emissions at the time of construction could be more or less than what is modeled. As a result, the project's greenhouse gas emissions constitute a potentially significant impact. Mitigation Measures 4.5-1a through 4.5-1h are provided to reduce the impacts to a less than significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.5-1a: *Idling Times*

Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all project access points. [Measure applies to idling times for all equipment].

Mitigation Measure 4.5-1b: *Idling Times for Diesel-powered Equipment*

Minimize the idling time of diesel-powered construction equipment to two minutes. [Measure applies to idling times for diesel-powered equipment only].

Mitigation Measure 4.5-1c: *Equipment Maintenance*

All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.

Mitigation Measure 4.5-1d: *Alternative Fuel Plan*

Prior to construction, develop a plan demonstrating that alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment will represent at least 15 percent of the construction fleet if commercially available.

Mitigation Measure 4.5-1e: *Local Building Materials*

Use at least 10 percent local building materials in construction (e.g., construction aggregates, concrete pipe).

Mitigation Measure 4.5-1f: *Recycle or Reuse Construction and Demolition Materials*

Recycle or reuse at least 50 percent of construction waste or demolition materials (e.g., during decommissioning and removal of processing plant facilities).

Mitigation Measure 4.5-1g: *On-site Material Hauling*

Perform on-site material hauling with trucks equipped with on-road engines (if less emissive of GHG emissions than off-road engines), if commercially available.

Mitigation Measure 4.5-1h: *Generator Alternative Fuel*

Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power, as feasible for each construction site.

Significance After Mitigation: Less than significant.

Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations.

The proposed project would not conflict with applicable plans, policies, and regulations for reducing emissions of GHGs. The applicable Community Climate Action Plan is the Alameda County Community Climate Action Plan, which is incorporated into the County's General Plan. The proposed project is consistent with this plan, as outlined in Section 4.7, "Land Use and Planning," of this SEIR.

The USEPA and NHTSA heavy-duty vehicle GHG emissions standards, as adopted by CARB, would ensure that as the project's heavy-duty vehicles are turned over (i.e., as old model year trucks are retired and replaced with new model year trucks), future GHG emissions from these heavy-duty vehicles would decline in future years, consistent with the state's goal of reducing future year GHG emissions to meet the year 2030 target and beyond. In addition, transportation fuels used by the project's vehicles and equipment would be in conformance with the LCFS as fuel suppliers would be required to provide fuels meeting the applicable low carbon standard. Furthermore, electricity used by the project's electric-powered equipment would be obtained from the local utility providers, which would be supplied by an increasing percentage of renewable sources, consistent with California's Renewables Portfolio Standard of 60 percent by December 31, 2030 and 100 percent eligible renewable energy resources and zero-carbon resources by December 31, 2045. The project would also not impede the ability of electricity and transportation fuel producers and suppliers to comply with the Cap-and-Trade Program, which is the primary mechanism that the State is using the

achieve the State's GHG reduction goals of AB 32 and SB 32. Finally, project GHG emissions are associated with reclamation activities, which will cease when reclamation is complete. As a result, the project would not conflict with applicable plans for reducing emissions of GHGs and impacts would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

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4.6—HYDROLOGY AND WATER QUALITY

This section of this subsequent environmental impact report (SEIR) addresses potential impacts of the project on hydrology and water quality, describes the environmental and regulatory setting, and discusses mitigation measures to reduce impacts where applicable. Issues addressed include impacts on potential flooding, surface water drainage, groundwater flow, groundwater supply, water quality, and water balance.

The hydrology and water quality conditions of the project were assessed through review of applicant-submitted documents, existing publicly available data and reports, aerial photos, and field observations. The information in this section is based on applicant-prepared studies and publicly available sources. The applicant-prepared studies used are:

- *Hydraulic Design Study* (Brown and Caldwell 2020) (Appendix F-1, "Hydraulic Design Study," of this SEIR),
- *Groundwater Hydrology and Water Quality Analysis Report for the Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (EMKO Environmental Inc. [EMKO] 2020a) (Appendix F-2, "Groundwater Hydrology and Water Quality Report," of this SEIR),
- *Focused Water Quality Assessment Lake B Component Eliot Quarry Reclamation Plan Amendment Project Alameda, California.* (Kleinfelder 2020) (Appendix F-3, "Focused Water Quality Assessment for Lake B," of this SEIR),
- *3D Clay Bed Geologic Model and Lack of Evidence for the Presence of Aquitards* (Jeff Light Geological Consulting 2019) (Appendix F-4, "3D Clay Bed Geologic Model and Lack of Evidence for the Presence of Aquitards," of this SEIR),
- *2013 Becker Hammer and 2018 Sonic Drill Logs* (Brown and Caldwell 2019) (Appendix F-5, "2013 Becker Hammer and 2018 Sonic Drill Logs," of this SEIR),
- *Adaptive Management Program for Water Quality Regarding Iron* (EMKO 2020b) (Appendix F-6, "Adaptive Management Program for Water Quality Regarding Iron," of this SEIR), and
- *Water Supply Assessment* (EMKO 2019) (Appendix F-7, "Water Supply Assessment," of this SEIR).

These analyses were peer reviewed by the County-retained Stillwater Sciences in April of 2019, April of 2020, and July of 2020. The peer review letter reports are on file with the County. The applicant revised the referenced analyses and provided responses to the peer reviewer comments, which are also on file with the County. Appendices F-1 through F-7, referenced above and incorporated into this SEIR, were finalized after and adequately addressed the peer reviewer's comments and questions.

4.6.1 Hydrology and Water Quality Conditions at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) describes the setting of the project site in 1976 as an area encompassing about 2,100 acres of undisturbed, mostly agricultural area, 900 acres of working gravel pits and earth fill and settling ponds, and 750 acres of settling pond water area. Surface water and groundwater conditions at the time of the LAVQAR EIR's preparation are described below (Alameda County 1980: 9).

4.6.1.1 Surface Water

The LAVQAR EIR listed Arroyo Mocho and Arroyo del Valle (ADV) as the primary sources of surface water at the project site, with some contributions from Arroyo Las Positas as well. In 1976, the average annual natural runoff of Arroyo Mocho and ADV was 3,000 and 21,000 acre feet annually, respectively. (Alameda County 1980:9-11). The South Bay Aqueduct system was completed in 1968, featuring reservoir storage of 77,000 acre feet at the Del Valle Reservoir. At the time of the LAVQAR EIR, the reservoir allocated 10,000 acre feet for silt storage, 30,000 acre feet for water supply, 35,000 acre feet for primary flood control, and 3,000 acre feet for secondary flood control. However, the aqueduct was not operational at that time, as it required the collection of 30,000 acre feet of water conservation storage, which was not predicted to occur until sometime after 1985. Therefore, at that time, ADV stormwater was stored or released into the ADV or the South Bay Aqueduct at the request of Zone 7 Water Agency (Zone 7) or Alameda County Water District (Alameda County 1980:12).

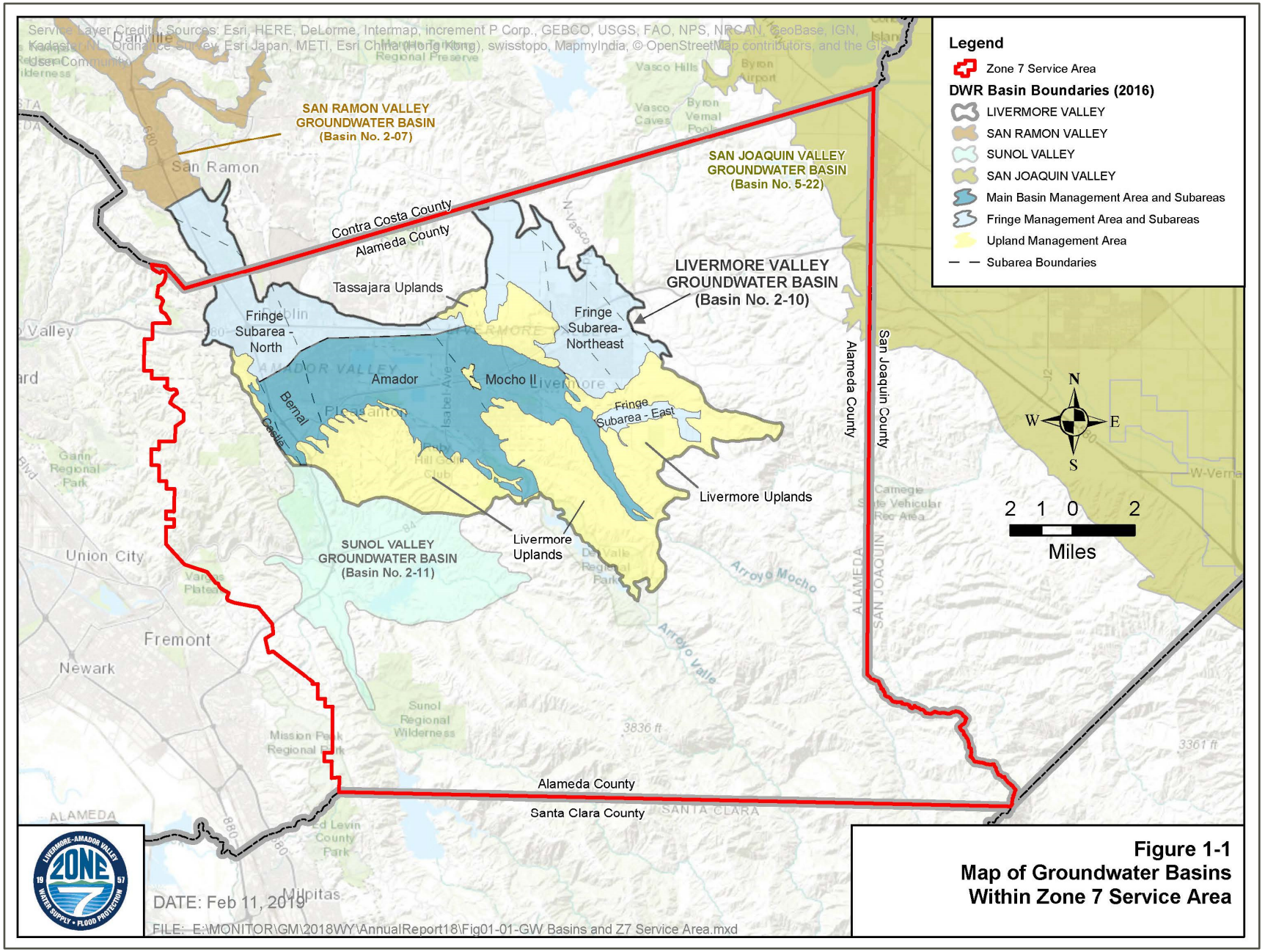
Periodic sampling of ADV runoff from 1958 to 1968 (before Del Valle Reservoir) indicated total dissolved solids (TDS) ranged from 150 to over 1000 milligrams per liter (mg/l). Most samples were of low flows, and they indicated that with a flow of 5 to 20 cubic feet per second (cfs), TDS averaged about 325 mg/l. After 1968, however, part of the flow in Arroyo del Valle and below the Del Valle Reservoir consisted of imported water, not natural runoff. Therefore, flows after 1968 were not sampled on a regular basis. Water from the Sacramento-San Joaquin Delta is released into Arroyo del Valle in the summer; during the months of September, October, and November releases are made from Del Valle reservoir to evacuate about 15,000 acre feet of storage for conservation of local runoff. (Alameda County 1980:12, 20). The LAVQAR EIR also noted that both the Arroyo Mocho and ADV run through the Chain of Lakes area into Arroyo de la Laguna (Alameda County 1980: 9-22).

4.6.1.2 Groundwater

The LAVQAR EIR noted that the Pleasanton fault formed the Amador/Bernal subbasin boundary, and the Livermore fault formed the Amador/Mocho boundary. In addition, groundwater movement was described as restricted across the two faults and the south side of the project area that overlies the ADV forebay area. This area, located between the ADV and Stanley Boulevard, was identified as a primary recharge area for the groundwater basin. Furthermore, as of 1976, the project area utilized approximately 8,000 acre feet of groundwater annually (Alameda County 1980: 9-10). In 1976, Zone 7 imported 21,000 acre feet of water, about 7,000 of which was used to replenish the groundwater basin. Groundwater quality in the project area varied from about 300 mg/l TDS in the forebay area to over 700 mg/l on the north side of the project area. The groundwater was much harder than the imported water. Therefore, in 1976, imported water quality was generally considerably higher quality than groundwater at the project site. The imported water had an average annual TDS range of 1.50 to 2.50 mg/l at the time. However, from February through December of the 1977 drought, groundwater at the project site began to average about 230 mg/l TDS over time, whereas the imported water averaged nearly 600 mg/l TDS, constituting a considerable change (Alameda County 1980:10, 21)

4.6.2 Environmental Setting

The project site is located within the Livermore-Amador Valley, an east-west trending inland alluvial basin located in northeastern Alameda County (Figure 4.6-1, "Map of Groundwater Basins within Zone 7 Service Area"). The eastern portion of the site (east of Isabel Avenue) contains Lake A, a formerly mined area that contains water primarily from groundwater infiltration. South of Lake A is the eastern portion of the ADV at the project site, which is a perennial drainage channel that runs east-west along the southern portion of the site.



SOURCE: Zone 7 2018 Annual Report, Figure 1; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

Map of Groundwater Basins within Zone 7 Service Area
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Figure 4.6-1

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The portion of the site west of Isabel Avenue contains Lake B, which is a portion of the active mining area with a mine pit approximately 100 to 130 feet deep. Lake J, which is one of the active mining areas, is located north of Lake B. The ADV continues east-west along the southern portion of this area of the site before merging with Arroyo de la Laguna, which then merges with Alameda Creek near Interstate 680 in the Sunol area. (see Figure 2-6, "Existing Facilities," in Chapter 2, "Project Description").

4.6.2.1 Climate and Precipitation

The general climate of the project area is classified as Mediterranean, characterized by semi-arid temperatures with seasonal rainfall. Warm summers and mild winters typify local climatic conditions. Precipitation is confined mainly to the "wet" season, which lasts from late fall (late October) to early spring (early April) (DWR 1975).

Over the course of a year, the temperature typically varies from 39°F to 88°F and is rarely below 31°F or above 98°F. The average annual precipitation in the project vicinity is approximately 14.53 inches per year (WRCC 2020).

4.6.2.2 Surface Elevations

Lake A is located east of Isabel Avenue (State Route 84) and Lake B is located west of Isabel Avenue (see Figure 2-5, "Anticipated Zone 7 Land Designations" in Chapter 2, "Project Description"). Surface elevations around the perimeter of Lake A range from approximately 415 feet (ft) mean sea level (msl) on the southwest side of the pit to approximately 445 ft msl on the northeast side of the pit. The elevation of the bottom of Lake A ranges from approximately 390 ft msl to 350 ft msl. Mining has not occurred in Lake A for approximately 10 to 15 years.

Surface elevations around the perimeter of Lake B range from approximately 410 ft msl on the east side of the pit to approximately 373 ft msl on the west side of the pit. The current mining depths range from approximately 325 ft msl to 265 ft msl in Lake A and from approximately 325 ft msl to 262 ft msl in Lake B (see Appendix B-1, "Proposed Reclamation Plan Amendment," and CEMEX Annual Compliance Report) (CEMEX 2020). Mining is also currently occurring in the location of the previous aggregate processing plant area, referred to as Lake J, with a current bottom elevation of approximately 251 ft msl. (CEMEX 2020).

4.6.2.3 Hydrostratigraphy and Groundwater

The information presented in this section has been summarized primarily from the *Hydrostratigraphic Investigations of the Aquifer Recharge Potential for Lakes C and D of the Chain of Lakes, Livermore, California* (Zone 7 2011), the *Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin* (Jones and Stokes 2005, cited in EMKO 2020a), *Focused Water Quality Assessment Lake B Component Eliot Quarry Reclamation Plan Amendment Project Alameda, California* (Kleinfelder 2020), and Zone 7 groundwater and surface water data. Additional interpretation is also provided based on borehole data obtained by CEMEX in 2013 and 2018 (see Appendix F-5).

The discussion below is focused on the following hydrogeologic conditions:

- hydrostratigraphy;
- aquifer properties;
- water level trends; and
- dewatering.

Each of these hydrogeologic conditions is described in detail below.

Hydrostratigraphy

This section describes the hydrostratigraphy near the Eliot Quarry (project site). Hydrostratigraphy is a term that refers to the layering of the underlying geologic sediments (e.g., alternating layers of gravels and clays) and how that layering may affect the occurrence and movement of groundwater.

The project site is located within the Livermore-Amador Valley, an east-west trending inland alluvial basin located in northeastern Alameda County (Figure 4.6-1). An alluvial basin is a valley that has been filled with sediments deposited predominantly by streams and rivers. The basin is surrounded primarily by north-south trending faults and hills of the Diablo Range. The Livermore-Amador Valley encompasses approximately 42,000 acres, is about 14 miles long (east to west) and varies from 3 to 6 six miles wide (north to south). The Livermore Valley Groundwater Basin is located in the central part of the Livermore-Amador Valley. The Main Basin is a part of the Livermore Valley Groundwater Basin that contains the highest yielding aquifers and the best groundwater quality. Lakes A and B are located within the southeast corner of the Main Basin.

The Livermore-Amador Valley is partially filled with recent alluvial fan, stream, and lake deposits (of Pleistocene-Holocene age; less than about 1.6 million years old) that range in thickness from a few feet along the margins to nearly 800 feet in the west-central portion. The alluvium consists of unconsolidated gravel, sand, silt, and clay. The southeastern region of the Valley, the proximal (upstream) portion of the alluvial fan deposits, is the most important groundwater recharge area and consists mainly of sand and gravel that was deposited by the ancestral and present ADV and Arroyo Mocho. The coarse alluvial fan deposits are economically important aggregate deposits, which has resulted in widespread aggregate mining in the Main Basin area.

The Livermore Formation (Pleistocene age; 11,000 to 1.6 million years old), found below the majority of the alluvium in the groundwater basin, consists of beds of clayey gravel and sand, silt, and clay that are unconsolidated to semi-consolidated. This formation is estimated to be 4,000 feet thick in the southern and western portion of the basin. These sediments display lower groundwater yields in the upland areas.

The Tassajara and Green Valley Formations, located in the Tassajara Uplands north of the Valley, are roughly Pliocene in age (1.6 to 5.3 million years old). They consist of sandstone, tuffaceous sandstone/siltstone, conglomerate, shale, and limestone. Water movement from these formations to the alluvium of the fringe and Main Basins is diminished by faults and angular unconformities or by stratigraphic disconformities along the formation-alluvium contacts.

Within the Livermore Valley groundwater basin, faults are the major structural features known to have marked effect on the movement of groundwater. Faults in this region tend to act as barriers to the lateral movement of groundwater. The resulting groundwater levels stand higher on the up-gradient side. The Livermore, Pleasanton, and Parks faults act as such barriers, dividing the Quaternary Alluvium into five groundwater sub-basins (DWR 2006, as cited in Kleinfelder 2020).

The project site is located approximately within the southeast corner of the Main Basin. East of Isabel Avenue, in the Lake A area, groundwater occurs within a relatively thin layer of alluvium (approximately 80 to 100 feet thick) and within the underlying Livermore Formation. West of Isabel Avenue, groundwater occurs entirely within the alluvium, which extends to at least 600 feet below the surface in the area of Lake B (EMKO 2020a). The Pleistocene Livermore Formation was folded and faulted before deposition of the Recent Alluvium. This older geologic formation consists of a range of sediments that

were deposited in a lake environment, referred to as lacustrine deposits. These deposits include oxidized, unoxidized, and sheared clay, freshwater limestone referred to as marl, and interbedded fine sand, silt, and clay that were deposited along the shoreline of and within the lacustrine environment (Cotton Shires 2006, as cited in Kleinfelder 2020). Due to the different structural history, different depositional environment, and preponderance of fine-grained deposits, the sediments of the Livermore Formation are not a part of the Upper or Lower Aquifers within the Recent Alluvium that is present in the Main Basin. This difference in the formation characteristics east and west of Isabel Avenue could result in some discrepancies in the chemical composition of groundwater in the east and west portions of the project site and suggests that they not be evaluated together (Kleinfelder 2020).

Numerous studies of the hydrogeology of the Livermore-Amador Valley Groundwater Basin have been conducted. In general, groundwater within the alluvium has been classified as being part of two main aquifer zones. In some parts of the groundwater basin, the two aquifer zones are separated by a silty clay aquitard up to 50 feet thick that prevents or limits the vertical migration of groundwater between the two zones. As demonstrated by JLGC, and later verified by EMKO (2020a) and Kleinfelder (2020), 5 sonic cores, 52 other drill hole logs, a three-dimensional geologic model, and sediments exposed in several high walls constitute substantial evidence to conclude that the 6 clay stratums identified by JLGC are discontinuous and do not provide aquitard forming conditions. JLGC also noted that the ADV's distribution of gravel and clay strata observed in the geologic model and depositional features observed in the sonic core are all consistent with a braided stream environment, which typically do not form large, interconnected clay strata that could provide for the formation of aquitards.

Figure 4.6-2, "Locations of Wells and Stratigraphic Cross Sections," shows the locations of several cross sections prepared by Zone 7 (2011) in the Chain of Lakes area of the Main Basin. The cross sections are shown on Figure 4.6-3, "Cross Sections ZA to ZC," and Figure 4.6-4, "Cross Section ZD." The cross sections show the relationships between the various aquifer zones and units. They also show the projected future depths of several of the mining pits that would become part of the Chain of Lakes, including Lake B, and Lakes C and D being mined by Vulcan Materials Company immediately north of Lake B. Lakes C and D are part of Alameda County Surface Mining Permit and Reclamation Plan No. 16 (SMP-16).

In addition to areas where it is absent, in areas where these variations occur, the aquitard is referred to as "leaky," because it allows groundwater to be transmitted between the two aquifers. The absence of a continuous silty clay aquitard is indicated by the 3D geologic model prepared by JLGC (2019)

As stated in *Hydrostratigraphic Investigations of the Aquifer Recharge Potential for Lakes C and D of the Chain of Lakes, Livermore, California* (Zone 7 2011), the two aquifer zones are designated as follows:

> **Upper Aquifer Zone:** The upper aquifer zone consists of alluvial materials, including primarily sandy gravel and sandy clayey gravels. These gravels are usually under the surficial clays, typically 5 to 70 feet below ground surface [bgs] in the west and exposed at the surface in the east. The base of the upper aquifer zone is at about 80 to 150 feet bgs. Groundwater in this zone is generally unconfined; however, when water levels are high, portions of the Upper Aquifer Zone in the western portion of the Main Basin can become confined.
>
> **Lower Aquifer Zone:** All sediments encountered below the clay aquitard in the center portion of the basin have been known collectively as the Lower Aquifer Zone. The aquifer materials consist of semi-confined to confined, coarse-grained, water-bearing units interbedded with relatively low permeability, fine-grained units. It is believed that the Lower Aquifer Zone derives most of its water

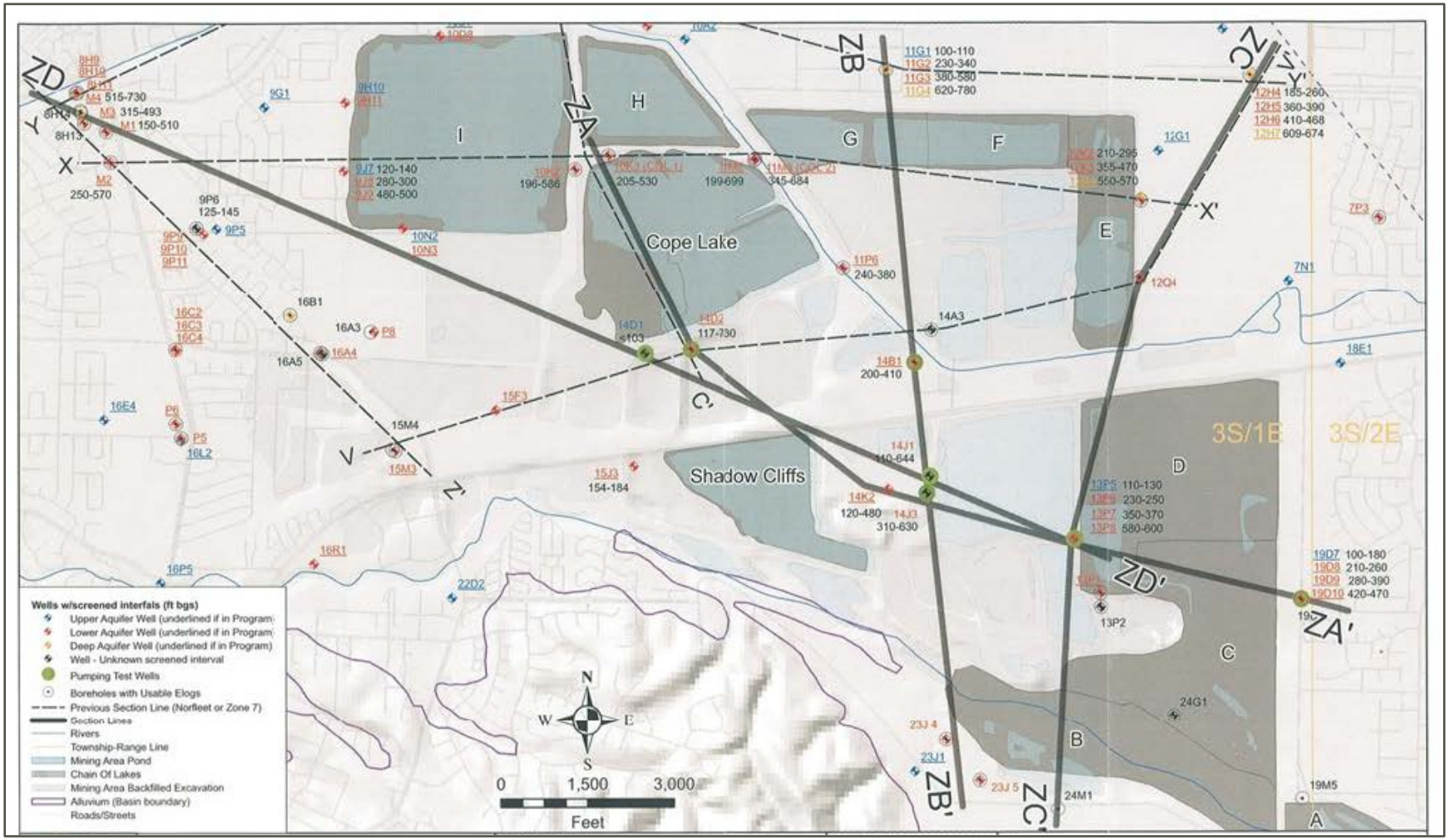
from the Upper Aquifer Zone through the leaky aquitard(s) when groundwater heads in the upper zone are greater than those in the lower zone.

The water-level trends evaluated by EMKO (2020a) show an appreciable difference in the water level behavior in wells and ponds along and south of ADV when compared to that in wells and ponds north of ADV. The water levels in the wells and ponds along and south of ADV have remained relatively stable for many decades and show minimal influence from drought periods. The Arroyo flows into or through several of these ponds (referred to as breached quarry ponds). These ponds are hydrologically connected to the arroyo. There is very little groundwater pumping south of ADV, so it is likely that recharge from the arroyo is sufficient to maintain the water levels in wells to the south and the ponds along the channel.

In contrast, the water levels in the wells and ponds north of ADV fluctuate cyclically in response to annual pumping and to drought and wet climatic cycles. Ponds that are not breached are generally not hydrologically connected at the surface with the Arroyo. Zone 7 (2012, 2013, 2014a, 2015, 2016, 2017, 2018, 2019) indicates that the reach of ADV adjacent to Lake B is a losing stream, meaning that the groundwater elevation is below the base of the stream bed and water from the stream percolates downward to the groundwater table. In addition, lack of recharge during drought periods combined with groundwater pumping and mine dewatering to the north of ADV appear to cause the cyclical water level trends at the monitoring locations north of the ADV.

The aquifer materials present in the southeastern part of the Amador sub-basin were deposited by ancestral streams that flowed in the same areas from which ADV and Arroyo Mocho currently originate within the Livermore highlands to the south (DWR 1966). While lakes formed intermittently in the central and western parts of the basin, the area south of Stanley Boulevard, in the current area of Lakes B, C, and D of the Chain of Lakes, was part of a large alluvial fan system emanating from the hills to the south (Alameda County 1980). Deposition of fine clays and silts in the lakes that formed away from the alluvial fan created the aquitard units between the main aquifers. The alternating deposition of coarse-grained aquifer materials and fine-grained aquitards materials outside of the alluvial fan resulted in the depositional sequences that were identified in the recent investigations conducted on behalf of Zone 7 (2011).

The ancestral stream channels for ADV and Arroyo Mocho were identified by DWR (1966). Figure 4.6-5, "Lines of Equal Thickness of Aquifers in the Depth Interval 100-200 Feet," and Figure 4.6-6, "Lines of Equal Thickness of Aquifers in the Depth Interval 0-100 Feet," are copies of a part of Plates 7 and 6, respectively, from the DWR (1966) study of the geology of the Livermore Valley. Figure 4.6-5 shows the gross thickness of aquifer materials in the depth interval between 100 ft bgs and 200 ft bgs in the Amador sub-basin. The ancestral axes of the major stream depositional channels, along with the present-day alignment of Stanley Boulevard are shown and labelled on Figure 4.6-5. In the area south of Stanley Boulevard and west of Isabel Avenue, the ancestral channel of ADV deposited as much as 90 feet of coarse-grained aquifer material within the 100-foot interval between 100 ft bgs to 200 ft bgs. The ancestral ADV channel depicted on Figure 4.6-5 is located along the northern and northeastern sides of Lake B. In contrast, north of Stanley Boulevard, the aquifer material comprises only 40 percent to 60 percent of the total sediment present in the interval between 100 ft bgs and 200 ft bgs. The information presented by DWR (1966), as shown on Figure 4.6-5, suggests that the aquitards are much thicker and more consistent in the area north of Stanley Boulevard than they are in the area of Lake B. Figure 4.6-5 also indicates that the Quaternary alluvium is not present in the depth interval from 100 ft bgs to 200 ft bgs east of Isabel Avenue and south of Alden Lane, in the area of Lake A.



SOURCE: Zone 7 2011, as cited in EMKO 2020a, EMKO 2020a Figure 2; modified by Benchmark Resources in 2020.

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Locations of Wells and Stratigraphic Cross Sections

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Figure 4.6-2

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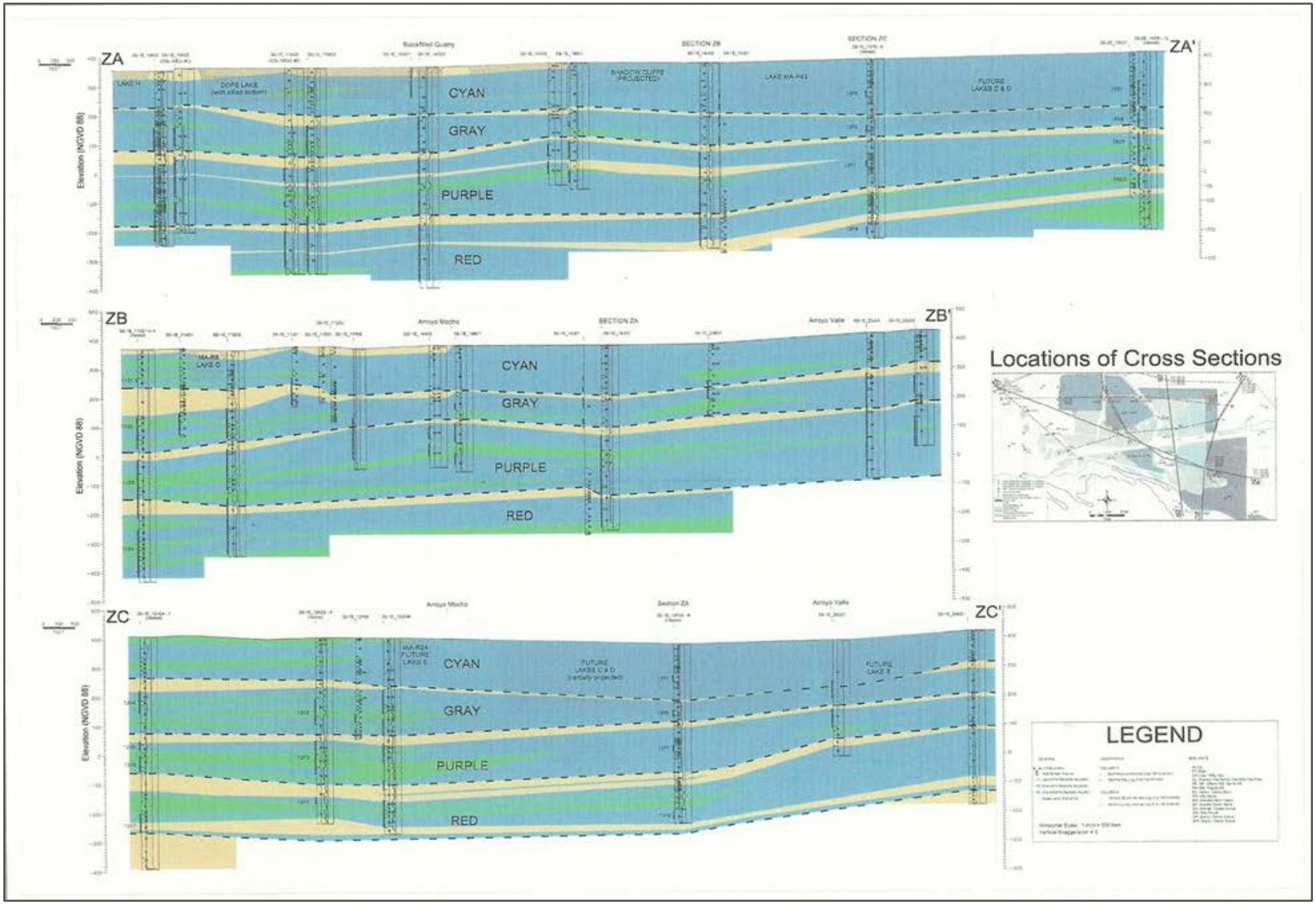

SOURCE: Zone 7 2011, as cited in EMKO 2020a, EMKO 2020a Figure 3; modified by Benchmark Resources in 2020.

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Cross Sections ZA to ZC
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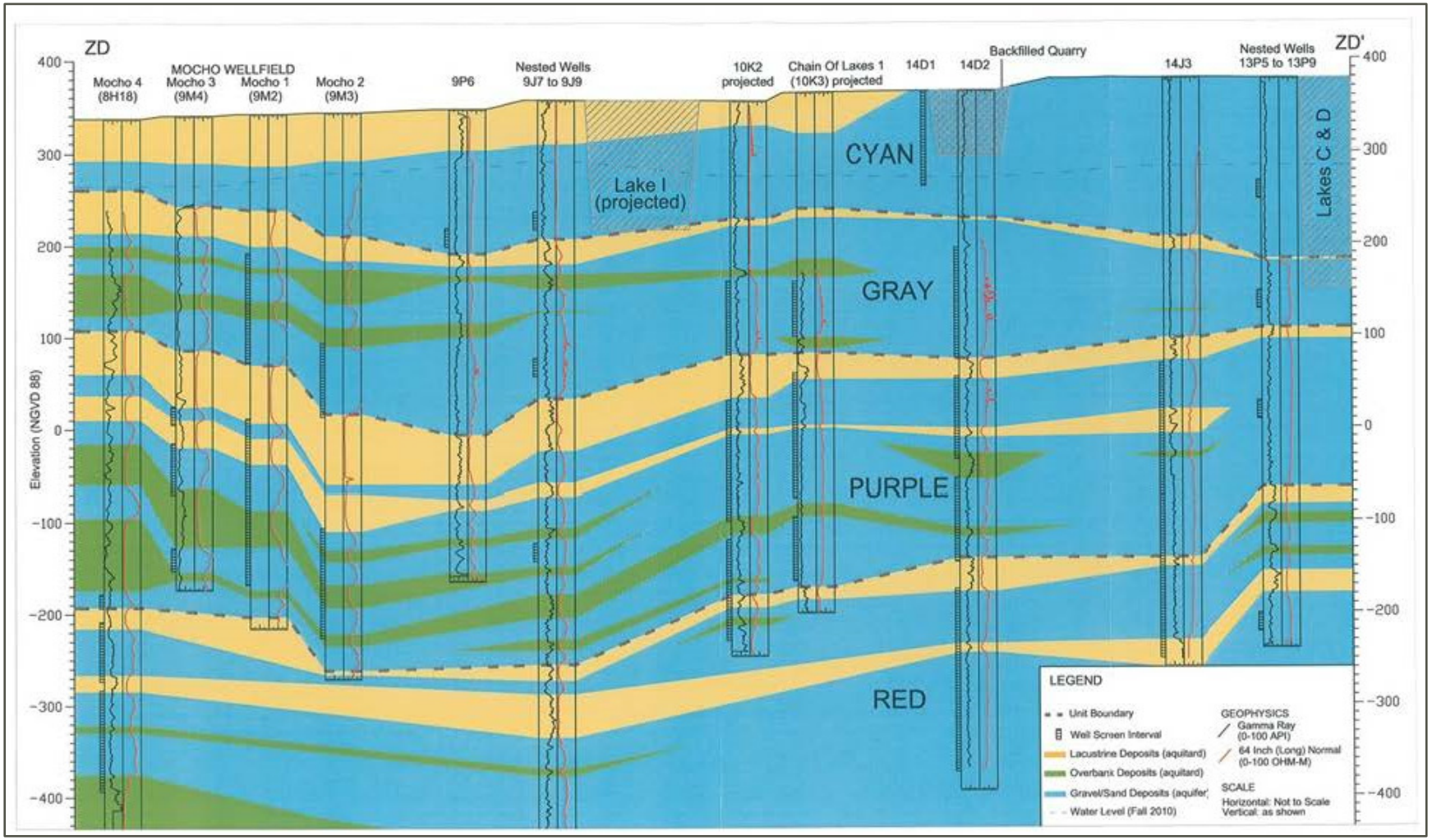

SOURCE: Zone 7 2011, as cited in EMKO 2020a, EMKO 2020a,, Figure 4; modified by Benchmark Resources in 2020.
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Cross Section ZD
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Figure 4.6-4

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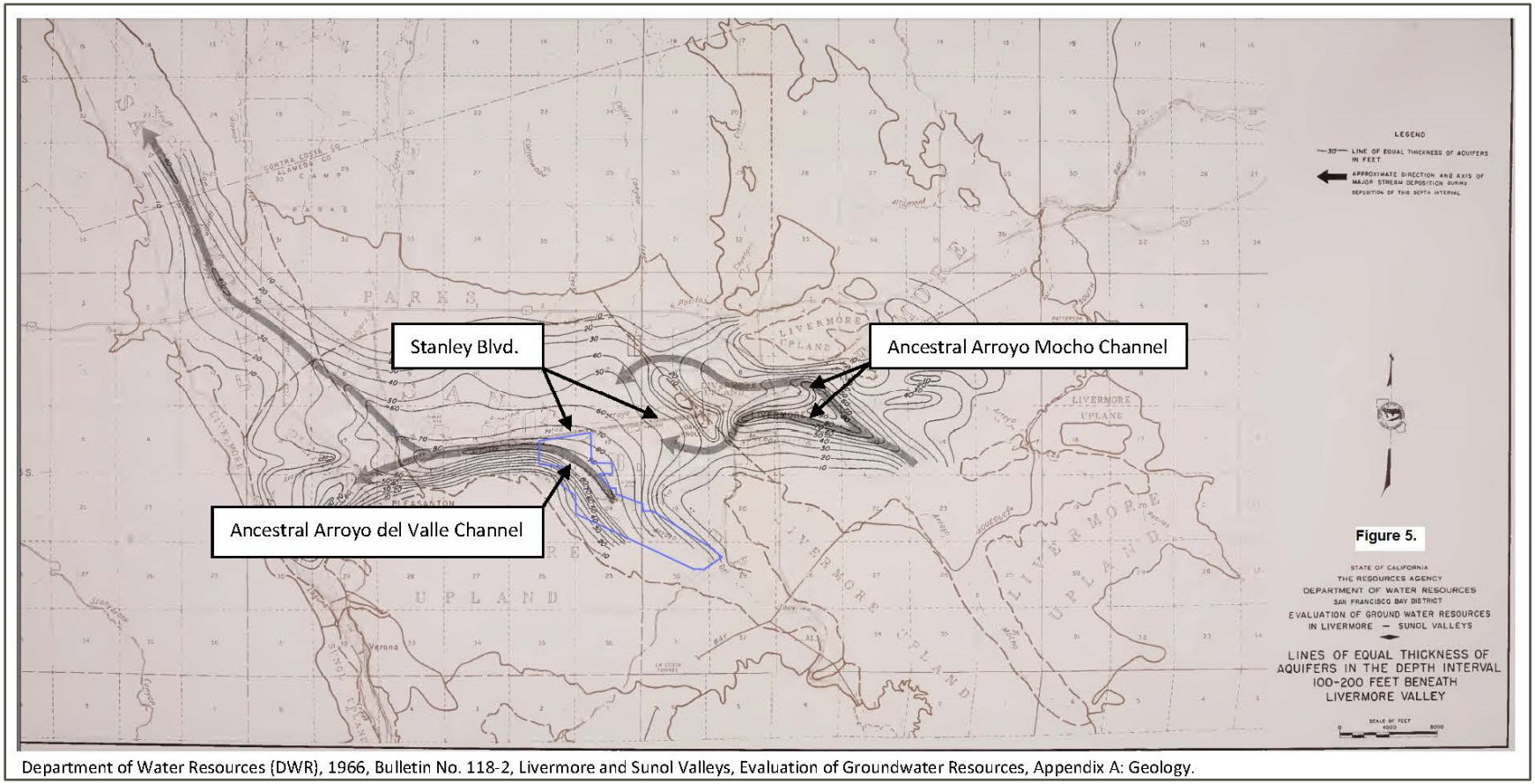

SOURCE: DWR 1966, as cited in EMKO 2020a, EMKO 2020a Figure 5; modified by Benchmark Resources in 2020.

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Lines of Equal Thickness of Aquifers in the Depth Interval 100-200 Feet

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Figure 4.6-5

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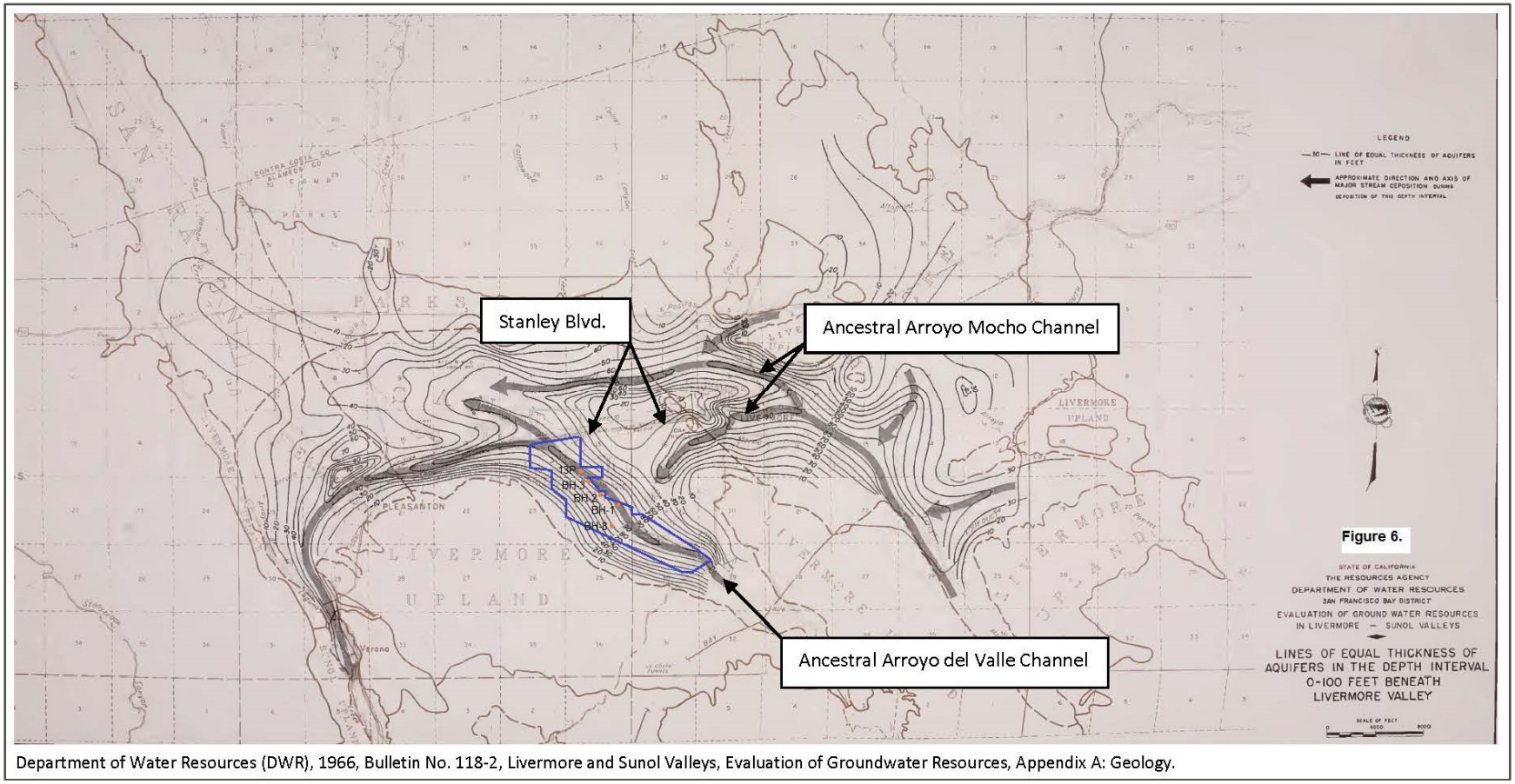

Department of Water Resources (DWR), 1966, Bulletin No. 118-2, Livermore and Sunol Valleys, Evaluation of Groundwater Resources, Appendix A: Geology.

SOURCE: DWR 1966, as cited in EMKO 2020a, EMKO 2020a Figure 6; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Lines of Equal Thickness of Aquifers in the Depth Interval 0-100 Feet

ELIOT QUARRY SMP-23 SEIR

Figure 4.6-6

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Figure 4.6-6 shows the gross thickness of aquifer materials in the depth interval between the ground surface and 100 ft bgs in the Amador sub-basin. The ancestral axes of the major stream depositional channels, along with the present-day alignment of Stanley Boulevard, are shown and labelled on Figure 4.6-6. The approximate outline of the project site and the location of several boreholes are also indicated on Figure 4.6-6. Deposition associated with the ancestral ADV channel within the depth interval down to 100 ft bgs extends east of Vallecitos Road. In the western part of Lake A, the eastern part of Lake B, and along the north side of Lake B, the coarse-grained aquifer deposits comprise over 90 percent of the material deposited by the ancestral ADV. It is also important to note that, while the ancestral stream channel follows the current stream channel in the Lake A area, it turns to the north in the Lake B area and then parallels the current location of Stanley Boulevard.

Boreholes

In April 2013, CEMEX drilled and logged 22 boreholes at SMP-23. The borehole locations are shown on Figure 4.6-7, "Borehole Locations." Five boreholes were drilled along the west and south sides Lake A, 14 boreholes were drilled around the perimeter of and within Lake B, and three boreholes were drilled in the existing plant area. At Lake A the boreholes were drilled to 110–200 feet bgs (approximately 320–220 ft msl). At Lake B the boreholes were drilled to 200–220 feet bgs within the pit and 280–300 feet bgs around the perimeter (approximately 136–96 ft msl), except for the two shallow holes within the pit, which were drilled to 50 feet bgs (approximately 250 ft msl). In the plant area the boreholes were drilled to 280–290 feet bgs (approximately 100–90 ft msl).

In May through July 2018, CEMEX and Zone 7 jointly drilled four boreholes around the perimeter of Lake B and one borehole to the west of Lake A to further define the aquitard issue. The borehole locations are shown on Figure 4.6-8, "Geologic Cross Section A-A," Figure 4.6-9, "Geologic Cross Section B-B," Figure 4.6-10, "Geologic Cross Section C-C," Figure 4.6-11, "Sand and Gravel Gross Section A-A," and Figure 4.6-12, "Location Map Clay #5," and are designated 2017-A through 2017-E, with the year 2017 representing the year in which CEMEX applied for drilling permits. At each location, a sonic drilling rig was initially used to obtain geologic cores to provide a visual understanding of the vertical distribution of coarse and fine-grained deposits. The sonic core holes were drilled to depths ranging from 250 ft bgs to 283 ft bgs, corresponding to elevations of approximately 166 ft msl to 121 ft msl. After the sonic core holes were drilled and plugged, a second set of borings were drilled at the same locations using a mud-rotary rig so that electric (geophysical) logs could be obtained from each borehole. The mud-rotary holes were drilled to depths ranging from 220 ft bgs to 360 ft bgs, corresponding to elevations of approximately 197 ft msl to 21 ft msl. Natural gamma ray and self-potential logs were obtained from each of the mud rotary boreholes, in addition to long-normal, short-normal, and single-point resistivity logs. A detailed evaluation of the drilling, geologic core, and electric logs is provided in *3D Clay Bed Geologic Model and Lack of Evidence for the Presence of Aquitards, Eliot Quarry-CEMEX Aggregates, Alameda County, California* (Jeff Light Geologic Consulting [JLGC] 2019) (see Appendix F-4).

The EMKO (2020a) report evaluated the data from the 2018 drilling program, including the logs from the sonic cores, the cuttings logs from the mud rotary holes, and the electric logs from the mud rotary holes. The EMKO (2020a) report made the following observations based on this data:

1. The sonic cores provide the highest detail and greatest resolution of the variations in the stratigraphy, with the ability to easily discern clay layers that are much less than one-foot thick.
2. The cuttings logs from the mud rotary holes have the lowest resolution and occasionally miss important stratigraphic changes; and

3. The electric logs provide a reasonable representation of subsurface conditions, but they can be difficult to interpret in the absence of core data. For example, in several instances, the electric logs were unable to detect clay layers up to two feet thick that were readily apparent in the sonic cores.

Based on these observations, JLGC (and later EMKO, citing JLGC) compared the percent of clay identified in the logs from four different series of boreholes, including the 2013 Becker Hammer logs, the electric logs from 86-series and 2012-series of boreholes obtained by Zone 7, and the sonic core logs from 2018. The comparison is presented on Figure 4.6-13 "Percentage of Clay Logged in Borehole Drilled at Different Times," which show the range in the percent of clay identified in each borehole from each series of boreholes. The data presented on Figures 4.6-12 and 4.6-13 demonstrate that there is no perceptible bias in the percent of clay identified in any of the different series of boreholes. More specifically, the range of clay percentage identified in the 2013 Becker Hammer logs falls within the same range as the clay percentage identified for all other series of boreholes. The data presented on Figure 4.6-12 and Figure 4.6-13 clearly demonstrate that there is no defensible scientific basis to selectively disregard any of the available borehole data. As a result, the cross sections shown in Figures 4.6-8, 4.6-9, 4.6-10, and 4.6-11 are based on all of the available data.

Detailed borehole logs are provided in Appendix F-5 of this SEIR.

Aquifer Transmissivity and Storativity

The aquifer properties addressed in the discussion below are the transmissivity and the storativity of the aquifer units. The transmissivity is a measurement of the ability of the aquifer to transmit water and is correlated to the permeability of the geologic material and the thickness of the aquifer. The storativity is a measurement of how much water the aquifer will provide when pumped, expressed as a fraction of the total volume of the geologic material and void space that comprises the aquifer.

As part of the Zone 7 (2011) report, Zone 7 installed new monitoring wells and conducted an aquifer pumping test with grant funds from the California Department of Water Resources. The maximum, minimum, and average aquifer parameters identified by the interpretation of the pumping test results are summarized in Table 4.6-1, "Aquifer Properties."

TABLE 4.6-1
AQUIFER PROPERTIES

Parameter	Units	Zone 7			EMKO
		Maximum	*Minimum*	*Average*	*Best Fit*
Transmissivity	Feet squared per day	6,900	2,400	4,600	4,350
Storativity	Unit-less[1]	0.001	0.00012	0.0007	0.0007

Source: EMKO 2020a

Notes:

1. Storativity units are volume of water pumped divided by the volume of the aquifer that released that water. The volumes could be expressed as cubic feet of water per cubic foot of aquifer. However, the cubic feet cancel out, making it unitless.

The aquifer test results indicate that the aquitard units are thin or discontinuous in the area of Lake B, as reflected by drawdown in the shallower aquifer units (Cyan and Gray) during pumping in deeper units (Purple and Red).



SOURCE: Compass Land Group 2020; modified by Benchmark Resources in 2020.

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Borehole Locations

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Figure 4.6-7

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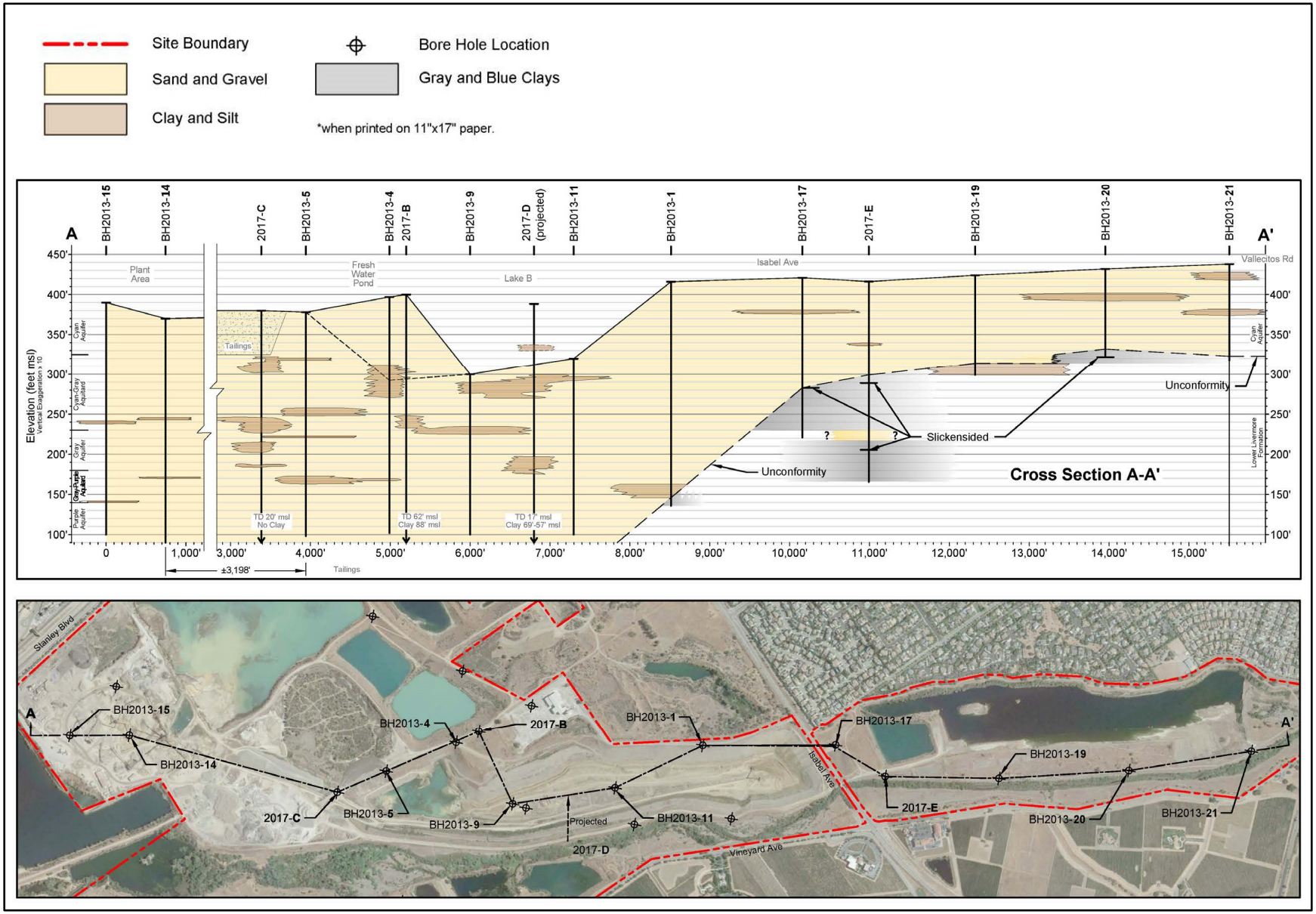

SOURCE: EMKO 2020a, Figure 8; modified by Benchmark Resources in 2020.

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Geologic Cross Section A-A

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Figure 4.6-8

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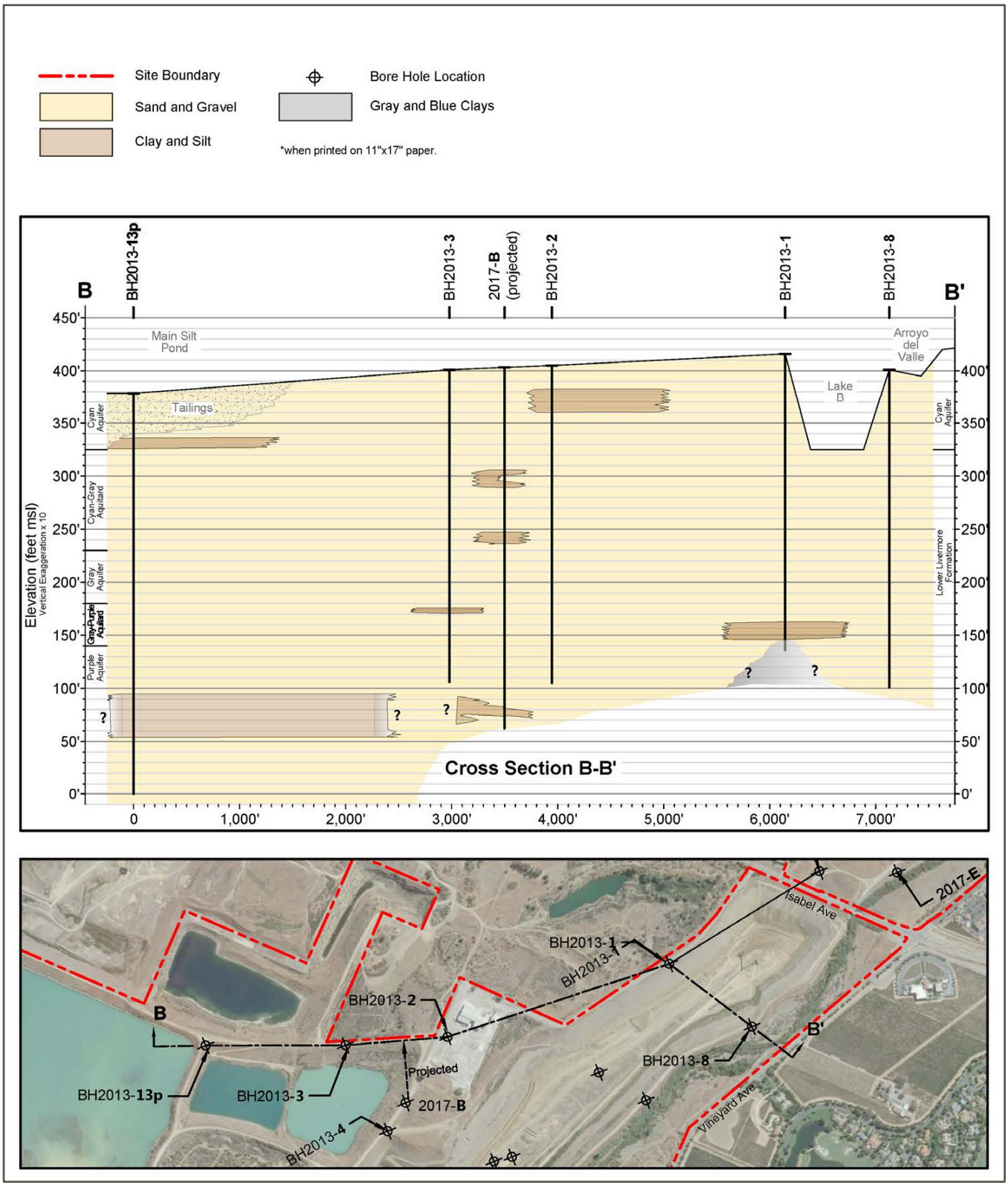

SOURCE: EMKO 2020a, Figure 9; modified by Benchmark Resources in 2020.
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Geologic Cross Section B-B
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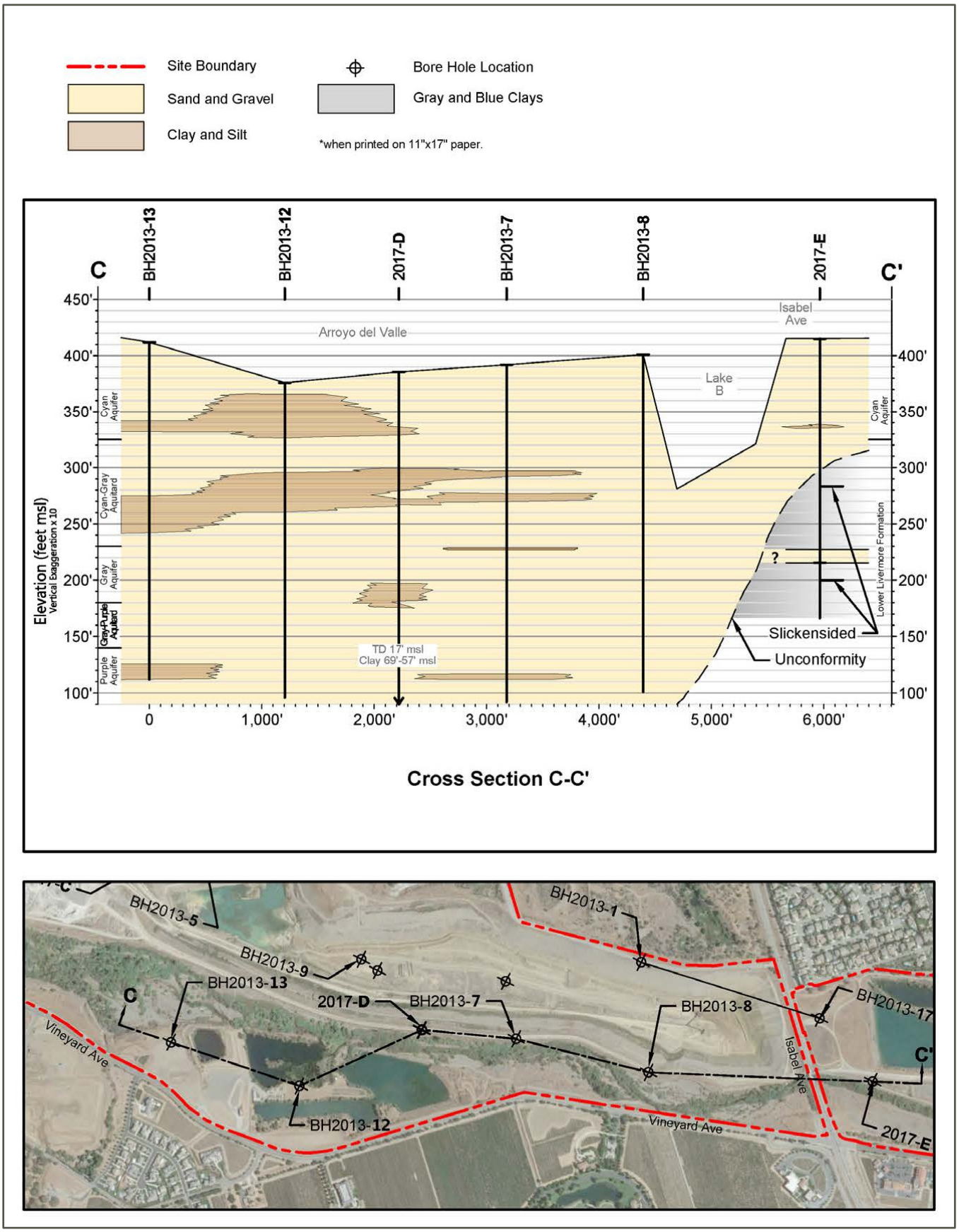

SOURCE: EMKO 2020a, Figure 10; modified by Benchmark Resources in 2020.

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Geologic Cross Section C-C

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Figure 4.6-10

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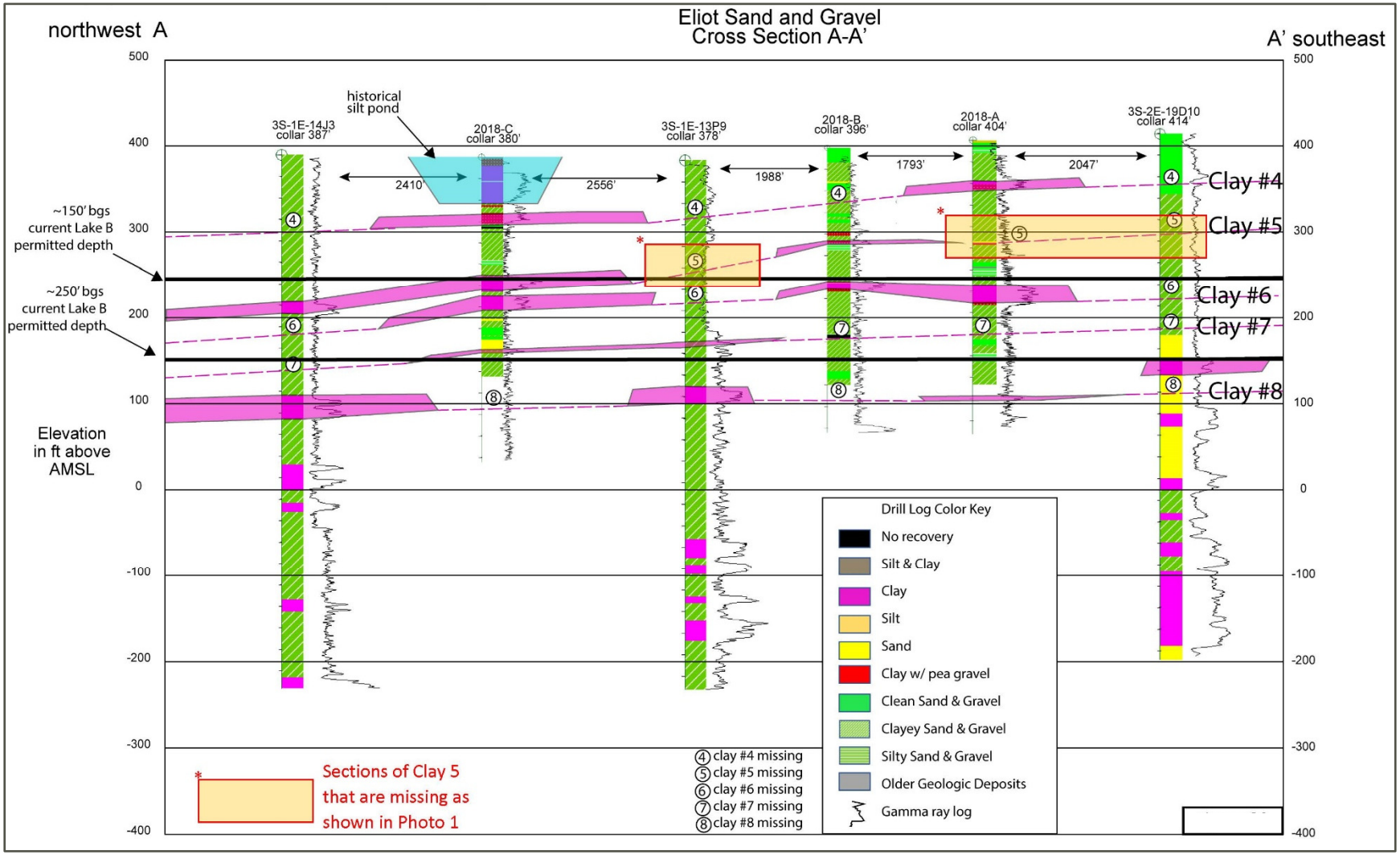

SOURCE: JGLC 2019; modified by Benchmark Resources in 2020.

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Sand and Gravel Cross Section A-A

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Figure 4.6-11

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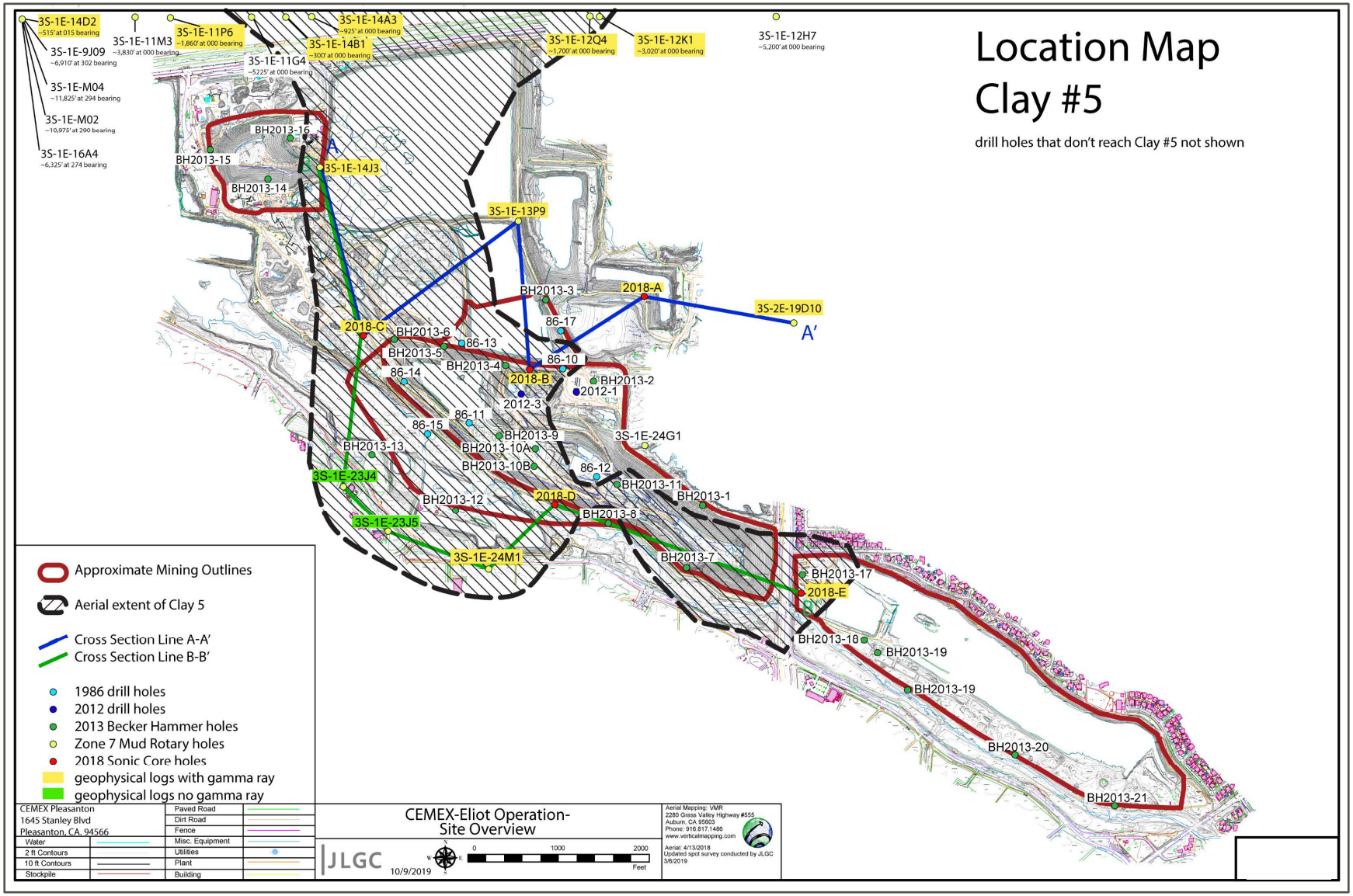

SOURCE: JGLC 2019; modified by Benchmark Resources in 2020.

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Location Map Clay #5

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Figure 4.6-12

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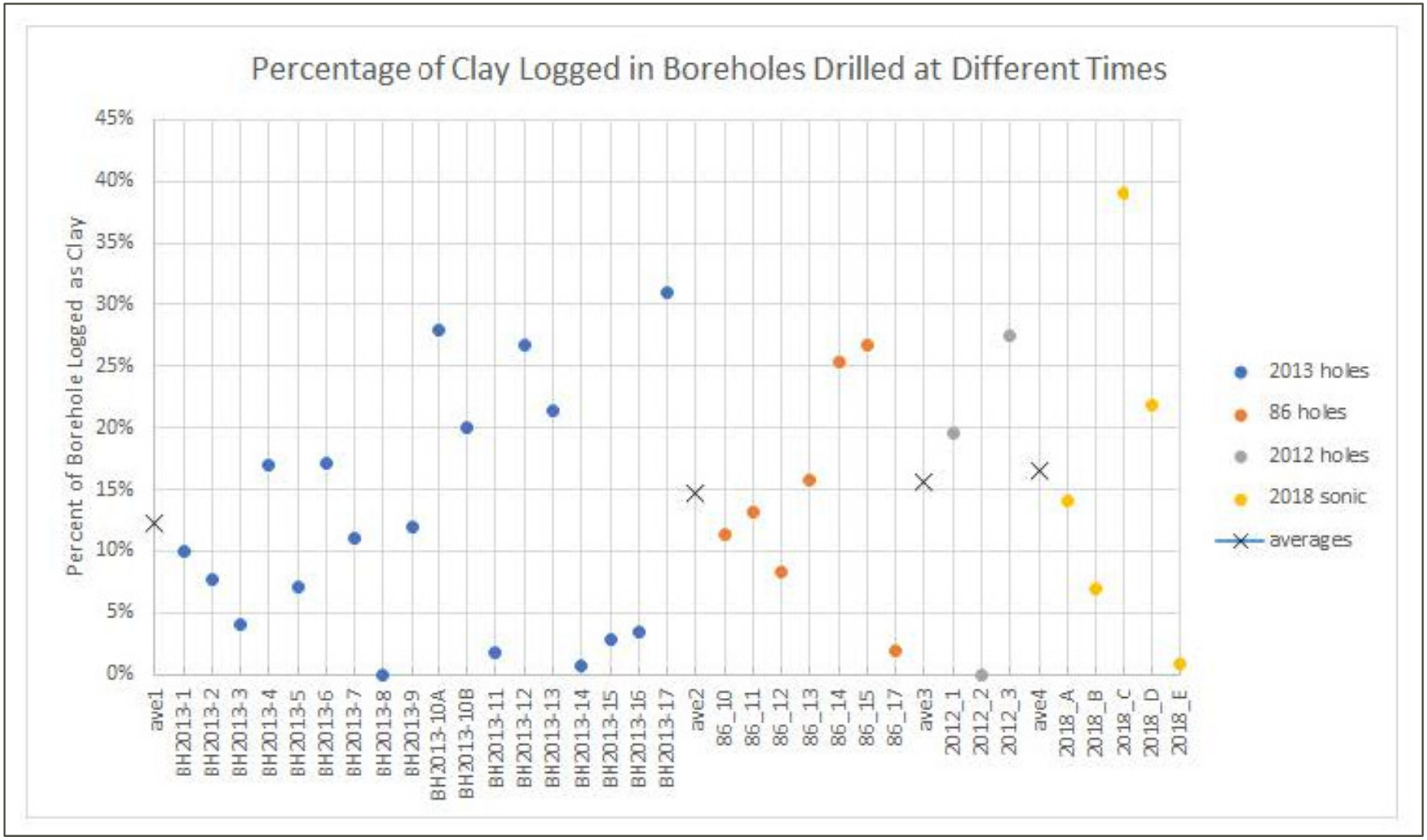

SOURCE: JLGC 2019, Figure 11; modified by Benchmark Resources in 2020.
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Percentage of Clay Logged in Borehole Drilled at Different Times
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Figure 4.6-13

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EMKO conducted analytical simulations and a sensitivity analysis to verify the results of Zone 7's pumping tests. Table 4.6-1 presents EMKO's results under the "best fit" values. The EMKO results are within the range of values found by Zone 7.

Water Level Trends

Water level data were requested and received from Zone 7 in May 2013 for 17 wells near Lake A and Lake B. The well locations are shown on Figure 4.6-14, "Location of Wells Used for Water Level Trends" (EMKO 2020a). Figure 4.6-15, "Hydrograph 1948–2018," is a hydrograph of the water levels measured in these 17 wells. More recent water level data have been obtained from Zone 7 annual monitoring reports (2014a, 2015, 2016). The well designations are listed in the legend of Figure 4.6-15.

Water level records for two wells (13P1 and 20M1) are available since 1948, and from an additional well (23J1) since 1958. The water level data show that in most wells, the water levels have tended to fluctuate based on rainfall patterns. For example, significant dry periods in the late 1980s to early 1990s and in the early 2000s are reflected in lower water levels at many locations. There are, however, exceptions to this pattern. Water levels in wells 29F4 and 30D2 show very little fluctuation over time. These two wells are both completed in the upper aquifer and located east of Isabel Avenue adjacent to the ADV.

To provide a closer focus on more recent water level trends, Figure 4.6-16, "Hydrograph Since 1999," shows the water level data for the same 17 wells since 1999. These same hydrographs have been plotted on a site map in Figure 4.6-17, "Hydrographs of Wells for Water Level Trends," so that the variation of water level conditions in different areas or locations can be visualized. These figures provide a clearer depiction of the wells with relatively stable water levels and those with more cyclical water levels. Essentially all of the wells with water levels above 350 ft msl exhibit stable water levels over time. These wells include 23J1, 25C3, 20M1, 29F4, 30D2, and 30G1, which are all located south of the ADV or east of Lake A. The data indicate that these six wells are in locations that are not affected by dewatering and pumping activities within the main groundwater basin. These characteristics may be attributed to wells located in recharge areas or some distance upgradient of groundwater extraction areas.

The water levels for the other 11 wells shown on Figures 4.6-14 and 4.6-16 typically have a dual cyclical pattern. As discussed above, long-term cycles are related to climatic changes such as wet periods and drought periods. Annual cycles are caused by recharge during the wet season and extraction during the dry season. Peak water levels generally occur between March and May each year, and minimum water levels generally occur in August or September. The long-term climatic cycles can result in water-level changes of up to 100 feet. The annual cycles typically range in magnitude from approximately 15 to 40 feet.

There are two well clusters included in the data evaluated for this study. Well cluster 13P5 through 13P8 is located just north of Lake B, between the SMP-23 main silt pond and future Lake D. Well cluster 19D7 through 19D10 is located along Isabel Avenue east of future Lake C. These two well cluster locations are identified on Figure 4.6-15. In each cluster, the screened interval is deeper with the higher number designation (i.e., 13P5 is the shallowest well and 13P8 is the deepest). At both clusters, the screened intervals correlate to the Cyan, Grey, Purple, and Red aquifer zones, respectively, as indicated on Figure 4.6-3. At both well cluster locations, the water levels show a downward vertical gradient, except between the Gray and the Purple units. Thus, the groundwater elevation in the Cyan unit is typically at a higher elevation than that in the Gray unit, and the water level in the Gray unit is typically higher than that in the Red unit, while the water level in the Purple unit is typically between that measured in the Cyan and Gray units. These relationships are further illustrated in Figures 15B, 16B, 15C, 16C, and 17 of the

Groundwater Hydrology and Water Quality Analysis Report for the Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California (EMKO 2020a) (see Appendix F-2).

The water-level trends evaluated by EMKO (2020a) show an appreciable difference in the water level behavior in wells and ponds along and south of ADV when compared to that in wells and ponds north of ADV. The water levels in the wells and ponds along and south of ADV have remained relatively stable for many decades and show minimal influence from drought periods. The Arroyo flows into or through several of these ponds (referred to as breached quarry ponds). These ponds are hydrologically connected to the arroyo. There is very little groundwater pumping south of ADV, so it is likely that recharge from the arroyo is sufficient to maintain the water levels in wells to the south and the ponds along the channel.

In contrast, the water levels in the wells and ponds north of ADV fluctuate cyclically in response to annual pumping and to drought and wet climatic cycles. Ponds that are not breached are generally not hydrologically connected at the surface with the Arroyo. Zone 7 (2012, 2013, 2014a, 2015, 2016, 2017, 2018, 2019) indicates that the reach of ADV adjacent to Lake B is a losing stream, meaning that the groundwater elevation is below the base of the stream bed and water from the stream percolates downward to the groundwater table. In addition, lack of recharge during drought periods combined with groundwater pumping and mine dewatering to the north of ADV appear to cause the cyclical water level trends at the monitoring locations north of the Arroyo (Kleinfelder 2020).

Summary

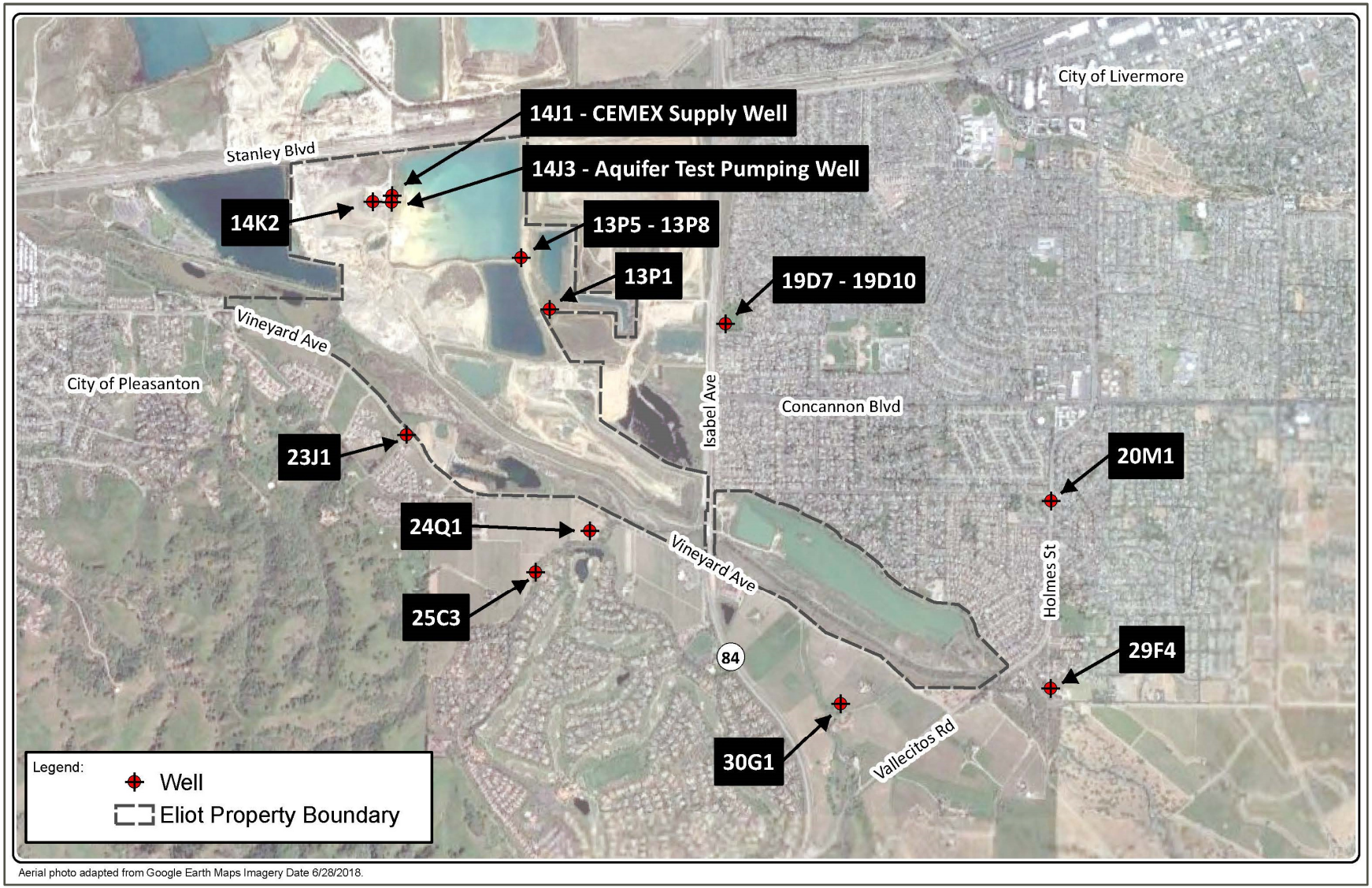
In summary of the results described in detail in the Jeff Light Geologic Consulting (2019), EMKO (2020a), Kleinfelder (2020), Appendix A of *Livermore and Sunol Valleys, Evaluation of Ground Water Resources* (DWR 1966), *Pleasanton Quarry Hydrogeologic Data Evaluation for Calmat Co. dba Vulcan Materials Company, Western Division* (Brown and Caldwell 2004), and *Hydrostratigraphic Investigation of the Aquifer Recharge Potential for Lakes C and D of the Chain of Lakes, Livermore, California* (Zone 7 2011) reports, the clay layers at the project area are discontinuous and do not act as aquitards separating the Upper and Lower Aquifer Zones.

4.6.2.4 Surface Water Hydrology

The ADV is located in the upper Alameda Creek watershed. The ADV drains an area of approximately 172 square miles before it discharges to Arroyo de la Laguna, west of Pleasanton. Arroyo de la Laguna flows south and discharges into Alameda Creek near the town of Sunol. Alameda Creek then flows west through the East Bay Hills before discharging into San Francisco Bay (Brown and Caldwell 2020).

Approximately 85 percent (146 square miles) of the ADV basin is located upstream of Del Valle Reservoir, constructed in 1968 to serve as off-channel storage for water delivered through the South Bay Aqueduct (part of the California State Water project) and for flood control. Three water agencies are served by the South Bay Aqueduct (Zone 7, Alameda County Water District, and Santa Clara Valley Water District). Zone 7 also uses a small portion of Del Valle Reservoir capacity to store runoff from the local watershed. Although Del Valle Reservoir primarily serves as water supply storage, a portion of its 77,100-acre-foot capacity is normally reserved for flood control.

Del Valle Reservoir has altered the hydrologic flow regime in the lower reaches of ADV (Kamman 2009, cited in Brown and Caldwell 2020). Peak flows have decreased, and large-magnitude flood flows have been virtually eliminated. Managed releases during the dry season have resulted in perennial flow conditions along the valley floor rather than the historical intermittent flow conditions when the arroyo would become dry in the summertime (Kamman 2009, cited in Brown and Caldwell 2020; LSA 2013, cited in Brown and Caldwell 2020).



SOURCE: Compass Land Group 2020; modified by Benchmark Resources in 2020.
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Location of Wells Used for Water Level Trends
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Figure 4.6-14

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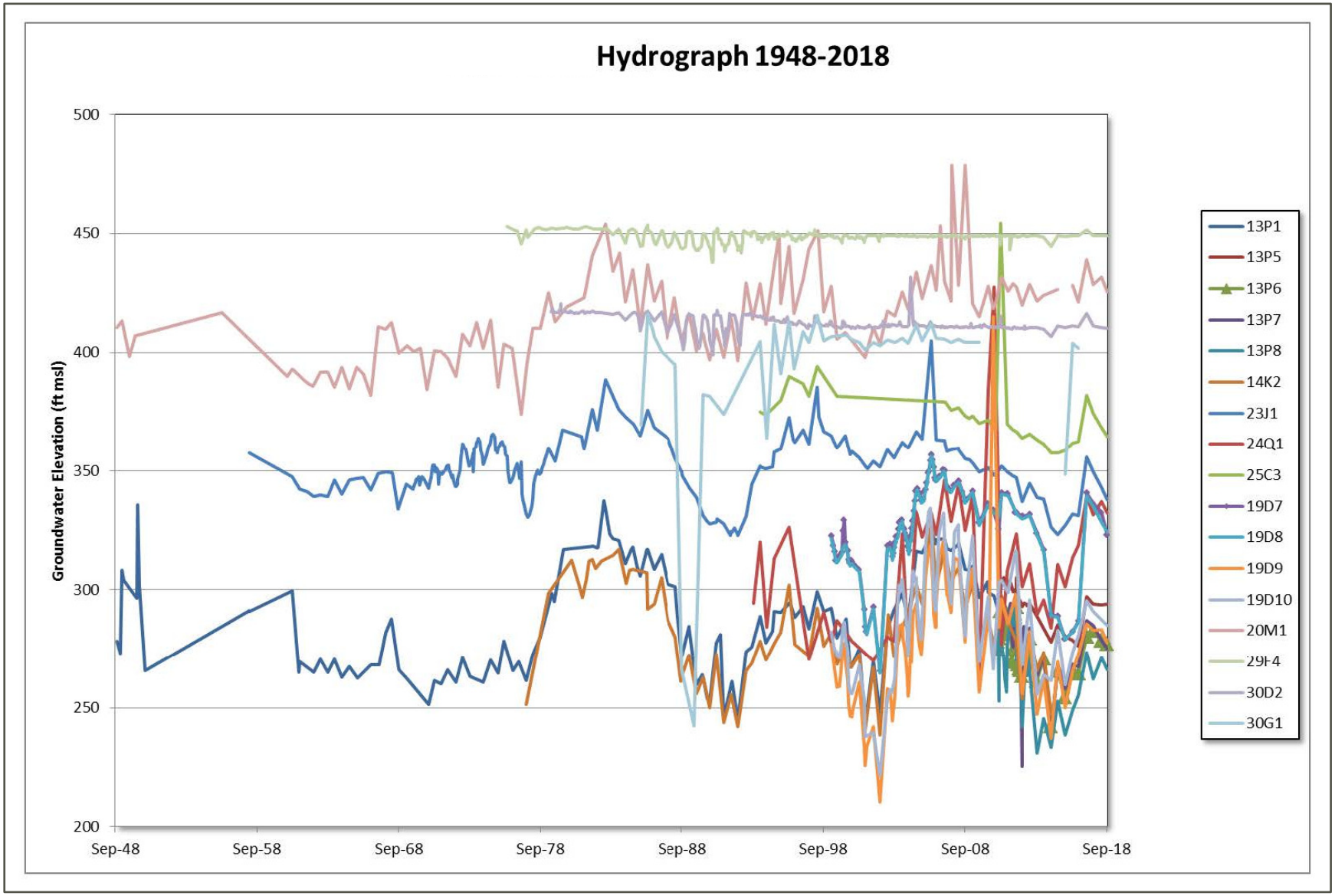

SOURCE: EMKO 2020a, Figure 15A; modified by Benchmark Resources in 2020.

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Hydrograph 1948-2018

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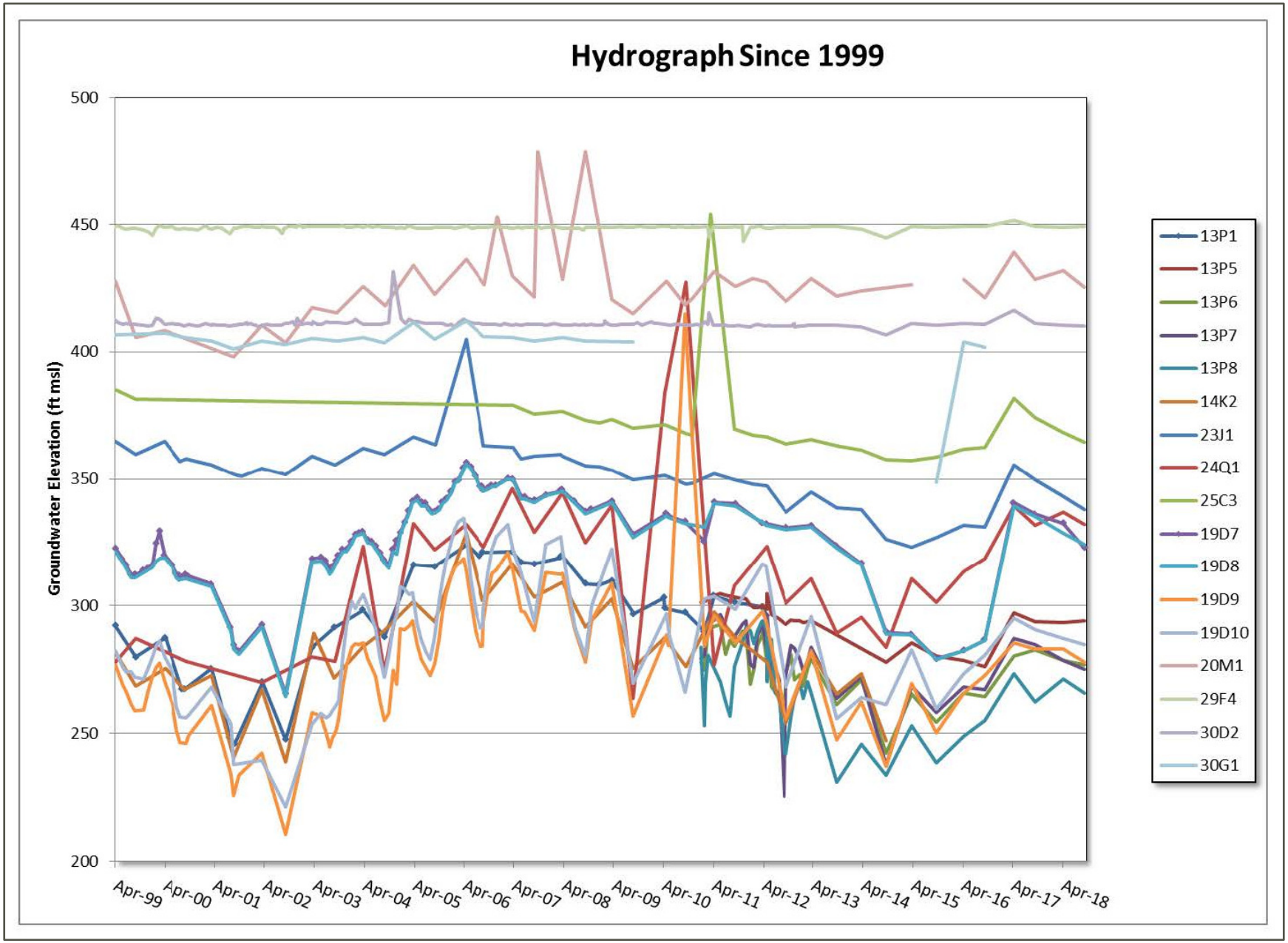

SOURCE: EMKO 2020a, Figure 16A; modified by Benchmark Resources in 2020.

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Hydrograph Since 1999
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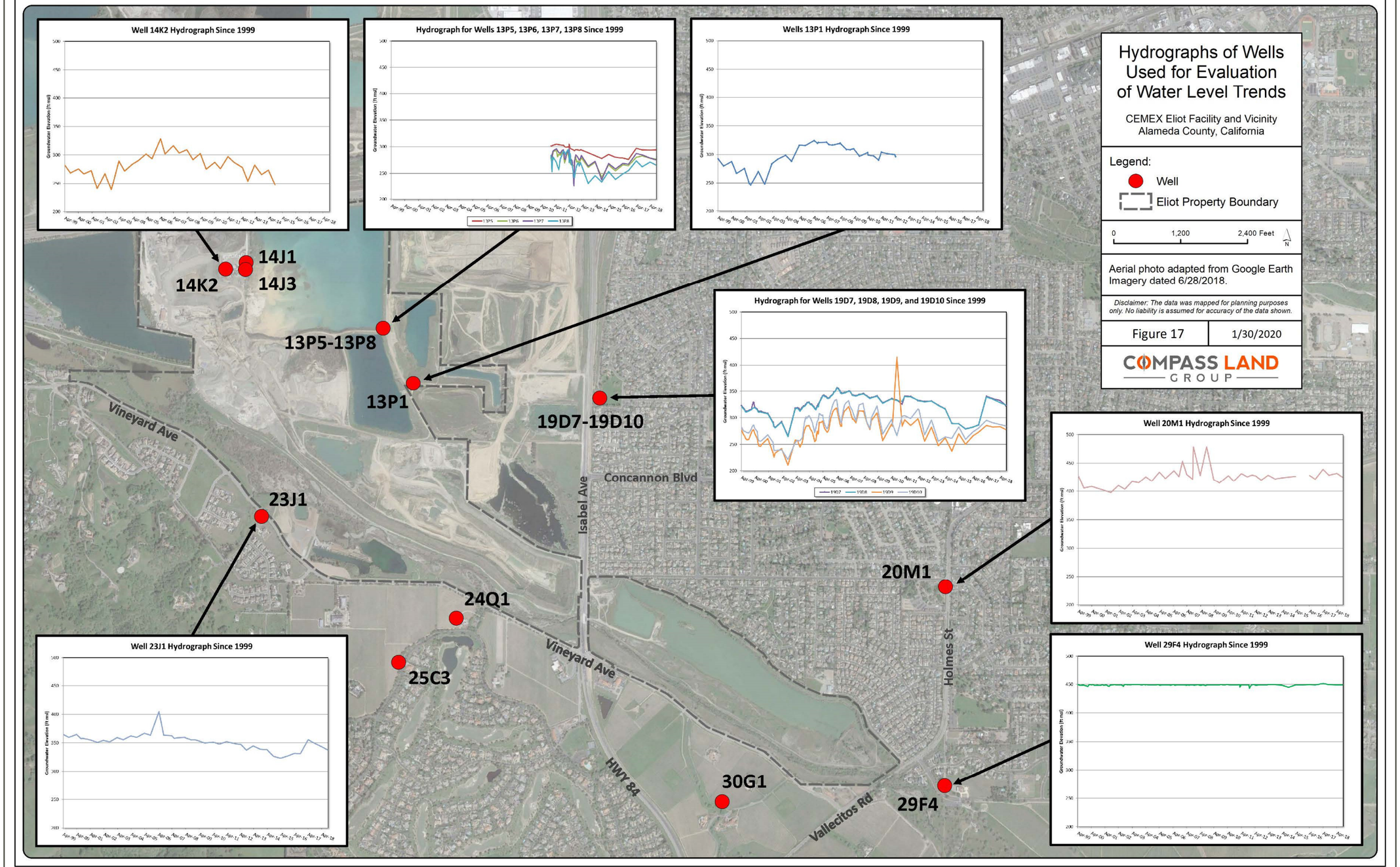

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Altered flows have also contributed to changes in ADV channel; the once actively braided channel network along the valley floor now has shifted to a more defined central channel system (Kamman 2009, cited in Brown and Caldwell 2020).

Directly downstream of the dam, the ADV flows through a narrow, sinuous canyon until it reaches the valley floor about 1 mile downstream, near the Veterans Administration hospital. At this point, the channel and floodplain become wider and, in the past, more active and braided. Sycamore Grove Park is an important community park that preserves mature Western Sycamore trees along this reach of the historical ADV floodplain. This park stretches approximately 2 miles from the hospital to Vallecitos Road.

The project site is located just downstream of Sycamore Grove Park. The ADV flows along the southern portion of the project site and adjacent to Lakes A and B. The arroyo flows through two small lakes along the south side of the Shadow Cliffs Regional Recreation Area and then continues west through the city of Pleasanton. Several small streams drain into ADV between the dam and its confluence with Arroyo de la Laguna.

Existing Flow Regime

As noted above, the hydrologic flow regime of the ADV was substantially altered by the construction of Del Valle Reservoir in 1968. The construction of Del Valle Reservoir resulted in a reduction in high flows and an increase in low flows, with a shift from intermittent to perennial flow conditions. Through the project reach, the ADV discharges a minimum flow of 0.01 cfs, greater than 1 cfs more than 50 percent of the time, greater than 10 cfs more than 20 percent of the time, and greater than 100 cfs only about 3 percent of the time (Brown and Caldwell 2020). In addition, based on U.S. Geologic Survey stream gauge station data for the Arroyo del Valle at Livermore (AVL), the post-dam average daily discharge for the period 2002 through 2017 exhibits a reasonably consistent pattern of seasonal flow releases. Based on the AVL stream gauge data, median daily flow rates are observed in the range of 0.5 to 3.0 cfs in the wet season (i.e., November through April) and 5 to 10 cfs in the dry season (i.e., May through October). This pattern suggests that dry season flows are predominantly due to controlled releases from upstream facilities (Brown and Caldwell 2020).

The peak annual discharge data for AVL was used to perform statistical estimates of peak discharges for a range of annual probabilities (Brown and Caldwell 2020). Table 4.6-2, "Peak Discharge Summary," below lists the estimated peak discharges for a range of annual probabilities, and Figure 4.6-18, "Peak Flow Frequency Curves for ADV from Regression Analysis," presents the peak discharge frequency results.

TABLE 4.6-2
PEAK DISCHARGE SUMMARY

Recurrence Interval (years)	Annual Chance of Exceedance (percent)	Peak Discharges from Analysis of USGS Streamflow Records (cfs) [a]		Peak Discharges from FEMA Flood Insurance Study[b]	Peak Discharges with Regulation at Del Valle Reservoir[c]
		Pre-dam	*Post-dam*		
1.5	66.7	547	87	--[d]	--[d]
2.0	50.0	1,413	198	--[d]	--[d]
5.0	20.0	6,434	898	--[d]	--[d]
10.0	10.0	12,087	1,891	1,860	2,200
25.0	4.0	21,198	4,042	--[d]	3,500
50.0	2.0	28,818	6,483[e]	4,150	4,500

Recurrence Interval (years)	Annual Chance of Exceedance (percent)	Peak Discharges from Analysis of USGS Streamflow Records (cfs) [a]		Peak Discharges from FEMA Flood Insurance Study[b]	Peak Discharges with Regulation at Del Valle Reservoir[c]
		Pre-dam	*Post-dam*		
100.0	1.0	36,695 [e]	9,797 [e]	7,000	4,500
200.	0.5	44,565 [e]	14,153 [e]	--[d]	7,000
500.0	0.2	54,617 [e]	21,831[e]	9,080	20,000

Source: Brown and Caldwell 2020

Notes:

a. Peak discharges calculated using Bulletin 17B methodology (see Appendix A of Appendix F-1 of this SEIR); analysis performed using peak annual discharge records from USGS 11176500 (pre-dam, 1912–67) and (post-dam, 1969–2017).
b. Peak discharges obtained from effective Flood Insurance Study (FIS) for Alameda County (FEMA 2009); the 100-year (i.e., base flood) peak discharge corresponds with managed releases plus spill at Del Valle Reservoir during the standard project flood (see next footnote).
c. Discharges estimated from Plate 3 of "Report on Reservoir Regulation" by the U.S. Army Corp of Engineers (USACE 1978). Flood control operations described by USACE (1978) as follows: "When the reservoir water surface is between 701.7 and 742.0 feet (39,000 and 74,000 acre-feet of storage, respectively), releases will be restricted to a maximum of 4,500 cfs, the estimated discharge when bank erosion begins on Arroyo Valle. When the reservoir water surface is between 742.0 and 749.0 (81,400 acre-feet of storage including 4,400 acre-feet of surcharge storage) releases will be made to restrict releases plus spill to a maximum of 7,000 cfs during floods up to the standard project flood magnitude. Inundation on Arroyo Valle is estimated to begin when discharge exceeds 7,000 cfs. When reservoir water surface is above elevation 749.0 no releases will be made."
d. Data not available at specified recurrence interval.
e. Recurrence intervals of 100, 200, and 500 years are greater than the available period of record and are therefore considered extrapolations; post-dam estimates do not account for flood control operations at Del Valle Reservoir and should not be relied upon for floodplain management.
f. Base Flood for floodplain management.
g. Standard Project Flood for Del Valle Reservoir (USACE 1978).
h. The peak discharge for the 500-year is large relative to the other discharges in the table; this is likely due to the rapid increase in discharge expected at the spillway.

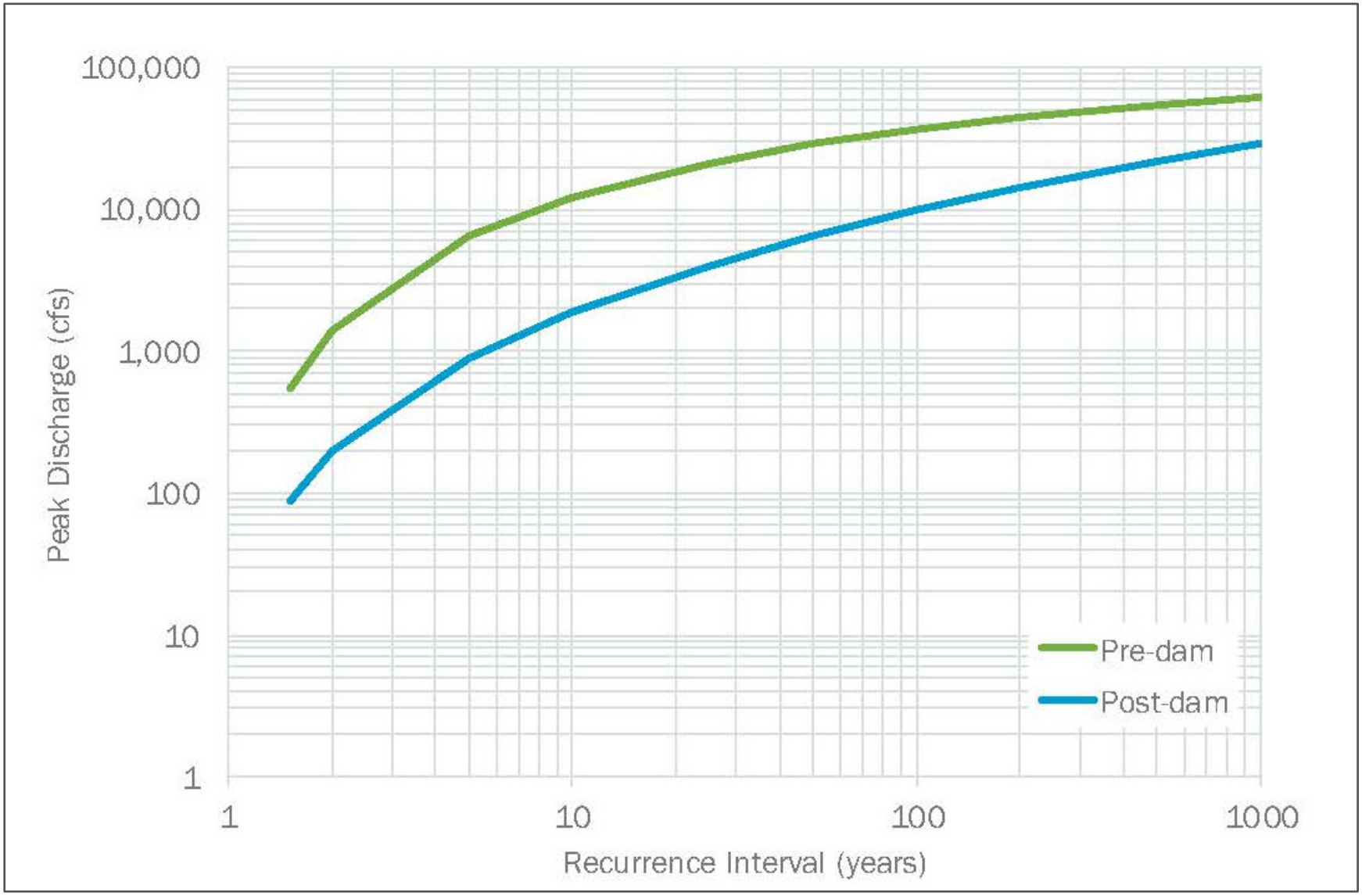
Existing Floodplain

FEMA has completed flood hazard mapping for ADV, including a detailed study of the reach upstream of Isabel Avenue (FEMA 2009). The entire reach of ADV from Arroyo de la Laguna to Del Valle Dam is mapped as a Special Flood Hazard Area (SFHA) (see Figure 4.6-19, "FEMA Flood Hazard Mapping").

The area shown to be within the SFHA is equivalent to the area that can be inundated by the base flood. The SFHA along ADV is divided into the following two flood hazard designations:

- Zone AE is a riverine flooding hazard with established base flood elevations; the delineated areas and flood profiles are based on detailed hydraulic modeling.
- Zone A is a riverine flooding hazard with no base flood elevations; these areas are delineated by approximate methods that may not have included any detailed modeling.

Two reaches of the ADV are shown as Zone AE in Figure 4.6-19. The first reach begins at the confluence with Arroyo de la Laguna and ends approximately 1,300 feet upstream of Bernal Avenue. The second reach begins at Isabel Avenue and ends at Del Valle Dam. The connecting Zone A reach covers approximately 3 miles, including areas adjacent to Shadow Cliffs Regional Recreation Area and Lake B of the project site (FEMA 2009).



SOURCE: B&C 2020, Figure 3-6; modified by Benchmark Resources in 2020.
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Peak Flow Frequency Curves for ADV from Regression Analysis
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Figure 4.6-18

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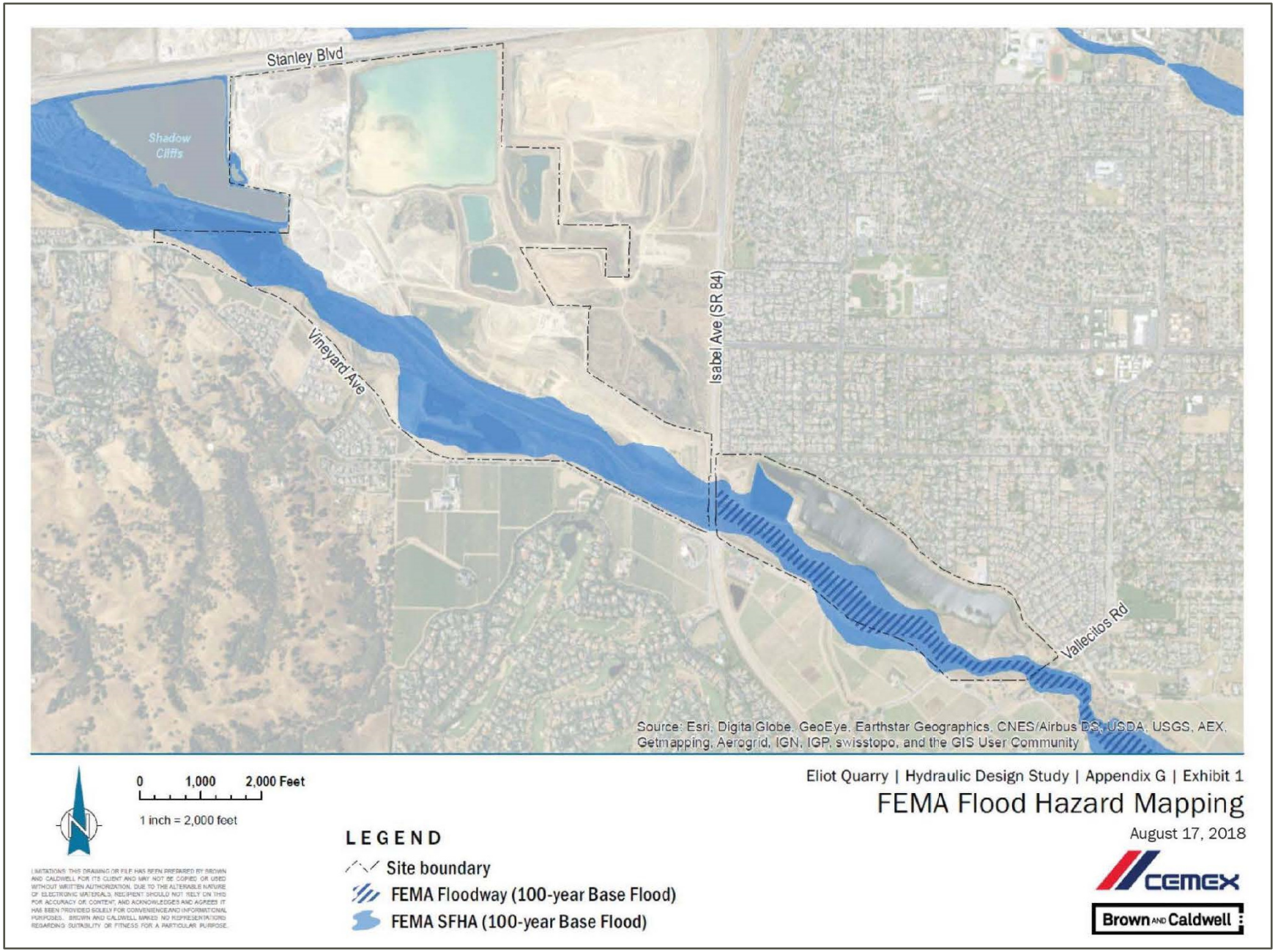

SOURCE: B&C 2020, Appendix G, Exhibit 1; modified by Benchmark Resources in 2020.

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FEMA Flood Hazard Mapping
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Conditions have changed since the original FEMA study was completed and supporting technical data, such as the current effective hydraulic model, were not available. Therefore, new and updated analyses were needed to obtain an accurate depiction of flooding potential under existing conditions. To perform new steady-state hydraulic simulations for the 10-, 50-, 100-, and 500-year floods, Brown and Caldwell developed a hydraulic model of ADV from approximately 1,000 feet downstream of Bernal Avenue to approximately 4,500 feet upstream of Vallecitos Road using Hydrologic Engineering Centers River Analysis System (HEC-RAS)[1] software (Version 5.0, 2016). (Brown and Caldwell 2020) (Appendix F-1). The peak discharges from the current FEMA FIS were used to develop the data inputs for the HEC-RAS model. According to FEMA's current FIS for the County, the peak 100-year discharge is 7,000 cfs, which corresponds to a managed flood release from the dam (FEMA 2009, USACE 1978). Furthermore, Brown and Caldwell reviewed existing hydraulic modeling data as well as new topographic data from 2018 to develop an up-to-date existing-conditions (i.e., baseline conditions) model of ADV. Brown and Caldwell then modified that model to reflect the conditions of the proposed project.

The estimated 100-year flood inundation in the project reach based on the existing conditions hydraulic model is shown on Figure 4.6-20, "100-Year Flood Inundation Based on Existing Conditions Hydraulic Modeling." The estimated water surface elevations in ADV are high enough to indicate that water could potentially flow into Lake A and/or Lake B at two low spots, as shown on Figure 4.6-20.

4.6.2.5 Groundwater and Surface Water Quality

The EMKO report (Appendix F-2) assesses water quality conditions at the entire project site. Water quality data were obtained from Zone 7 for wells and surface water locations near Lake A and Lake B. Figure 4.6-21, "Pond Water Elevations and Surface Water Sampling Locations," and Figure 4.6-22, "Well Sampling Locations," show the locations of wells and surface water samples, respectively. The water quality data are provided in Table 4.6-3, "Groundwater Quality Data," and Table 4.6-4, "Surface Water Quality Data." Note that not all locations shown on these figures were evaluated as some are located outside the project boundary and others would not be affected by the proposed project. The water quality data were evaluated using a combination of Stiff plots, Piper diagrams, Durov diagrams, and Schoeller diagrams. See Appendix B of the EMKO (2020a) report (provided in Appendix F-2 of this SEIR) for the data plots for the 2012 groundwater data. These graphical presentation and analysis tools are standard approaches for evaluating general mineral water quality data (USGS 1989).

The Kleinfelder focused water quality assessment (Appendix F-3), however, was prepared to determine potential differences in water quality between the Upper and Lower Aquifers in the vicinity of Lake B only and to evaluate if the proposed increase in depth of Lake B has the potential to substantially degrade water quality in the Lower Aquifer. The assessment is based on an evaluation of data collected for groundwater and surface water by Zone 7, with a focus on four of the five constituents listed in Zone 7's Alternative Groundwater Sustainability Plan for the Livermore Valley Groundwater Basin (i.e., TDS, nitrate, boron, and hexavalent chromium). The fifth constituent, toxic sites, does not apply to the project site.

[1] HEC-RAS is a 1-dimensional step backwater flow model developed by USACE HEC. Standard hydraulic simulations require two types of input data: (1) geometric data comprising cross-sections, stream reach lengths, and bridge/culvert dimensions; and (2) flow data comprising flow rates and boundary conditions. Both types of input data were imported into HEC-RAS for the Hydraulic Analysis (see Section 6.1 of Appendix F-1 of this SEIR).

TABLE 4.6-3
GROUNDWATER QUALITY DATA

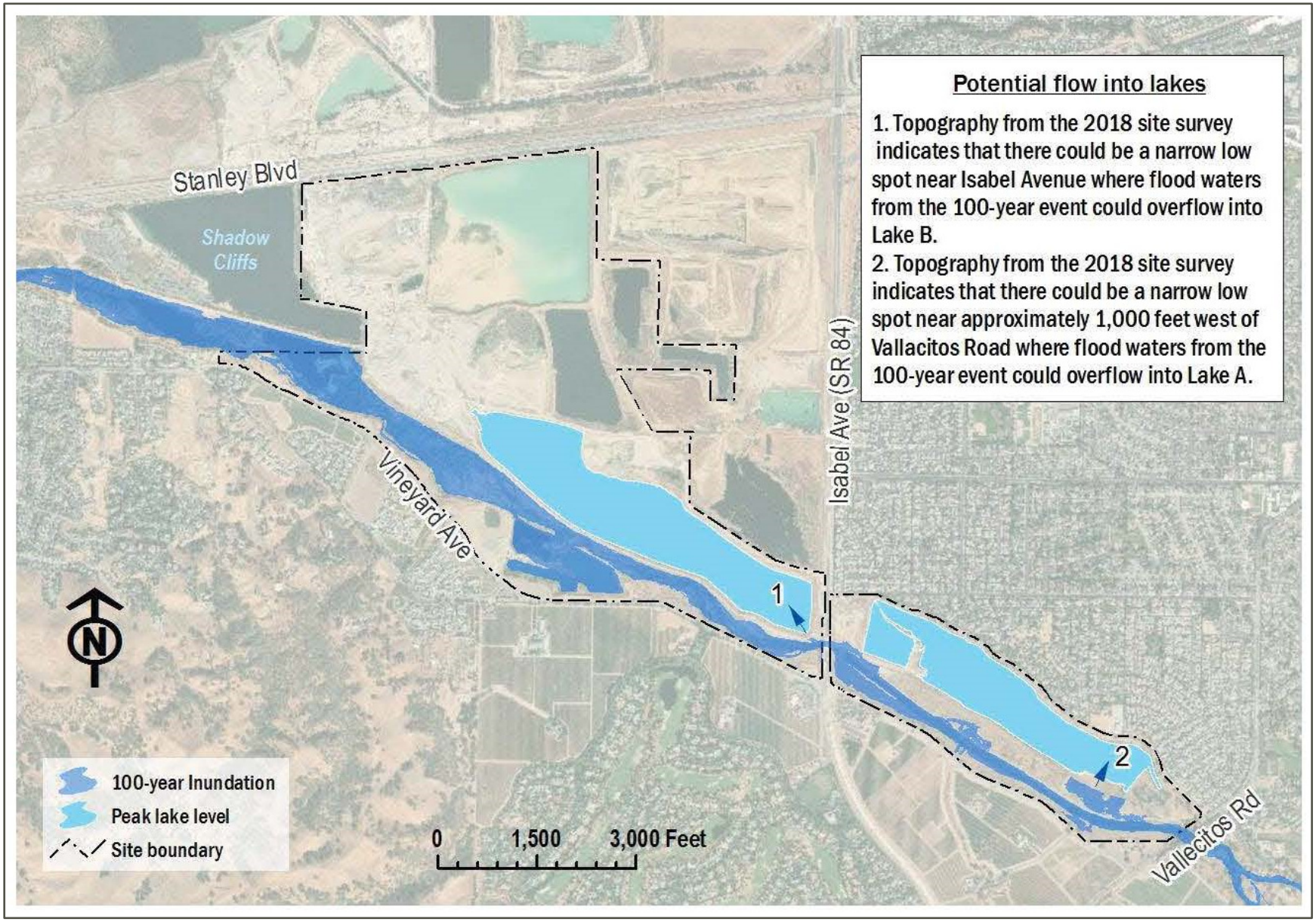
Parameter	Well:	13P1	13P05	13P06	13P07	13P08	23J01	25C03	19D07	19D08	19D09	19D10	20M01	29F04	30D02
	Units	*4/17/12*	*4/17/12*	*4/17/12*	*4/17/12*	*4/17/12*	*2/8/12*	*2/8/12*	*4/16/12*	*4/16/12*	*4/16/12*	*4/16/12*	*2/8/12*	*4/16/12*	*5/30/12*
Calcium	mg/L	56	50	86	49	61	53	56	75	88	44	61	73	64	44
Magnesium	mg/L	18	22	22	12	17	30	23	51	56	15	30	33	26	22
Sodium	mg/L	48	49	34	50	52	58	69	30	32	27	44	68	38	37
Potassium	mg/L	1.8	1.7	2.0	2.0	2.1	1.0	1.3	2.1	2.3	1.4	1.8	1.7	1.9	1.9
Bicarbonate (as $CaCO_3$)	mg/L	188	182	267	246	229	166	254	281	304	133	208	326	285	202
Sulfate	mg/L	45	45	42	40	43	13	31	22	25	10	32	53	56	43
Chloride	mg/L	80	83	69	16	56	144	96	135	152	48	97	89	42	54
TDS	mg/L	357	359	415	316	376	447	446	501	553	294	449	511	391	326
Specific Conductivity	umho/cm	623	621	704	506	628	813	763	902	988	467	735	881	657	566
pH	std units	7.4	7.4	7.3	7.7	7.3	8.0	6.8	7.2	7.3	7.4	7.3	7.6	7.6	7.7

Source: EMKO 2020a: Table 5
Notes: mg/L = milligrams per liter; std units = standard units; TDS = total dissolved solids; umho/cm = micromhos.

TABLE 4.6-4
SURFACE WATER QUALITY DATA

Sample Location:		K18	P10	P12	P42	P28	P41
Parameter	*Units*	*5/29/2012*	*5/29/2012*	*5/29/2012*	*5/29/2012*	*5/29/2012*	*5/29/2012*
Calcium	mg/L	36	25	40	47	35	52
Magnesium	mg/L	17	26	18	23	42	36
Sodium	mg/L	49	53	41	41	83	62
Potassium	mg/L	2.1	2.4	2.0	1.4	2.4	2.5
Bicarbonate (as CaCO3)	mg/L	138	473	164	202	216	236
Sulfate	mg/L	45	21	45	41	52	39
Chloride	mg/L	70	72	71	66	153	130
TDS	mg/L	308	310	313	339	487	457
Specific Conductivity	umho/cm	539	558	568	617	883	851
pH	std units	8.9	8.7	8.4	8.4	8.6	8.6

Source: EMKO 2020a: Table 6
Notes: mg/L = milligrams per liter; std units = standard units; TDS = total dissolved solids; umho/cm = micromhos.



SOURCE: B&C 2020, Figure 6-8; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

100-Year Flood Inundation Based on Existing Conditions Hydraulic Modeling

ELIOT QUARRY SMP-23 SEIR

Figure 4.6-20

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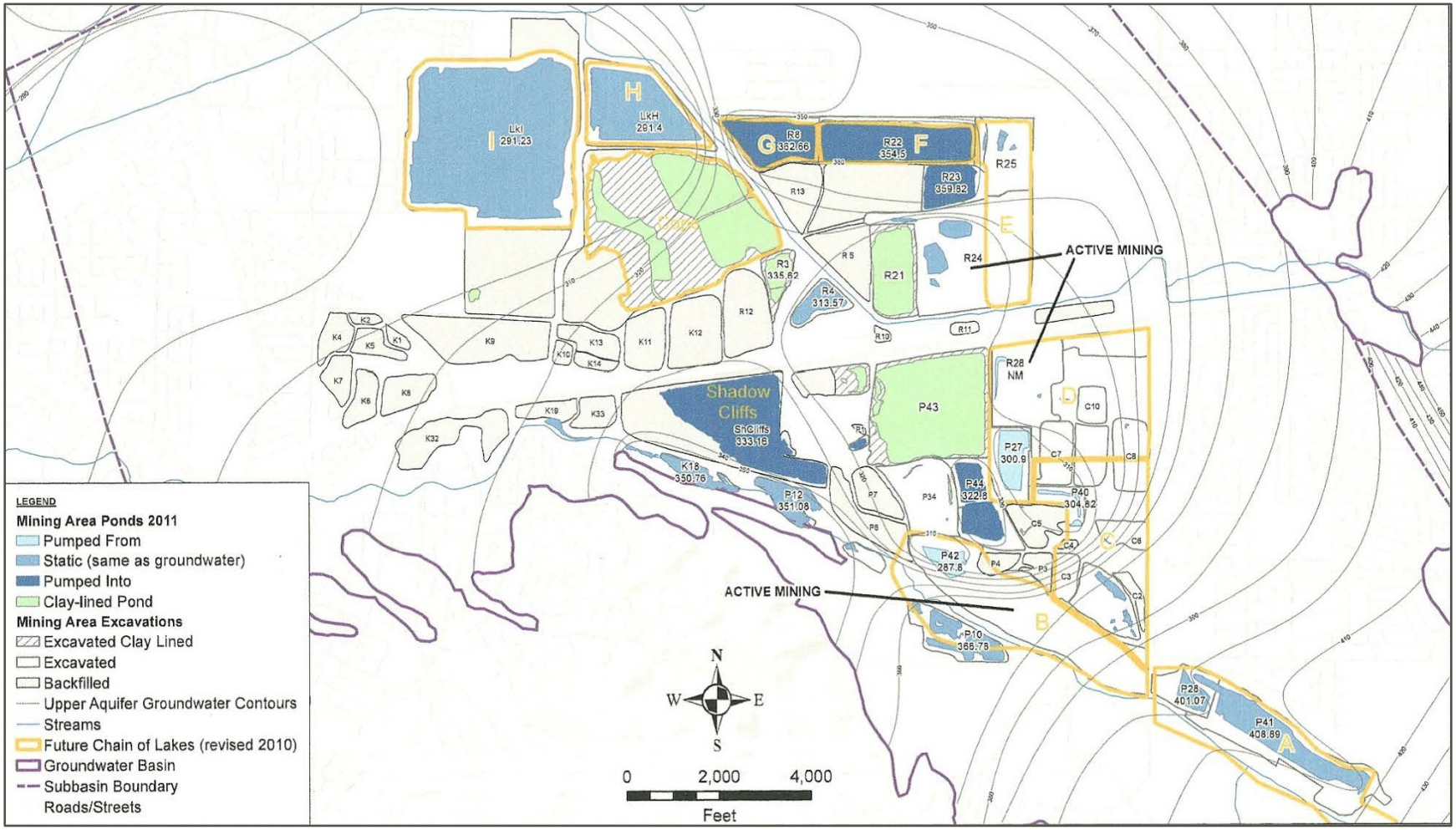

SOURCE: EMKO 2020a; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Pond Water Elevations and Surface Water Sampling Locations

ELIOT QUARRY SMP-23 SEIR

Figure 4.6-21

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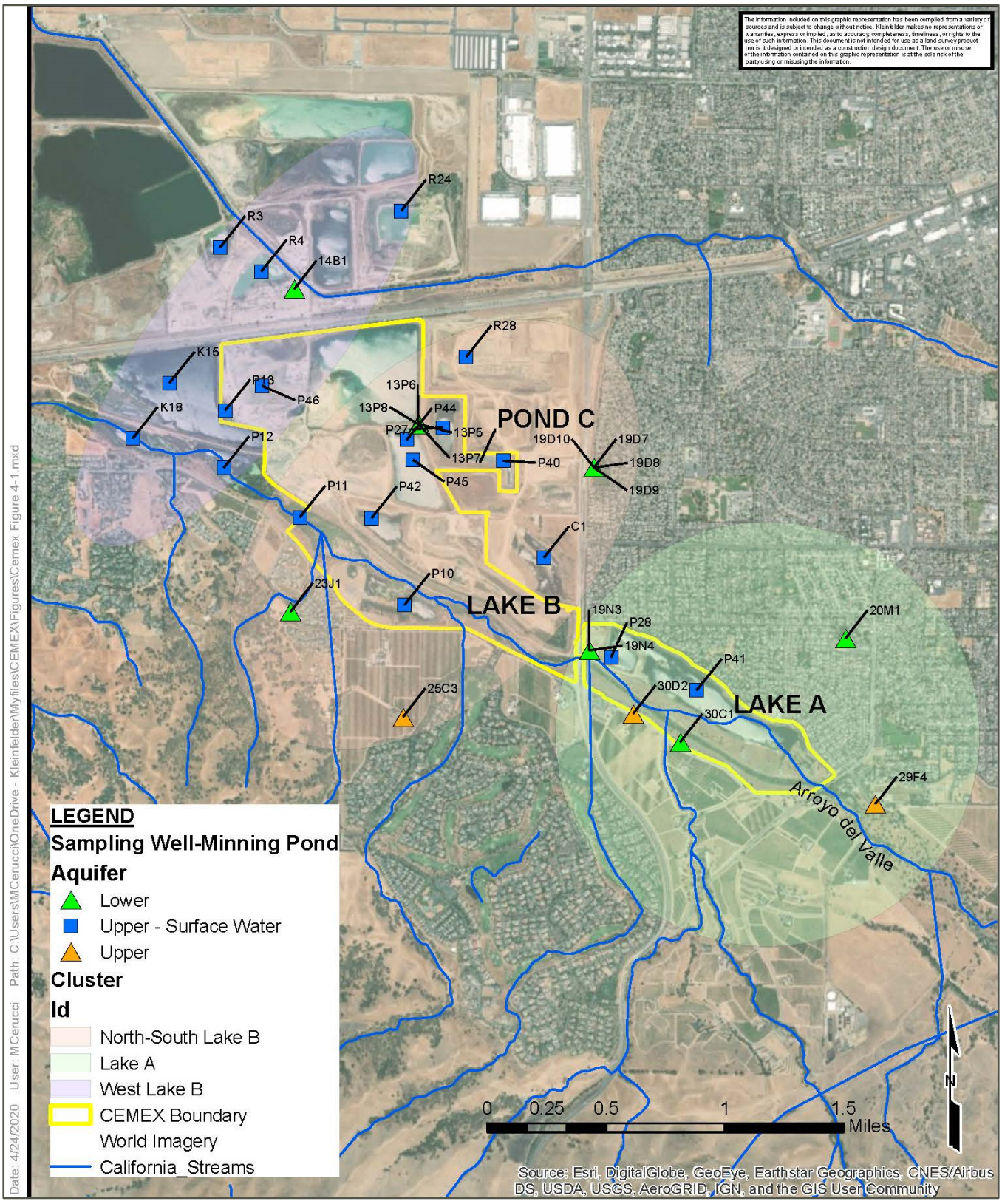

SOURCE: Kleinfelder 2020, Figure 4.1; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

Well Sampling Locations
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Figure 4.6-22

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The chemical parameters evaluated in the Kleinfelder assessment were arsenic, boron, calcium, chloride, bicarbonate plus carbonate, chromium, iron, potassium, magnesium, sodium, nitrate, sulfate, silica, TDS, and pH. The graphing tools Piper, Schoeller, and Durov diagrams were used to evaluate hydrochemical facies (water types), mixing of waters, and potential sources. Box-whisker plots were prepared to identify outliers. Parametric statistics (mean, maximum, and minimum) were calculated for most parameters, and non-parametric statistics were derived for nitrate, boron, chromium, and TDS using the 40-year data record provided by Zone 7.

Groundwater Quality

Zone 7 (2011) reports that no distinct water quality characteristics uniquely distinguish an individual well or aquifer unit. The groundwater is primarily a calcium-bicarbonate water type. Levels of total dissolved solids (TDS) range from approximately 300 mg/L to 550 mg/L.

For several wells, water-quality data since the 1970s is available. To evaluate any trends or major changes in water quality over time, the data from well 13P1, located on the east side of SMP-23, were used. The data plots for the historical data evaluation of well 13P1 are provided in Appendix B of the EMKO (2020a) report (Appendix F-2 of this SEIR).

For groundwater, TDS levels range fairly uniformly from approximately 300 to 550 mg/L. The pH ranges from 6.8 to 8.0, with all but two values being between 7.2 and 7.7. The predominant anion (negatively charged ion) is bicarbonate in all wells except 23J1, where chloride is the predominant anion. Calcium is the predominant cation (positively charged ion), however magnesium is slightly more predominant in wells 19D7 and 19D8, while sodium is more predominant in 25C3 (see Appendix A of EMKO 2020a [Appendix F-2 of this SEIR] for all diagrams and plots).

The Kleinfelder report compared existing groundwater water quality data, described above, with the thresholds in the Zone 7 Alternative Plan. As a result, Kleinfelder collected data for TDS, nitrate, chromium, and boron (the priority constituents listed in the Alternative Groundwater Sustainability Plan) concentrations in groundwater (see Table 4.6-5, "Maximum Concentration of Constituents 1980 -2019: Groundwater") and noted the following observations:

- **TDS**: Average TDS concentration varies from 373 mg/L in the Upper Aquifer of North-South Lake B area to 432.57 mg/L in the Upper Aquifer west of Lake B area. An individual elevated TDS result for mining pond P40 (6,199 mg/L) is recognized as an outlier and was not used in the parametric statistical analyses. Subsequent sampling performed in 2017 indicated significantly lower levels of TDS in P40 (380 mg/L).
- **Nitrate:** Nitrate levels are lower for the Upper Aquifer wells and mining ponds. Lower Aquifer well 19D10 has an average nitrate concentration above the 10 mg/L Alternative Plan threshold. This is an indication that water from the Upper Aquifer in the vicinity of nested well 19D10 would not degrade water quality in the Lower Aquifer with respect to nitrate. Silica also has higher concentrations in the Lower Aquifer.
- **Chromium:** The averages of chromium for the different spatial clusters are within the same order of magnitude and well below the 10 μg/L Alternative Plan threshold, and even further below the current state MCL of 50 μg/L. The analysis of samples according to their position in the aquifer does not indicate significant differences in chromium concentrations for the Upper and Lower Aquifers. Thus, based on concentrations it is unlikely that the mixing of Upper and Lower aquifer waters would significantly change chromium concentrations in the Lower Aquifer.

- **Boron:** The average boron concentration is higher in the Upper Aquifer, mainly in surface water. However, the average concentrations are significantly lower than the 1,400 µg/L Alternative Plan threshold. It is possible that concentrations of boron in the Lower Aquifer would increase over time due to mixing if surface water infiltrates from the Upper Aquifer. However, because higher boron concentrations are normally found in surface water, the existing grading was designed to divert stormwater from reclaimed areas to retention ponds to prevent it entering Lake A and Lake B.

TABLE 4.6-5
MAXIMUM CONCENTRATION OF CONSTITUENTS 1980 -2019: GROUNDWATER

Well ID	Nitrate mg/L	Boron µg/L	Chromium µg/L	TDS mg/L	Arsenic mg/L	Silica µg/L	Iron µg/L
13P5	0.4	410.0	3.6	366.0	< 1.0	17.1	<100.0
13P6	0.9	390.0	4.6	424.0	< 1.0	23.5	680.0
13P7	0.2	210.0	6.5	322.0	< 1.0	23.8	490.0
13P8	1.1	330.0	< 2.0	385.0	< 1.0	27.8	170.0
14B1	2.7	390.0	6.0	457.0	< 1.0	21.4	<50.0
19D10	13.5	220.0	2.7	469.0	< 1.0	36.2	<50.0
19D7	8.3	100.0	12.0	802.0	< 1.0	28.9	140.0
19D8	6.7	100.0	8.3	587.0	< 1.0	27.2	<50.0
19D9	13.1	100.0	6.7	297.0	< 1.0	28.2	200.0
19N3	0.6	240.0	< 1.0	361.0	9.1	27.8	<100.0
23J1	7.9	340.0	5.0	486.0	< 1.0	38.7	<50.0
25C3	5.0	410.0	2.0	465.0	< 1.0	29.3	120.0
29F4	1.3	1400.0	11.0	655.0	8.0	25.3	540.0
30D2	1.8	800.0	4.4	494.0	< 1.0	25.2	<100.0

Source: Kleinfelder 2020

As stated above, the data from well 13P1 from 1971 through 2012 were also evaluated to assess variations or trends over time. The data from well 13P1 indicate that the general water quality parameters in this well have been consistent over time and no significant trends in these parameters have occurred over the last several decades.

Surface Water Quality

Surface water data plots are provided in Appendix D of the EMKO (2020a) report (Appendix F-2 of this SEIR). The surface water data suggest that the general water chemistry is slightly different at Lake A compared to downstream locations. At Lake A, the water chemistry is more similar to that for groundwater in nearby wells than it is to the other surface water locations downstream, with TDS levels in the range of 450 mg/L to 490 mg/L, and with magnesium, sodium, and chloride present at higher proportions than at other locations. While the overall water type from Lake A is similar to the groundwater wells, there are also some differences related to individual parameters between Lake A and the available data from two nearby wells, 30D2 and 29F4. For example, the TDS in Lake A (457 to 487 mg/L) is higher than 30D2 (326 mg/L) and 29F4 (391 mg/L). The chloride in Lake A (130 to 153 mg/L) is higher than 30D2 (54 mg/L) and 29F4 (42 mg/L). The pH in Lake A (8.6) is higher than 30D2 (7.7) and 29F4 (7.6). The specific conductivity in Lake A (851 to 883 micromhos per centimeter [umhos/cm]) is higher than 30D2 (566 umhos/com) and 29F4 (657 umhos/cm). However, other parameters, such as calcium, bicarbonate, and sulfate in Lake A generally have comparable concentrations to those in the nearby wells. The water in Lake A is primarily groundwater that has been exposed to the atmosphere.

Therefore, evaporation and exposure to oxygen in the atmosphere may result in some modification of the water chemistry in Lake A compared to that in the nearby wells, where the groundwater is not directly exposed to the atmosphere (see Table 4.6-3).

The surface water in the ADV generally has slightly lower TDS levels and a slightly higher pH than groundwater in the vicinity of Lake A and Lake B. The general mineral chemistry of the surface water is comparable to that observed in the groundwater in the area.

As noted above, the Kleinfelder report compared existing surface water quality data with the thresholds in the Zone 7 Alternative Plan. Only one of those four constituents, boron, applied to surface water. As a result, the Kleinfelder report noted the average boron concentration is higher in the Upper Aquifer, mainly in surface water. However, the average concentrations were significantly lower than the 1,400 µg/L Alternative Plan threshold (see Table 4.6-6, "Maximum Concentration of Constituents 1980 -2019: Surface Water"). Because higher boron concentrations are normally found in surface water, the existing grading was designed to divert stormwater from reclaimed areas to retention ponds to prevent it entering Lake A and Lake B.

TABLE 4.6-6
MAXIMUM CONCENTRATION OF CONSTITUENTS 1980 -2019: SURFACE WATER

Well ID	Nitrate mg/L	Boron µg/L	Chromium µg/L	TDS mg/L	Arsenic mg/L	Silica µg/L	Iron µg/L
C1	0.3	2480.0	2.0	1057.0	13.0	22.0	222.0
K18	0.3	420.0	<5.0	553.0	2.1	11.4	<100.0
P10	0.3	1000.0	2.3	662.0	5.9	22.3	210.0
P11	0.6	700.0	3.0	524.0	2.0	20.2	350.0
P12	0.3	440.0	3.1	516.0	3.9	21.4	510.0
P13	NA	NA	NA	588.0	NA	NA	NA
P27	0.3	560.0	2.7	447.0	5.0	20.3	290.0
P28	0.1	680.0	< 5.0	544.0	4.9	13.9	520.0
P40	0.1	650.0	4.3	484.0	3.5	17.1	2100.0
P41	0.1	590.0	4.1	555.0	4.0	13.8	300.0
P42	0.7	400.0	9.6	423.0	2.4	20.1	1160.0
P44	0.1	530.0	6.3	428.0	2.0	12.4	660.0
P45	0.3	500.0	3.8	377.0	3.9	11.2	890.0
P46	1.3	420.0	1.0	476.0	< 1.0	19.0	<100.0
R24	0.3	810.0	17.0	567.0	4.0	19.4	940.0
R28	0.6	470.0	8.1	407.0	< 1.0	18.2	1200.0
R3	0.5	930.0	11.0	690.0	2.1	23.1	3500.0
R4	0.6	930.0	6.7	631.0	3.2	24.4	960.0
K15	0.3	410.0	2.1	747.0	4.8	14.0	130.0

Source: Kleinfelder 2020
Notes: NA = Not Available

4.6.3 Regulatory Setting

A discussion of the key laws, regulations, and programs pertaining to hydrology and water quality is provided in the following sections.

4.6.3.1 Federal

Federal Water Pollution Control Act (33 USC 1251 et seq.)

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), established the basic structure for regulating discharges of pollutants into the waters of the United States. This gave U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting water quality standards and criteria for contaminants in surface waters. The CWA does not deal directly with groundwater or with water quantity issues. Section 208 requires the use of best management practices (BMPs) to control releases of pollutants in stormwater at construction sites. Section 303(d) requires the states identify waters for which effluent limits are not stringent enough to implement the applicable water quality standards, and to prepare plans for improving the quality of these water bodies. Section 401 requires the federal government to obtain certification from the state that a project is consistent with state water quality standards. Section 402(p)(3)(B)(iii) authorizes the National Pollutant Discharge Elimination System (NPDES) permit program to control water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or human-made ditches. Section 404 authorizes the U.S. Army Corps of Engineers to regulate projects that will discharge dredge or fill materials into waters of the United States.

Construction projects and many industrial facilities must obtain NPDES permits to control the release of industrial chemicals in stormwater runoff. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall events that often contain pollutants in quantities that could adversely affect water quality. The primary method to control stormwater discharges is through the use of BMPs.

Anti-degradation Standards of the CWA dictate that once the existing uses of a water body have been established—by evaluating the water's quality relative to uses already attained—a State/Tribe must maintain the level of water quality that has been identified as being necessary to support those existing uses. The "use" of a water body is the most fundamental articulation of its role in the aquatic and human environments. The "designated" uses of a water body are an expression of goals for the water, such as supporting aquatic life and human activities, including recreation and use as a public water supply. That is, these uses may not currently be attained for the water body. The general parameters of a State or Tribe's antidegradation program must address the following three categories:

- **Tier 1:** Protection of water quality for existing uses by maintaining the water quality necessary to support those uses. Tier 1 is applicable to all surface waters;
- **Tier 2:** Protection of high quality waters, or water bodies where existing water quality conditions are better than necessary to protect CWA 101(a) designated uses. High quality waters must be addressed by the State or Tribe's antidegradation program because of the importance of such waters as a resource with economic, public health, and ecological value; and
- **Tier 3:** Outstanding National Resource Waters (ONRWs), or waters that have unique characteristics to be preserved (e.g., waters of exceptional recreational, environmental, or ecological significance). While States/Tribes are required to have provisions in their antidegradation policy that address ONRWs, it is left to the State/Tribe's discretion to identify waters as ONRWs.

At a minimum, States/Tribes must apply their antidegradation program to activities that are regulated under State, Tribal, or federal law, including:

- Any activity that requires a permit or water quality certification.
- Any activity subject to State/Tribal non-point source control requirements or regulations.
- Any activity that is otherwise subject to State/Tribal regulations specifying that water quality standards are applicable (EPA 2020).

4.6.3.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) [Section 13000 et seq.]) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It created the State Water Resources Control Board (SWRCB) and nine regional water quality control boards (RWQCBs) to plan, implement, manage, and enforce water quality protection and management. The RWQCBs are empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards. The project site is located within the San Francisco Bay and is regulated by the San Francisco Bay RWQCB. The NPDES permitting program is administered by the SWRCB. To obtain a NPDES permit under the General Permit for stormwater, applicants must prepare and submit a notice of intent with the SWRCB and development of a stormwater pollution prevention plan (SWPPP) and monitoring program that incorporates applicable BMPs. The applicable NPDES permit for the proposed project is NPDES No. CAG982001, which was adopted on October 14, 2020, will become effective on January 1, 2021, and will expire on December 31, 2025.

Regional Water Quality Control Boards

The regulations set by the nine RWQCBs pertain to water quality aspects of discharges of solid waste to land for treatment, storage, or disposal. The provisions of California Code of Regulations, Title 27, Division 2, Article 1, Subchapter 1, Chapter 7, Subdivision 1 (Section 22470), regulate the discharge of mining waste. The standards set by the RWQCBs do not override or relieve an owner of compliance with other orders, laws, regulations, or other requirements of other approval, regulatory, or enforcement agencies, such as the California Department of Toxic Substances Control, local health entities, water and air quality control boards, local land use authorities, fire authorities, and other agencies.

Senate Bill 610: Water Supply Assessment

Water Code Sections 10910 through 10915 were amended by Senate Bill 610 (SB 610) in 2002. SB 610 requires that under specific circumstances, as detailed below, an assessment of available water supplies must be conducted. The purpose of the assessment is to determine if available water supplies are sufficient to serve the demand generated by the project, as well as the reasonably foreseeable demand in the region over the next 20 years under average normal year, single dry year, and multiple dry year conditions. Water Code Section 10910 was further amended by SB 1262 on September 24, 2016 to require a Water Supply Assessment to include additional information regarding the groundwater basin designation and adjacent water systems. Appendix F-7, "Water Supply Assessment," provides the information required for a Water Supply Assessment (WSA), as described in the October 2003 *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 to Assist Water Suppliers, Cities, and Counties in Integrating Water and Land Use Planning*, published by the California Department of Water Resources (DWR Guidebook) along with the additional information required by SB 1262. The SB 610 water supply assessment has been completed for the project (EMKO 2019) (see Appendix F-7).

California Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code [PRC], Sections 2710–2796) and its implementing regulations (California Code of Regulations [CCR], Title 14, §3500 et seq.) provide a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized, and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the state's mineral resources. PRC Section 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations.

SMARA CCR Section 3706 applies to the discussion of the project's potential for hydrology and water quality impacts:

a) Surface mining and reclamation activities shall be conducted to protect on-site and downstream beneficial uses of water in accordance with the Porter-Cologne Water Quality Control Act, Water Code section 13000, et seq., and the Federal Clean Water Act, 33 U.S.C. Section 1251, et seq.

b) The quality of water, recharge potential, and storage capacity of ground water aquifers which are the source of water for domestic, agricultural, or other uses dependent on the water, shall not be diminished, except as allowed in the approved reclamation plan.

c) Erosion and sedimentation shall be controlled during all phases of construction, operation, reclamation, and closure of a surface mining operation to minimize siltation of lakes and watercourses, as required by the Regional Water Quality Control Board or the State Water Resources Control Board.

d) Surface runoff and drainage from surface mining activities shall be controlled by berms, silt fences, sediment ponds, revegetation, hay bales, or other erosion control measures, to ensure that surrounding land and water resources are protected from erosion, gullying, sedimentation and contamination. Erosion control methods shall be designed to handle runoff from not less than the 20 year/l-hour intensity storm event.

e) Where natural drainages are covered, restricted, rerouted, or otherwise impacted by surface mining activities, mitigating alternatives shall be proposed and specifically approved in the reclamation plan to assure that runoff shall not cause increased erosion or sedimentation.

f) When stream diversions are required, they shall be constructed in accordance with: (1) the stream and lake alteration agreement between the operator and the Department of Fish and Game; and (2) the requirements of the Federal Clean Water Act, Sections 301 (33 U.S.C. 1311) and Section 404 (33 U.S.C. 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

g) When no longer needed to achieve the purpose for which they were authorized, all temporary stream channel diversions shall be removed and the affected land reclaimed.

Sustainable Groundwater Management Act

Under California's Sustainable Groundwater Management Act (SGMA) passed in 2014, Zone 7 is designated as the exclusive Groundwater Sustainability Agency (GSA) for the Livermore Valley Groundwater Basin. The project site is located within the Livermore Valley Groundwater Basin or Basin Number 2-10 as defined by the California Department of Water Resources (DWR) California's Groundwater, Bulletin 118—Update 2003. In compliance with the SGMA regulations, the GSA must prepare either a Groundwater Sustainability Plan (GSP) or an Alternative Plan. An Alternative Plan must be functionally equivalent to a GSP and demonstrate that the entire basin has been operating within its sustainable yield for at least 10 years. In December 2016, Zone 7 submitted an Alternative Plan for the

Livermore Valley Groundwater Basin. On July 17, 2019, DWR approved the Alternative Groundwater Sustainability Plan for the Livermore Valley Groundwater Basin.

In accordance with SGMA, sustainability plans must address sustainability indicators that effect groundwater conditions occurring throughout the basin that, when significant and unreasonable, become undesirable results. SGMA lists six undesirable results, one of which is significant and unreasonable degraded water quality including the migration of contaminant plumes that impair water supplies. For groundwater quality within the area of the project site, Zone 7's Alternative Plan states undesirable results are defined as the loss of beneficial uses as measured in basin municipal wells that provide drinking water supply for the basin. This result would be caused by degradation of the Lower Aquifer such that constituent levels in municipal wellfields cannot be managed to provide drinking water supply. The Alternative Plan lists five specific constituents identified in the basin that could result in undesirable results including total dissolved solids (TDS), nitrate, boron, hexavalent chromium, and toxic sites. Toxic sites are those sites that generally have been impacted by fuels and industrial chemicals (Zone 7 2016). Based on review of the Alternative Plan and the 2018 Annual Water Monitoring Report for the basin, no toxic sites have been identified in the vicinity of the project site.

Pursuant to SGMA, minimum thresholds must be established to assess if undesirable results are occurring. For the five constituents listed above, the minimum thresholds as defined by Zone 7 in the Alternative Plan are as follows:

- TDS—500 mg/L
- Nitrate as nitrogen (N)—10 mg/L
- Boron—1.4 mg/L
- Hexavalent Chromium—10 micrograms per liter (µg/L) (assumes all total chromium is hexavalent chromium)
- Toxic Sites—Primary Maximum Contaminant Levels (MCLs) established by Federal and State Agencies. As stated above, there are currently no toxic sites identified in the area of the Eliot Mine.

Consistent with the Alternative Groundwater Sustainability Plan developed by Zone 7, these constituents and established minimum thresholds are used to assess if the proposed change to the final elevation (increase in depth) of Lake B could adversely affect groundwater quality in Section 4.6.5 below.

4.6.3.3 Local

East County Area Plan

The goals and policies in the *East County Area Plan* (ECAP) are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use–related issues and to provide guidance for day-to-day decision making (Alameda County 2000). The following goals and policies in the ECAP are related to hydrology and water quality. The project's consistency with the goals and policies is evaluated in Section 4.8, "Land Use and Planning," of this EIR.

Watershed

Policy 101: The County shall encourage public water management agencies to explore recreational opportunities on watershed lands, particularly reclaimed quarries, where recreational use would not conflict with watershed protection objectives.

Water Quality

Goal: To protect and enhance surface and groundwater quality.

Policy 306: The County shall protect surface and groundwater resources by:

- preserving areas with prime percolation capabilities and minimizing placement of potential sources of pollution in such areas;
- minimizing sedimentation and erosion through control of grading, quarrying, cutting of trees, removal of vegetation, placement of roads and bridges, use of off-road vehicles, and animal related disturbance of the soil;

Flood Hazards

Goal: To minimize the risks to lives and property due to flood hazards.

Policy 316: The County shall require new residential, public, commercial, and industrial development to have protection from a 100-year flood.

Zone 7 of the Alameda County Flood Control and Water Conservation District

On June 18, 1957, Livermore-Amador Valley voters approved creation of the Zone 7 of the Alameda County Flood Control and Water Conservation District. The purpose of Zone 7 was to place under local control, through a locally elected board of directors, the matters of flood protection and water resource management in eastern Alameda County (Zone 7 2020b). Zone 7's responsibilities include managing the Livermore-Amador Valley groundwater basin and the Chain of Lakes.

As described in Zone 7's *2020 Preliminary Lake Use Evaluation Report*, Lake A's primary uses are surface water conveyance, water storage, and stormwater management. Lake B's primary use is surface water conveyance and water storage. Lake A's secondary uses are recreation and habitat restoration/conservation. Lake B's secondary use is habitat restoration/conservation (Zone 7 2020a).

Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation (1981)

As part of the *Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation* (Specific Plan) (Alameda County 1981), quarry operators in the Livermore-Amador Valley are required to excavate basins for future use by Zone 7 for groundwater storage, conveyance, and recharge facilities collectively and commonly known as the "Chain of Lakes" (see Figure 4.6-1). The Specific Plan requires the mining operators to dedicate to Zone 7 all excavated basins that are identified as part of the Chain of Lakes within the Specific Plan area. On the Eliot site, Lakes A and B are identified as part of the Chain of Lakes, while Lake J is not included in the Chain of Lakes.

The following aspects of the Specific Plan relate to hydrology and water quality:

III. General Objectives

5. To provide a coordinated plan for arrangement of mining-produced land and water masses into a coherent, flexible form, reflecting interrelatedness of geology, hydrology, land use, and other factors throughout the Quarry Area.

IV. Specific Objectives

1. To mitigate alteration/impedance of groundwater movement and storage due to mining operations.
2. To mitigate exposure of groundwater to evaporative losses due to mining operations.

3. To mitigate exposure of groundwater to increased risk of quality degradation due to surface exposure as a result of mining operations.
4. To provide uninterrupted and undiminished satisfactory water quantity and quality in the upper aquifer of the mined area for beneficial uses.
6. To provide a surface water storage and transmission system to replace a portion of the existing subsurface system to mitigate mining impacts and enhance the ability to utilize, develop, and manage the water resources of the Livermore-Amador Valley for public benefit.

2. Specific Plan: Water Areas

- Water from Arroyos del Valle and Mocho (and possibly Las Positas and other waters) will be diverted into the chain of lakes.
- The diversion structure from Arroyo del Valle within Lake A into Lake C will be capable of diverting at least the first 500 cubic feet per second of flow from the Arroyo.

IV. Policies

6. Levees and dikes constructed as part of the water management system shall be guaranteed by the constructing operator (s) for 5 years after construction and maintained in a sound and acceptable condition until dedicated to Zone 7: Water Conveyance structures (conduits, appurtenances, diversion structures etc.) will be guaranteed for 2 years after construction, and maintained in a sound and acceptable condition until dedication to Zone 7 and further guaranteed for one year after acceptance of dedication by Zone 7 if more than one-half the 2-year guarantee period has expired. All other reclamation features shall be guaranteed by the operators for 2 years after completion of the component.
8. The operators shall pay for their fair share of the following studies or reviews necessary to demonstrate viability of their proposal in an amount to be fixed by the Planning Commission. The "fair share" shall be in proportion to the extent to which the study or review is necessary to address impacts of mining or reclamation in each operator's mining area. Studies or reviews to which this policy shall apply are as follows:
    - A routing study showing how water would be routed through the chain of lakes including interfaces with the groundwater basin and how the system would be operated under a number of hypothetical conditions (wet year, dry year, flood, drought, etc.).
    - A study of hydrology near Stanley Boulevard to demonstrate whether the area is critical for recharge of lower aquifers and to justify placement of inert material in an area shown for water on the approved Q-76 reclamation plan.
    - A study to demonstrate imperviousness and stability of pits and dikes under uplift pressures. Monitoring of water levels and quality necessary to determine the potential effects on mining and water resources.
18. The reclamation plans to be submitted by each operator shall indicate how drainage is to be provided for all land areas which will not pollute the lakes.

Alameda County Surface Mining Ordinance

The Alameda County Surface Mining Ordinance (Chapter 6.80) includes the following provisions related to hydrology and water quality:

6.80.210—Mining

G. Drainage—Water Quality and Conservation

1. Provision shall be made to protect mining operations from overflow from adjacent streams or from slope failures caused by infiltration and seepage from surface water bodies by the construction of levees or other devices to prevent flooding. No obstruction shall be placed in stream channels without obtaining a permit allowing such obstruction from the county flood control and water conservation district.
3. Excavations that may penetrate near or into usable water bearing strata shall not reduce the transmissivity or area through which water may flow unless approved equivalent transmissivity or area has been provided elsewhere, nor subject such groundwater basin or subbasin to pollution or contamination.
4. Nothing in this chapter shall be construed to prevent the use of mined lands for the conservation or storage of water, or for the control of flood or storm waters, by a public agency duly authorized to engage in such work, provided that any such use will not conflict with nor prevent reclamation required under an approved reclamation plan, and provided such use is approved by the county flood control and water conservation district and/or public works agency.
5. Any waters discharged from the site to adjacent lands, streams, or bodies of water or to any groundwater body shall meet all applicable water quality standards of the regional water quality control board and any other agency with authority over such discharges. Records of any water quality monitoring conducted in conjunction with the requirements of such agency or agencies shall be made available to the director of community development and the director of public works on request. Discharges of water to designated on-site settling ponds or desilting basins shall not be deemed to be in violation of this chapter solely on the basis of sediment content.

6.80.240—Reclamation and Reclamation Plans

D. Drainage, Erosion and Sediment Control.

5. Upon reclamation, no condition shall remain that will or could lead to the degradation of water quality below applicable standards of the regional water quality control board or any other agency with authority over water quality.

4.6.4 Significance Criteria and Analysis Methodology

4.6.4.1 Significance Criteria

Hydrology and water quality impacts were determined based on an evaluation of existing project-area surface and groundwater hydrology and water quality conditions and consideration of project water consumption and potential changes to surface and groundwater hydrology and quality caused by project ground disturbance and land uses.

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to hydrology and water quality if it would:

a) violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater water quality;
b) substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;

c) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
   - result in substantial erosion or siltation on- or off-site,
   - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite,
   - create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or
   - impede or redirect flood flows;

d) in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or

e) conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.6.4.2 Analysis Methodology

Evaluation of the hydrology and water quality impacts in this section is based on information from published maps, reports, and other documents that describe the hydrological and hydrogeological conditions of the project area, and on professional judgment. The analysis assumes that the project proponents would conform to the requirements of the County General Plan (*East County Area Plan)*, the LAVQAR Specific Plan, the County Surface Mining Ordinance, the county grading ordinance, and National Pollutant Discharge Elimination System requirements. In addition to review and incorporation of data contained in publicly available reports, the County conducted peer review of the reclamation plan amendment, project description, erosion control plan, and technical evaluations that incorporated design measures to determine potential impacts that could substantially alter the existing drainage pattern of the project site or area, either by the alteration of the course of the ADV or through the addition of impervious surfaces that could result in substantial erosion or siltation by on and off the project site.

The evaluation also peer reviewed and incorporated both applicable FEMA maps and Brown and Caldwell's HEC-RAS model. The HEC-RAS model provided a detailed description of the existing flow regime and flood flow in and around the project site to determine if the project would substantially increase the rate or amount of surface runoff in a manner that would: 1) result in flooding on- or offsite, 2) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems, 3) provide substantial additional sources of polluted runoff, or 4) impede or redirect flood flows.

One of the technical reports prepared regarding water quality impacts (EMKO 2020a) analyzed two baseline conditions: current operating conditions and conditions that would occur if mining and dewatering ceased (non-operational conditions). The baseline for the CEQA analysis considers current operating conditions with dewatered active mining excavations.

The datasets for this analysis include existing water quality, well construction details, and spatial data in the vicinity of the mine. Information was obtained from Zone 7 and from CEMEX. Spatial data acquired for the project is referenced to the California State Plane Zone III coordinate system. The water-quality data provided by Zone 7 are available in electronic format in (Kleinfelder 2020) (see Appendix F-3). The information provided by Zone 7 includes water quality parameters measured in samples from wells located in the Upper Aquifer, Lower Aquifer, and the Livermore Formation and parameters measured in several mining ponds in the vicinity of the project site (surface water). Data from 36 sampling locations

within 1-mile of the project site were used. Figure 4.6-22 presents the locations of wells and mining ponds with water-quality data. Table 4.6-7, "Well and Mining Pond Characteristics," presents the well and mining ponds characteristics.

TABLE 4.6-7
WELL AND MINING POND CHARACTERISTICS

Well ID	Type	Use	Aquifer	Depth (feet)
GROUNDWATER				
13P5	well-static	nested	upper	135
13P6	well-static	nested	lower	255
13P7	well-static	nested	lower	375
13P8	well-static	nested	lower	605
14B1	well-supply	industrial	lower	435
19D10	well-static	nested	lower	470
19D7	well-static	nested	upper	180
19D8	well-static	nested	lower	260
19D9	well-static	nested	lower	390
19N3	well-static	nested	upper	120
19N4*	well-static	nested	lower	203
20M1*	well-supply	supply	lower	184
23J1	well-supply	supply	lower	120
25C3	well-static	monitor	upper	146
29F4	well-static	monitor	upper	36
30C1*	well-supply	supply	lower	150
30D2	well-static	monitor	upper	44
SURFACE WATER				
C1	mining pond	mining	upper	NA
K18	mining pond	mining	upper	NA
P10	mining pond	mining	upper	NA
P11	mining pond	mining	upper	NA
P12	mining pond	mining	upper	NA
P13	mining pond	mining	upper	NA
P27	mining pond	mining	upper	NA
P28	mining pond	mining	upper	NA
P40	mining pond	mining	upper	NA
P41	mining pond	mining	upper	NA
P42	mining pond	mining	upper	NA
P44	mining pond	mining	upper	NA
P45	mining pond	mining	upper	NA
P46	mining pond	mining	upper	NA
R24	mining pond	mining	upper	NA
R28	mining pond	mining	upper	NA
R3	mining pond	mining	upper	NA
R4	mining pond	mining	upper	NA
K15	mining pond	mining	upper	NA

Source: Kleinfelder 2020
Notes: * = Livermore Formation

The wells and surface water observations are not evenly distributed in space and time. The southeast portion of the site has more groundwater samples whereas the central and northwest portions of the site have a greater number of surface water samples. Also, the sampling timeframe is not consistent for all sampling locations. Some monitoring locations are sampled multiple times every year while others have a period of several years between samples. The frequency of sampling also varies according to the water-quality parameter. The spatial and temporal variabilities are inherent to the dataset and a potential source of bias for the statistical analysis. Thus, the data were grouped, presented, and evaluated in different ways to reduce the effect of potential bias in the conclusions.

Additional detailed discussion regarding methodology for analyzing hydrology and water quality impacts are provided in Appendices F-1 through F-7.

4.6.5 Project Impacts and Mitigation Measures

4.6.5.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, several hydrology and water quality impacts were determined to be significant and unavoidable, though several mitigation measures were proposed to lessen the impacts. (Alameda County 1980: 22-38).

The approved project includes the following mitigation relevant to water quality impacts:

- **Side Slopes.** Experience in California in Los Angeles County, in Orange County, in Santa Clara County, and in the Niles Canyon area has been that worked out gravel pits used for groundwater recharge must occasionally be cleaned and reshaped. Steep side slopes are difficult to maintain, are not conducive to water-oriented recreation, and present a safety hazard to those who may enter the water for any reason. Earthquakes may create problems, and equipment should be able to enter the pits. As a mitigation measure enabling maintenance and management of the gravel pits after excavation is finished, a minimum side slope standard of 2:1 should be set. Exception to this standard should be allowed under certain conditions when compatible with the water and land use planning for a specific area. (Alameda County 1980: 32)
- **Maintenance Access and Buffer Strips.** Without access worked out gravel pits can become a nuisance; it is difficult to monitor them, to prevent or clean up pollution, and to maintain, and/or to rehabilitate them.

  For routine maintenance, a minimum access of at least 20 feet should be provided around the gravel pits. These access areas should be shown in the Plan. Additional area should be designated where special maintenance problems might occur; for example, around water conduits and areas where silt cleaning equipment would have to operate. In Los Angeles County, maintenance benches are designed for the pits so carry-alls can collect silt as it is scraped from the pit sides. These benches could also be used for recreation purposes and for safety.

  In addition, buffer strips should be provided along each major traffic corridor and adjacent to urban areas to minimize the potential for pollution of groundwater. The major traffic corridors identified in the Plan are Vineyard Avenue, Isabel Avenue (State Route 84), Stanley Boulevard, Las Positas Boulevard, and El Charro Road. Extra space also should be provided where pollution could be a problem from heavy concentrations of people, traffic, or urban uses. Reasonable standards would be 50 feet along major corridors and 50 to 200 feet or more adjacent to urban areas where direct pollution could be a problem. Lands adjacent to the basins could be zoned for

uses that would be compatible and non-polluting; for example, service stations should not be allowed next to the open gravel pit lakes.

In the past, setbacks for maintenance roads and buffer strips have been set for individual quarry permits. With standards adopted as part of the Reclamation Plan, or as part of the County General Plan, the general setback allowances could be modified over time as necessary in the site specific reclamation plans developed by the quarry operators. A general agreement should be reached on the setback standards by the County, local agencies, Zone 7, and the gravel companies. However, the establishment of maintenance access and/or buffer strip standards cannot be done without considering alternative plans for the area as described in the Alternative Section. Maintenance and buffer strips should be shown as part of the Reclamation Plan as illustrated in Figure 14 [of the LAVQAR EIR]. (Alameda County 1980: 33)

- **Relocation of Arroyo Mocho and Arroyo del Valle Channels.** For both channel relocations, the existing streamflow capacity and the percolation rates under both low flow and storm conditions would have to be maintained. To prevent possible adverse impacts on the groundwater due to any reduction in channel percolation, spreading basins might be needed. All costs for design and construction and in-kind maintenance for the proposed relocation of these two channels would accrue solely to increase gravel production.

  Extensive studies would be required to determine existing channel capacities and percolation rates. Some special monitoring of streamflow rates would be necessary. Both Zone 7 and ACWD share rights to storm water in Del Valle. Existing agreements between the two agencies might have to be modified if percolation rates in ADV are changed. A water rights study will be needed if the channel is relocated and percolation rates changed, and the point of diversion moved. (Alameda County 1980: 33)

- **Desilting Facilities.** Desilting and flocculation facilities would be necessary for storm runoff diverted to spreading basins if spreading basins were found necessary. Desilting basins will be necessary if water is diverted into the gravel pits for any operational Local Storm Water Control Facilities. (Alameda County 1980: 34)

- **Local Storm Water Control Facilities.** Because of potential pollution from storm water originating on the development areas envisioned in the Plan, storm water runoff should be prevented from directly entering the gravel pit lakes. A storm drainage system should be designed for Reclamation Plan Class 1, 2, and 3 development areas as part of the reclamation plans for individual quarry areas. Likewise, storm runoff from adjacent or nearby industrial, commercial, residential, and agricultural areas should be prevented from directly entering the lakes through diking or other means.

- **Groundwater Movement and Storage Facilities.** To determine natural flow rates, additional groundwater monitoring and planning studies would be required. Water quality must be considered. Modeling might be necessary. The size and design of the facilities needed to maintain water movement and water quality would have to be determined. More conduits might be needed to release water into Arroyo Mocho and del Valle and also in the forebay area south of Stanley Boulevard since the northwesterly movement of water might be more rapid under the Reclamation Plan than under natural conditions. Gates might be needed on the conduits to maintain water quality and flow. With full exposure of the gravel pit lakes along both sides of Stanley Boulevard, the proposed conduit under Stanley Boulevard probably would not be required for water movement.

During mining operations, each gravel pit is composed of several individual cells separated by earthfill dikes. After the pit has been worked out, it is proposed to breech the earthfill dikes between these cells so as to allow water to move freely within each gravel pit lake. The dikes should be lowered to a point below normal low groundwater levels, as shown by studies, and the breeching should be done in a manner which will ensure adequate water movement throughout the pit after the dike has been under water many years. (Alameda County 1980: 34)

Engineering studies should be made in each major pit area to show that the underwater earthfill material will not create sediment and/or turbidity that would block water flow through exposed gravel faces. This is particularly necessary in the forebay area south of Stanley Boulevard and in the area west of El Charro Road. In the forebay area, water percolates sideways and downward into the upper and lower aquifers. It is very important to maintain this area free of silt. The gravel pits north of Stanley Boulevard could theoretically be dewatered for maintenance, but it would be difficult to dewater the forebay area once it is filled with water. As shown in the Plan, earthfill dikes would be constructed adjacent to ADV and in between the gravel pit lakes. Gravel dikes, perhaps topped with earthfill above the high groundwater level, should be used instead of earthfill dikes in the forebay area unless it can be conclusively shown that earthfill dikes would not interfere with water movement or create other problems. Since the storage capacity created would exceed the present groundwater storage, mitigation measures with respect to storage capacity would not be necessary except for the volume of water necessary to fill the additional space. The Alameda County Surface Mining Ordinance prohibits, upon reclamation, any condition "which will or could lead to the degradation of water quality below applicable standards of the Regional Water Quality Control Board or any other agency with authority over water quality." (Alameda County 1980: 34)

- **Monitoring.** Geohydrologic and water resource data for the project area and areas adjacent thereto are insufficient for the needed analyses. Zone 7 has a groundwater monitoring program for the entire Valley. This needs to be expanded so the gravel extraction area and adjacent areas, where maximum disruption to the basin is occurring, can be modeled in detail. Specifically, the monitoring program should be expanded to include more data on groundwater levels, water quality, and water use in the Plan area. Geologic data on storage and transmissibility should be compiled. Water quality data is needed on flows in Arroyos Los Positas, Mocho, and del Valle. Water levels and pumpage into specific pits during specific period of time should be monitored as needed. One of the best ways to design the monitoring system would be to develop a detailed model nodal pattern for the area and then monitor to obtain the hydrologic and geohydrologic input needed. The detailed or fine grid model would be part of the larger model of the Valley already partially developed by the California Department of Water Resources. The monitoring program should be carried out by Zone 7 and the gravel companies. (Alameda County 1980: 35)
- **Water Resource Optimization/Multiple Use Scenario.** The arrangement of land and water areas proposed in the Reclamation Plan presents great opportunities for a variety of public benefits. An ideal Reclamation Plan could present basic elements needed for management of the Livermore-Amador Valley's water resources for multiple purpose and not just minimal mitigation facilities needed for water transmissivity as proposed. This would enable the general public and agencies using the Plan report to be aware of the larger potential water resource management concepts for the area, and the validity of subsequent reclamation plans for individual areas could be judged against this larger concept. Included would be use of the Plan area to help achieve management goals for flood control, water conservation, recreation, and water quality management. All these

goals are mentioned in the Reclamation Plan but are not fully explored, especially as they translate to possible physical facilities necessary for effectuation.

Properly envisioning this alternative requires postulation of a possible optimum water resource management concept, under which landforms would be shaped over time to accommodate all needed water management facilities, not just mitigation facilities. Costs of both mitigation and non-mitigation facilities would be estimated. Allocation of costs toward different functions, such as between quarry mitigation, flood control, and water supply, could be identified. Complete range of benefits (many of which could outweigh impacts which cannot be directly mitigated) could be specified, rather than just adverse impacts.

An example of such a concept is presented in Figure 14 [of the LAVQAR EIR]. Illustration of a water resource optimization scenario. The basic land and water areas as proposed in the Reclamation Plan would be retained because of their assumed flexibility. Building upon the Plan, general management concepts could be explored for their feasibility, benefits, cost, and compatibility. Such a scenario, for example, could be based on the following management concepts:

- Water management in the gravel pits would be done in conjunction with the adjacent groundwater basin.
- The west gravel pit basins would be used for current operation purposes.
- The south (forebay) basins would be used for recharge purposes and as a source of emergency water supply.
- Flood control storage would be provided in the north and east basins area.
- An annual average of over 10,000-acre feet of runoff would be conserved.
- Well fields to evacuate water stored in the gravel pits lakes would be located within the project area and in the groundwater basin to the west.
- The pit basins could be used for temporary storage of imported South Aqueduct water and storage of storm flows for other agencies.
- Urbanization and urban activities would be minimized in the forebay area; the forebay would be used primarily for passive recreation and open space to prevent pollution.
- In the west and east basins area there would be strict separation of the basins from urban uses.
- Buffer zones would be maintained.
- To minimize the inflow of poor quality groundwater it might be practical to seal off the northern side of the north and east basins.
- Recreation use, facilities, and linkage trails would be considered in the design of the water management facilities.

The facilities needed to manage the water under these concepts would include:

- Surface water diversion structures
- Surface conveyance channels connecting the streams to the basins and turnouts as required.
- Desilting areas for each stream.
- Maintenance areas for each stream.
- Maintenance roads throughout the area.

- Buffer strips needed for prevention of pollution.
- Well fields.
- Recreation facility linkage including bridges.
- Gated multiple level conduits designed for water quality control purposes between the basins.

Project Revisions

The LAVQAR EIR assessed the realigned ADV to flow through Lake B. The 1981 project also included a Lake A with a final surface area of 208 acres and Lake B with a surface area of 243 acres. Under the proposed project, approximately 5,800 linear feet of the ADV would be realigned to flow around, rather than through, Lake B under the proposed project. Figure 4.6-23, "Surface Flows Related to ADV and proposed Lakes A, B, and C," depicts the proposed directional flows of water under the proposed project. Reclamation of Lake A would involve limited earthmoving, with a reduction in final surface area from 208 acres to 81 acres and construction of a diversion structure from the ADV that is capable of diverting up to the first 500 cfs of flow from the ADV into the lake. Reclamation of Lake B would also involve a reduction in final surface disturbance compared to the currently approved design from 243 acres to 208 acres, in addition to installation of a pipeline turn-out from Lake A, a water pipeline conduit to future Lake C, and two overflow outlets to allow water to flow back into ADV when Lake A and Lake B water levels are high. Furthermore, the proposed project would adjust reclamation boundaries and contours, develop a new segment of public use trail along the southern boundary of Lake B, as well as enhance drainage and water conveyance facilities. Finally, the proposed project would reclaim the Lake J excavation (not part of the Chain of Lakes), processing plant sites, process water ponds, and Ponds C and D, referenced as the "North Reclamation Area." These design changes are substantial and may create a new or increased significant impact to hydrology or water quality.

Changed Circumstances

Since 1981, new residential subdivisions have been developed to the north of Lake A (e.g., Pulte Oaks and Kristopher Ranch) and to the south of Lake B (e.g. Ruby Hills) These sensitive land uses are changed circumstances that could create a new or increased significant impact. In 1989–1992, CEMEX's predecessor purchased the Jamieson Parcels (see Figure 2-1, "Vested Mining Permits" in Chapter 2, "Project Description"). Jamieson Parcels 1 and 2 were within the scope of Q-76, while Jamieson Parcels 3 and 4 were within the scope of Q-4 initially granted to California Rock and Gravel Company in 1957. The Jamieson Parcels also have vested mining rights. The Jamieson Parcels were acquired by CEMEX's predecessors after the County had approved SMP-23 in 1987; therefore, those parcels were not included within the currently approved SMP-23 reclamation plan boundary.

New Information

Extensive new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the LAVQAR EIR was adopted. In addition to existing publicly available data and reports, aerial photos, and field observations discussed above, there are several applicant-prepared studies that have been peer reviewed and incorporated into this SEIR as the following appendices:

- *Hydraulic Design Study* (Brown and Caldwell 2020) (Appendix F-1 of this SEIR),
- *Groundwater Hydrology and Water Quality Analysis Report for the Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (EMKO 2020a) (Appendix F-2 of this SEIR),

- *Focused Water Quality Assessment Lake B Component Eliot Quarry Reclamation Plan Amendment Project Alameda, California.* (Kleinfelder 2020) (Appendix F-3 of this SEIR),
- *3D Clay Bed Geologic Model and Lack of Evidence for the Presence of Aquitards* (Jeff Light Geological Consulting 2019) (Appendix F-4 of this EIR),
- *2013 Becker Hammer and 2018 Sonic Drill Logs* (Brown and Caldwell 2019) (Appendix F-5 of this SEIR),
- *Adaptive Management Program for Water Quality Regarding Iron* (EMKO 2020b) (Appendix F-6 of this SEIR), and
- *Water Supply Assessment* (EMKO 2019) (Appendix F-7 of this SEIR).

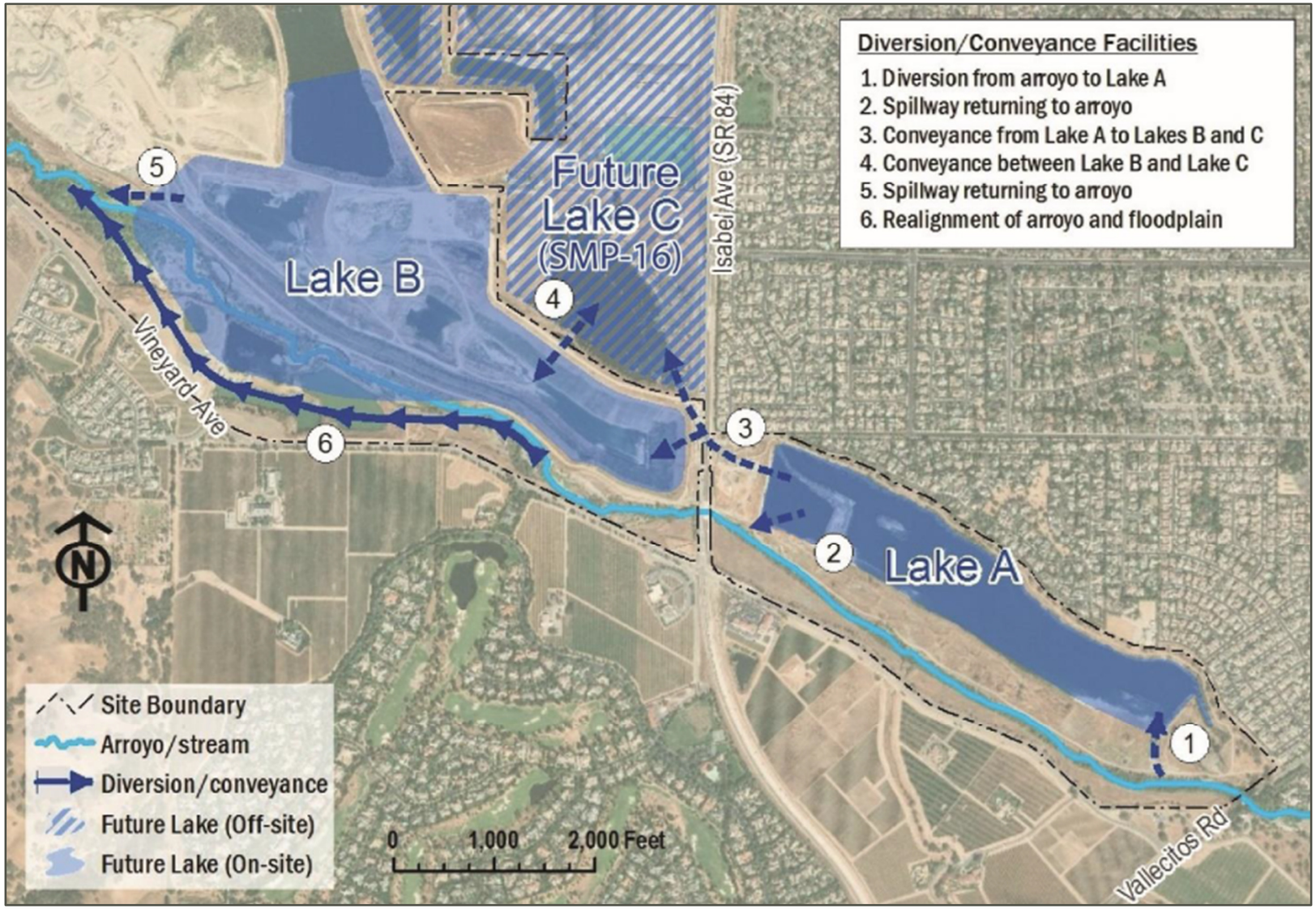
4.6.5.2 Subsequent Environmental Analysis

The impact analysis for the proposed project is complex because there are several components of the project that have potential significant impacts to hydrology and water quality resources. Therefore, for each significance threshold specified in Appendix G of the CEQA Guidelines, a separate sub-impact statement is provided in this analysis. The following components are separately evaluated for each significance threshold criterion:

- Diversion Structure from ADV to Lake A, including:
  1) infiltration gallery,
  2) conversion of a berm in Lake A to a small island,
  3) diversion from ADV to Lake A,
  4) conduit from Lake A to Lake C, and
  5) the overflow from Lake A back into ADV;
- ADV Realignment;
- North Reclamation Area, including the grading, revegetation, and return to open space and/or agriculture of Lake J, Ponds C and D, and creation of new retention ponds; and
- Reclamation of Lake B, including the depth of the reclaimed Lake B, the backfill of the eastern end of Lake B, the spillway of Lake B back into ADV, turnout to Lake B, and the creation of Lake B trail.

Impact 4.6-1a: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Lake A Reclamation and Diversion Structure Construction

Lake A Reclamation and Diversion Structure Construction would consist of the installation of a surface water diversion from the ADV to Lake A; conversion of a berm that is currently located in Lake A that blocks water to a small island to allow water to flow across the lake; installation of a water conveyance pipeline from Lake A to future Lake C (located off-site to the northwest); and an overflow outlet to allow water to flow back into ADV when Lake A water levels are high to prevent flooding in the localized area.



SOURCE: B&C 2020, Figure ES-2; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Surface Flows Related to ADV and Proposed Lakes A, B, and C

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Figure 4.6-23

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Infiltration Gallery and Diversion from ADV to Lake A

The diversion from ADV to Lake A would consist of an intake and fish screen, a lowhead diversion dam to control water levels in the channel, a bypass structure for fish passage, a flow control structure, and a conduit into Lake A. The diversion would feature an infiltration bed concept that includes a 100-foot-wide (extending in the horizontal direction perpendicular to the stream bank) by 200-foot-long gravel infiltration bed to be constructed along the north bank of ADV. To meet the objectives of the LAVQAR Specific Plan and the Zone 7 Agreement, the diversion structure would convey up to 500 cfs through an 84-inch-diameter pipe into Lake A.

Based on the detailed engineering analysis, Brown & Caldwell identified an infiltration bed as the best alternative to divert up to 500 cfs and meet the Zone 7 and CDFW design criteria. The diversion structure would consist of a 100- by 200- by 4-foot-deep gravel infiltration bed adjacent to the stream channel. A rock-covered, concrete grade-control structure with fish bypass would provide the necessary head to inundate the gravel infiltration bed. The grade-control structure would be placed to a top elevation that is 3.2 feet above the creek bed and would not increase the area inundated by a 100-year flood event. Forty 100-foot-long, perforated, horizontal drainpipes would be buried near the base of the gravel bed. The horizontal drainpipes would join along a manifold pipe connected to a flow control gate. When the flow-control gate is opened, water from the ADV would infiltrate through the gravel, be collected in the drainpipes through the manifold, and pass through the flow-control gate. The connection to Lake A would be completed with an 84-inch pipe with a riprap outfall extending into Lake A (see Figure 2-10, "Proposed Lake A Diversion Plan" in Chapter 2, "Project Description").

Potential impacts to water quality standards or waste discharge requirements or substantial degradation to surface water or groundwater quality would be reduced to a level of insignificance by adherence to requirements of a construction SWPPP and implementation of erosion control measures in Mitigation Measure 4.6-1, "Development of SWPPP and 4.4-1, "Erosion Control Plan," respectively.

Mitigation Measure 4.6-1 includes specified erosion control measures and discharge limitations. Furthermore, adherence to these requirements would be monitored to ensure compliance.

In addition, the infiltration gallery has been designed to create a low flow channel to ensure that at least 8 cfs of water stays in the ADV to ensure a minimum flow is retained within the ADV. The infiltration gallery would also contain a gravel bed to screen out potential sedimentation that could otherwise be discharged from the ADV to Lake A. Thus, the gravel bed and Mitigation Measure 4.6-1 would eliminate or reduce any impacts to water quality standards or waste discharge requirements or substantial degradation to surface water or groundwater quality to a less than significant level.

Conduit from Lake A to Lake C

The Permittee, or its contractors would conduct necessary grading and excavation to install the water pipeline under Isabel Avenue to connect Lake A to future Lake C. Pursuant to a request from the end user of the facilities, Zone 7, a turnout to Lake B would also be included in the conveyance structure; this feature is discussed in Impact 4.6-1(d), below. These grading and excavation activities would adhere to Mitigation Measure 4.6-1 to eliminate or reduce any impacts to water quality standards or waste discharge requirements. As a result, substantial degradation to surface water or groundwater quality would be reduced to a less than significant level.

Convert Lake A Berm to Small Island

The existing berm blocks the efficient flow of water. The proposed project would convert this berm to small island in the middle of Lake A, allowing water to more efficiently flow across the lake. The Permittee, or its contractors, would excavate two small drainage slots at the western end of Lake A. Based on input from EMKO, the excavations would be conducted to a bottom elevation of 405 feet msl (about 12 feet below existing ground surface) with a bottom excavation width of approximately 80 feet. These excavation activities would adhere to Mitigation Measure 4.6-1 to eliminate or reduce any impacts to water quality standards or waste discharge requirements. As a result, substantial degradation to surface water or groundwater quality would be reduced to a less than significant level.

Overflow from Lake A back into ADV

The Permittee, or its contractors would install an earth- and rock-lined structure to collect overflow water from Lake A to allow water to flow back into ADV when Lake A water levels are high to prevent flooding in the localized area. The rock lined outflow would consist of a 270-ft wide shallow spillway lined with pit run gravel that slopes south toward ADV at 3 horizontal to 1 vertical, designed to eliminate or reduce erosion potential that could be caused by water flowing from Lake A back into ADV (Brown and Caldwell 2020). In addition, the construction activities associated with establishing the overflow structure would adhere to Mitigation Measure 4.6-1, which would eliminate or reduce any impacts to water quality standards or waste discharge requirements or substantial degradation to surface water or groundwater quality would be reduced to a less than significant level.

Level of Significance: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.6-1: *Development of SWPPP*

The Permittee, and its contractors, shall conduct activities consistent with the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, which would require development of a stormwater pollution prevention plan (SWPPP) for the reclamation construction activities. The SWPPP and Notice of Intent to comply with the General Permit shall be prepared and filed with the RWQCB before commencement of construction activities. This mitigation may be fulfilled through one or more separate Notices of Intent.

Mitigation Measure 4.4-1: *Erosion Control Plan (see Section 4.4, "Geology and Soils")*

The Applicant, and its contractors shall adhere to the Erosion Control Plan for the ADV realignment and Lake A diversion structure prepared by Brown and Caldwell, which shall be incorporated by reference into the conditions of approval for the project.

Level of Significance after Mitigation: Less than significant.

Impact 4.6-1b: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding the ADV Realignment

To facilitate the southerly progression of mining of Lake B, the proposed project includes realignment and restoration of an approximately 5,800-linear-foot reach of the ADV (see Figure 2-4, "Realigned Arroyo del Valle Concept" in Chapter 2, "Project Description"). CEMEX plans to move the ADV

closer to Vineyard Avenue in a realigned stream channel and floodplain, creating an enhanced riparian and aquatic habitat. The planned ADV realignment would result in a riparian corridor that flows around, rather than through (as originally anticipated in SMP-23), Lake B.

Design Considerations to Reduce or Eliminate Erosion and Potential Water Quality Impacts

The Permittee, or its contractors, would grade transitions at the upstream and downstream ends of the realignment to provide smooth and gradual connections between the designed channel and the existing geometry. For example, the banks of the new backfill channel would be extended upstream and tied into the outer slopes of the existing floodplain to intercept flow from a wider area and minimize the potential for ADV to shift channels upstream and flank the transition point. This concept is illustrated in Figure 4.6-24, "Schematic of Bank Tie-in at Upstream Transition."

Several tributary drainages flow into ADV between the proposed upstream and downstream tie-in points. The tributaries are typically dry with intermittent flow from stormwater runoff; drainage areas range between about 0.5 to 2.0 square miles. Each tributary originates from the south and crosses Vineyard Avenue via an existing culvert. These existing culverts would be extended and connected to maintenance holes and new pipes where stormwater runoff would be dropped to a lower elevation and conveyed to the realigned floodplain. The drop structures would reduce the discharge velocities at the outfalls; however, riprap aprons would also be constructed at the outfall to ADV to reduce the potential for erosion.

Given the considerable uncertainty associated with transient and highly variable sediment loads and transport rates the ADV realignment was designed with additional stability features to mitigate the potential for channel migration and floodplain widening that could impact Lake B or adjacent properties and infrastructure. Rock barbs would be installed along the outer bends of the floodplain. These barbs would function like vanes, designed to reduce velocities along the outside edges of the floodplain and direct flow away from the outer slopes of the floodplain corridor.

Pursuant to the project design, rocks used to construct the stone barbs would have a median stone diameter of at least 24 inches to remain stable under 100-year flood conditions. Rock material would also meet Caltrans standard specifications for "1/2-ton" riprap with "Method B" placement (Racin et. al. 2000, cited in Brown and Caldwell 2020). Riprap should be composed of well-graded angular rocks to allow for interlocking and include a mixture of smaller rocks to fill interstices.

The Permittee would also have to obtain permits or biological opinions from the CDFW, RWQCB, Army Corps of Engineers (ACOE), United States Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS) to protect water quality and biological resources. Adherence to State and Federal water quality requirements would be a condition of approval for the project.

In addition to these design considerations and permitting requirements, the construction activities associated with constructing the ADV realignment shall adhere to Mitigation Measure 4.6-1 and 4.4-1, which would eliminate or reduce any impacts to water quality standards or waste discharge requirements or substantial degradation to surface water or groundwater quality to a less than significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measures 4.6-1 (see Impact 4.6-1a, above), 4.4-1 (see Section 4.4, "Geology and Soils").

Level of Significance after Mitigation: Less than significant.

Impact 4.6-1c: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality at the Northern Reclamation Area

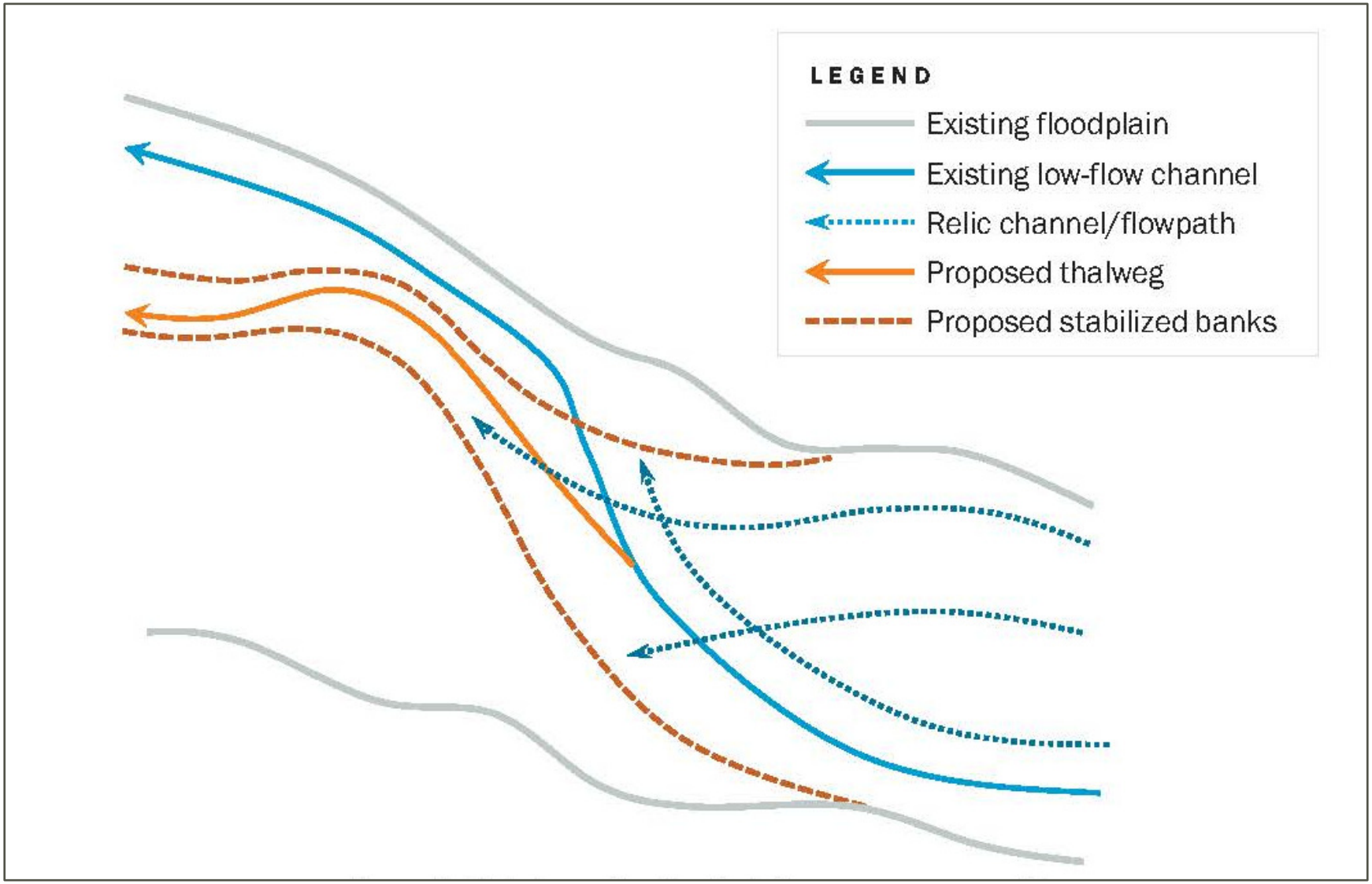
Reclamation of the Northern Reclamation Area includes reclaiming the Lake J excavation (not part of the Chain of Lakes), processing plant sites, process water ponds, and Ponds C and D, which includes grading, revegetation, and a return to open space and/or agriculture. Two potential impacts to water quality in the Northern Reclamation Area could occur as a result of the proposed project: water quality impacts associated with boron and with agricultural runoff. These potential impacts are discussed below.

Potential Boron Impacts

The Zone 7 *2016 Alternative Groundwater Sustainability Plan* (GSP) for the Livermore Valley Groundwater Basin identifies boron as a constituent that could cause undesirable results and establishes a minimum threshold of 1,400 micrograms per liter (ug/L). Based on Kleinfelder's 2020 evaluation of water quality data provided by Zone 7 for surface water and groundwater at and near the project site, average boron concentrations do not exceed the minimum threshold at any location for which data were available. Individual boron concentrations also do not exceed the minimum threshold in any of the groundwater wells evaluated, except for Well ID 29F4. In surface water ponds, the only locations at which the boron concentrations occasionally exceeded the minimum threshold were at Lake C (sample location C1) on the Vulcan site and at Shadow Cliffs Lake (sample location K15). Neither of these surface waters are located on the project site. Except for outliers, boron concentrations do not exceed the minimum threshold at any of the surface water sample locations on the project site or along the ADV south of Lakes A and B.

Figure 4.6-25, "Boron Concentration at Lake C and Shadow Cliffs Lake," shows the available boron data for Lake C and Shadow Cliffs Lake. At Lake C, boron exceeded the minimum threshold four times from 1991 to 1994 and one time in 2003. The peak concentration was 2,480 ug/L in October 2003. Since 2004, the boron concentrations at Lake C have generally been decreasing. At Shadow Cliffs Lake, boron exceeded the minimum threshold once in 1991 and once in 2003. The peak concentration was 1,770 ug/L in September 2003. Neither of these surface waters are located on the project site.

As shown on Figure 4.6-25, the boron concentrations in Lake C and Shadow Cliffs Lake follow similar trends over time, with the concentration at Shadow Cliffs generally being lower than that at Lake C. Given the distance between Lake C and Shadow Cliffs Lake, the lack of any elevated boron concentrations in the surface water ponds at and south of the project site (i.e., between Lake C and Shadow Cliffs), and the absence of any direct connection between these two locations, it is unclear why the boron concentration trends are so similar.



SOURCE: B&C 2020, Figure 5-19; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

Schematic of Bank Tie-in at Upstream Transition
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Figure 4.6-24

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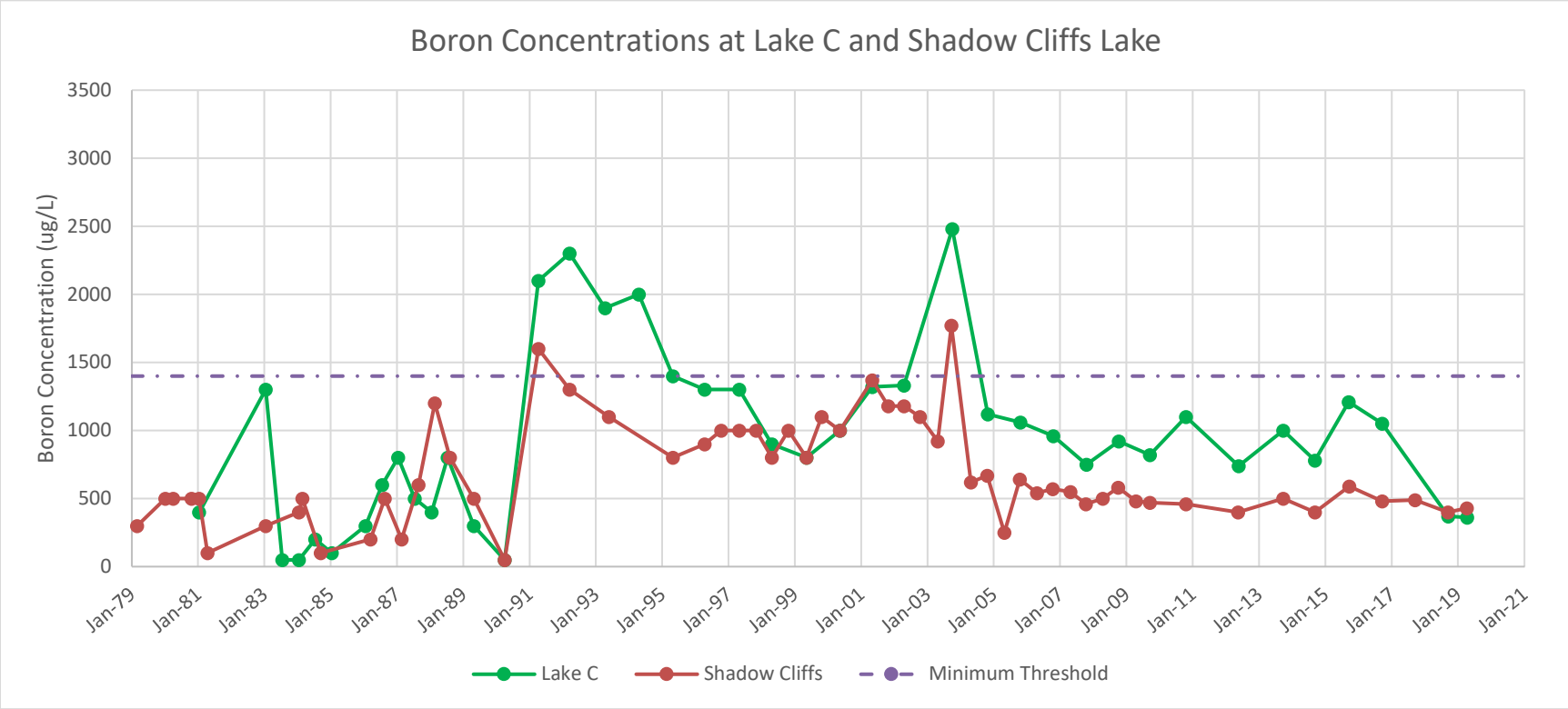

SOURCE: Kleinfelder 2020, Figure 1; modified by Benchmark Resources in 2020.

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Boron Concentration at Lake C and Shadow Cliffs Lake

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Figure 4.6-25

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The primary similarity between Lake C and Shadow Cliffs Lake compared to the surface water ponds at Eliot are that both Lake C and Shadow Cliffs Lake are adjacent to major roadways (Isabel Avenue and Stanley Boulevard, respectively).

To assess the potential that surface runoff from major roadways may be the primary source of boron at Lake C and Shadow Cliffs Lake, the boron concentrations over time were compared with annual rainfall totals for Livermore. Figure 4.6-26, "Comparison of Lake C Boron Concentrations with Annual Rainfall," compares the boron concentrations from Lake C with the annual rainfall amounts. As indicated on Figure 4.6-26, there is somewhat of an inverse correlation between rainfall and boron concentrations, with periods of low boron concentrations following wet years and elevated boron concentrations following drought periods. Thus, there is not an immediate response of increased boron concentrations at times when runoff from the major roadways would be expected. Conversely, the lack of a consistent elevated boron concentration in the surface water and groundwater samples throughout the Chain of Lakes area precludes the possibility that increased runoff from the roadways during wet years would be diluting otherwise elevated boron concentrations in the surface water ponds or shallow aquifer.

Lake C is an active Vulcan mining area, and Shadow Cliffs is a reclaimed area now used as a public recreation area, neither of which are located on the project site. The elevated boron levels at Lake C and Shadow Cliffs Lake are most likely related to specific activities occurring at those separate and disparate locations. In contrast, the reclaimed mining excavations at the project site would be primarily used for water diversion and storage as part of the Chain of Lakes. Mining activities, such as those occurring at Lake C, or contact water recreation, such as that occurring at Shadow Cliffs, would not occur as part of the reclamation of the project site. Furthermore, the primary water source feeding Lakes A and B would be local groundwater and surface water diverted from the ADV that was released from Del Valle Reservoir. The 40 years of monitoring data from Zone 7 do not provide any indication that groundwater in the area or surface water from Lake Del Valle and the ADV have ever had elevated boron concentrations. In any case, the data do not provide any indication that the few, infrequent, and dated detections of elevated boron are related to existing practices occurring at the project site or that reclamation of the site would in any way contribute to future boron detections above the minimum threshold. For these reasons, the potential impact associated with elevated boron concentrations in reclaimed lakes at the project site and water quality in the Upper and Lower Aquifers is considered less than significant.

Potential Agricultural Runoff Impacts

Ponds C and D would potentially be used as silt ponds during mining operations, with a silt deposit allowance of up to 330 feet msl. Prior to converting Pond D to a silt pond, mining could continue to 200 feet msl. These ponds would be reclaimed as either independent open water bodies or merge with larger future Lakes C and D.

The existing main silt pond and future silt pond locations (i.e., Pond C, Pond D, and Lake J) are shown on Figure 2-6, "Existing Facilities," in Chapter 2, "Project Description," of this SEIR. The Permittee would continue to use the main pond as its primary silt settling pond until it reaches its capacity, at which time a 3-foot soil cap would be graded atop the pond. The Lake J excavation area is then intended to serve as the facility's primary silt pond but depending on timing of aggregate excavation in the Lake J area, Ponds C and D may be used first. In addition, dry silts and overburden may also be placed in the pit floor of the eastern end of Lake B below the future water surface elevation of the lake (as shown on Sheet R-2 of Appendix B-1). The use of these settling ponds and

silt storage areas prevents the potential sedimentation of the ADV with process wash fines, particularly since these basins do not have an outlet to lower ground.

As part of reclamation, small retention ponds are planned in the northeast corner of the main silt pond and north and south ends of the Lake J area (identified as Ponds 1, 2, and 3 on Sheet R-1 of Appendix B-1) to prevent future agricultural runoff from entering Lake B. Thus, the potential impact associated with agricultural runoff due to project activities in the Northern Reclamation Area is considered less than significant.

Level of Significance: Less than significant.

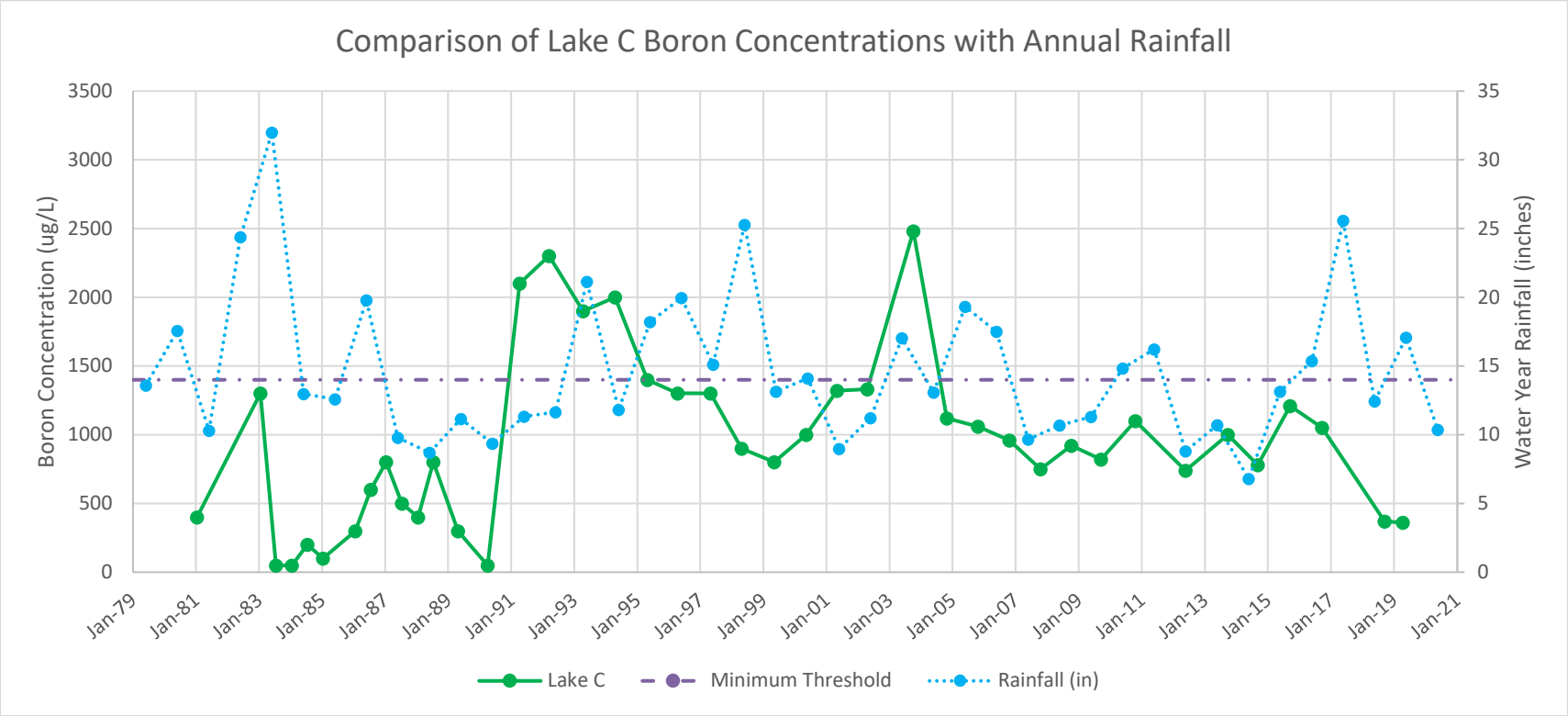
Mitigation Measure: None required.

Impact 4.6-1d: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Reclamation of Lake B

Lake B reclamation would include installation of a pipeline turn-out from Lake A, a water pipeline conduit to future Lake C, and an overflow outlet to allow water to flow back into ADV when Lake B water levels are high. The final bottom elevation of Lake B is proposed at 150 feet msl, in order to maximize the available aggregate resource. The final surface area of Lake B would be 208 acres as compared to 243 acres in the approved reclamation plan. Reclamation would be conducted in accordance with the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, which would require development of a SWPPP for the reclamation construction activities. A SWPPP would identify the potential sources of sediment and other pollutants that could affect the quality of stormwater discharges from the site. The SWPPP would also identify site-specific measures (BMPs) that would eliminate or reduce to acceptable levels sediment and other pollutants in stormwater discharges from the site. Therefore, Mitigation Measure 4.6-1 shall be implemented to protect groundwater quality from potential stormwater pollution. The mitigation measure requires the General Permit and SWPPP, which further require CEMEX to file a Notice of Intent to comply with the stormwater regulations with both the State Water Resources Control Board and the Regional Water Quality Control Board. In addition, as discussed in further detail below, Mitigation Measure 4.6-2 must be implemented to protect groundwater quality from potential impacts due to elevated levels of iron. Thus, impacts to groundwater quality would be less than significant with mitigation incorporated.

Potential Agricultural Runoff Impacts

The area around Lake B and any other remaining ponds would need to be graded to prevent runoff from agricultural areas, roads, and developed areas from entering the water bodies. Runoff from these areas could contain contaminants that may result in a significant impact to groundwater quality. Therefore, preventing runoff from entering reclaimed pits and ponds would protect groundwater quality and any impacts to water quality standards or waste discharge requirements or substantial degradation to surface water or groundwater quality would be less than significant.



SOURCE: Kleinfelder 2020, Figure 2; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Comparison of Lake C Boron Concentration with Annual Rainfall

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Figure 4.6-26

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Potential Boron, TDS, Nitrate, and Chromium Impacts

The statistical analysis presented in the Kleinfelder report (see Section 4.6.2.5, above, and Appendix F-3) provides an indication of areas of potential sources for the parameters of interest listed in the Alternative Groundwater Sustainability Plan for the Livermore Valley Groundwater Basin. The average concentrations calculated for most wells and mining ponds in the vicinity of the project are below the maximum thresholds of TDS, chromium, nitrate, and boron.

The Livermore Formation wells of Lake A group (20M1, 19N4 and 30C1) were not included in the overall statistics presented in the above-referenced tables, because these wells are screened in a different formation. The overall averages and non-parametric statistics calculated with and without Livermore Formation wells in Lake A group are very similar. Although the Livermore Formation wells are not included in the overall statistics presented below, they are referenced in the discussion if the calculated average for the well is above the Alternative Plan threshold for a water quality parameter.

For TDS, 97 percent of wells and ponds have average concentrations below the threshold (without considering Livermore Formation wells 20M1, 19N4, and 30C1). An individual elevated TDS result for mining pond P40 (6,199 mg/L) was recognized as an outlier and was not used in the overall statistics. Subsequent sampling performed in 2017 indicated significantly lower levels of TDS in P40 (380 mg/L). When these wells are added to the overall statistics, 94 percent of wells and ponds have average concentrations below the threshold. For nitrate, 97 percent of sampling locations have average concentrations below the threshold (with and without Livermore Formation wells 20M1, 19N4 and 30C1). There are no sampling locations with average concentrations of chromium and boron above the threshold. There are also no sampling locations on the project site where a maximum concentration of chromium has been recorded above the threshold (see Figure 4.6-19 and Tables 4.6-5 and 4.6-6).

Potential Iron Impacts

The existing grading, designed to divert stormwater to retention ponds, would also reduce the likelihood of higher iron concentrations in surface water reaching the Lower Aquifer. Although iron is not identified in the Alternative Groundwater Sustainability Plan for the Livermore Valley Groundwater Basin as a constituent that could cause undesirable results, the average iron concentration in surface water is approximately double of the average calculated for the Lower Aquifer. The averages of some mining ponds (P40, P45, R24 and R28) are above the 300 μg/L drinking water standard for iron. Elevated iron is common in silt ponds and reclaimed mine pits with substantial vegetative growth that creates reducing conditions when the vegetation dies and decays, so concentrations would likely decrease rapidly upon contact with elevated iron in the aquifer. The average iron concentration in Upper Aquifer wells is 95.5 μg/L, which is very close to the Lower Aquifer well average of 82.3 μg/L. Both are significantly below the 300 μg/L drinking water standard for iron. Based on concentrations, it is unlikely that the mixing of Upper and Lower Aquifer waters would significantly change iron concentrations in the Lower Aquifer. However, an adaptive management plan (AMP) that addresses the potential for elevated iron in the mining ponds was prepared by EMKO Environmental, Inc., on July 6, 2020 (see Appendix F-6). Mitigation Measure 4.6-2 requires the Permittee to implement this AMP to ensure water quality is protected.

The analysis of cations and anions with Piper, Durov, and Schoeller diagrams indicates the hydrochemical facies of the Upper Aquifer, Lower Aquifer, Livermore Formation, and surface water are similar. The predominant anion is bicarbonate for most locations, with chloride predominant

during drought conditions at some locations. Surface water has more spatial variability than groundwater. Most sampling locations do not have a dominant cation and are classified as mixed geochemical water types. Magnesium is slightly more predominant in surface water and calcium slightly more predominant in groundwater. The hydrochemical facies derived for the 10-year period are typical for shallow fresh groundwaters and were identified in both Upper and Lower Aquifers suggesting shallow and deep waters are similar.

The findings of the Kleinfelder report indicate that there are no distinct water quality characteristics in the vicinity of the project site that would uniquely distinguish an individual well or aquifer unit within the basin. Therefore, the proposed 100-foot depth increase in the final elevation of Lake B is not anticipated to result in undesirable effects or degrade groundwater quality. Other than the recommendation for an Adaptive Management Plan, no additional measures are deemed necessary to protect groundwater quality during the course of mining or reclamation at Lake B.

Once mining at Lake B is completed, several actions would be appropriate to protect water quality. As noted above, the area around Lake B and any other remaining ponds would need to be graded to prevent runoff from agricultural areas, roads, and developed areas from entering the water bodies. Runoff from these areas could contain contaminants that might affect groundwater quality. Therefore, preventing runoff from entering reclaimed pits and ponds would protect groundwater quality.

The Waste Discharge Requirements (WDRs) would apply to future operations at the mine site. While these mining operations are outside the scope of this reclamation plan amendment project, the WDRs would require monitoring of discharges for compliance with specific water quality standards, as presented in Table 4.6-8, "Water Quality Standards and Effluent Limitations."

TABLE 4.6-8
WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS

Parameter	Units	Daily Maximum	30-Day Arithmetic Mean	7-Day Arithmetic Mean	90-Day Arithmetic Mean
Total dissolved solids	mg/L	500	–	–	360
Chlorides	mg/L	250	–	–	60
Total suspended solids	mg/L	–	30	45	–
Turbidity	NTU	40	–	–	–
Total settleable solids	mL/hr	0.2	0.1	–	–
Chlorine residual	mg/L	0.0		–	–
pH	std units	6.5–8.5			
Acute toxicity (96-hour)	–	70% survival			

Source: EMKO 2020a.

Notes: NTU = nephelometric turbidity units; mg/L = milligrams per liter; mL/hr = milliliters per hour; std units = standard units.

1. Total dissolved solids and chlorides limits are applicable only to discharges to Alameda Creek watershed above Niles. Exceedance of the dissolved solids or chloride limits would not constitute a violation of this order if the discharger demonstrates that the source water is also high in dissolved solids or chloride concentration and the exceedance is not caused by its facility operation.
2. Chlorine residual limit is applicable only to sand washing facilities that use municipal water supply as wash water.
3. Exceedance of pH limit would not constitute a violation of the waste discharge requirements if the discharger demonstrates that the source water is also high in pH and the high pH in its discharge effluent is not caused by the facility's operation.

Once mining is completed, there would be no significant impact related to mixing of groundwater from the lower and upper aquifers with the implementation of design features discussed above and

the adoption of Mitigation Measure 4.6-2, which would eliminate or reduce any impacts to water quality standards or waste discharge requirements or substantial degradation to surface water or groundwater quality due to iron. In addition, two or three groundwater well monitoring locations would be added on the perimeter of Lake B to monitor groundwater quality. For these reasons, the potential impact associated with elevated iron concentrations in reclaimed lakes at the project site and water quality in the Upper and Lower Aquifers is considered less than significant with mitigation incorporated.

Level of Significance: Potentially significant.

Mitigation Measures:

Mitigation Measures: *Implement Mitigation Measure 4.6-1 (see Impact 4.6-1a, above).*

Mitigation Measure 4.6-2: *Implementation of Adaptive Management Program for Iron*

The Permittee shall implement the Adaptive Management Program for Iron (see Appendix F-6 to the SEIR), which will be incorporated into conditions of approval.

Mitigation Measure 4.6-3: *Install Lake B Groundwater Monitoring Wells*

The Permittee shall install two or three groundwater monitoring wells on Lake B perimeter after consultation on locations with Zone 7 to inform MM 4.6-3 actions.

Significance After Mitigation: Less than significant.

Impact 4.6-2a: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding Lake A Reclamation and Diversion Structure Construction

A description of the Lake A Reclamation and Diversion Structure Construction is provided in Impact 4.6-1a. In addition, as discussed more fully below in Impact 4.6-3a, a small overflow spillway would be installed at the top of the berm along the south side of Lake A, near the western end of the berm. If a flooding event on the ADV or a mechanical failure affected the ability of the upstream diversion structure into Lake A to shut off, and Lake A began to overfill, the overflow channel would allow the excess water to return to the ADV. The overflow channel would be rock lined to prevent erosion and siltation. If Lake A were to overfill, most if not all of the water in Lake A would consist of water diverted from the ADV, or water from the arroyo that seeped into the lake through the porous and permeable gravel material present between Lake A and the ADV. The overflow channel would only involve excess Lake A water and the Lake A Reclamation and Diversion Structure Construction would not result in the substantial depletion of groundwater supplies or interference with groundwater recharge. There would be no substantial depletion of groundwater supplies or interference with groundwater recharge associated with Lake A reclamation and diversion structure construction activities. Therefore, such impacts would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-2b: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding the ADV Realignment

A description of the ADV Realignment activities is provided in Impact 4.6-1b. Balance Hydrologics, Inc. and EMKO performed infiltration testing at the proposed ADV realignment site to compare properties of the native soils with onsite spoil materials and evaluate their suitability as a construction material for the realigned channel and floodplain (Appendix F). The realigned corridor will require cut, fill, and compaction of the spoil soil material present at the site. Thus, existing spoil soil material around the proposed realignment is considered representative of the soil that will compose the substrate under the realigned channel. Results from field testing indicate that infiltration rates for the spoil material are less (i.e., slower) than those observed in native soil materials, indicating that stream channel seepage rates along the restored channel are likely to be less than current rates (Brown and Caldwell 2020).

Furthermore, there would no substantial depletion of groundwater supplies or interference with groundwater recharge associated ADV Realignment, as the realigned ADV would provide improved natural functions over existing and currently approved conditions. Therefore, such impacts would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-2c: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge at the Northern Reclamation Area

Reclamation treatment for the North Reclamation Area, which includes the Lake J excavation area (not part of the Chain of Lakes), processing plant sites, and process water ponds, would generally involve final grading, following backfilling under the mining operation, for a return to open space and/or agriculture. The final bottom mining elevation of Lake J would be 130 feet msl (i.e., approximately 260 feet bgs). However, upon the completion of mining, Lake J would be repurposed as a silt pond and would be backfilled during the course of mining with overburden and silt to approximately 360 to 380 feet msl. Ponds C and D in the North Reclamation Area may also be repurposed as silt ponds. For these ponds, silts may be deposited up to elevation 330 feet msl. These ponds would either be reclaimed as independent open water bodies with a projected water surface elevation of 370 feet msl or merged with the larger future Lakes C and D to be developed by Vulcan. Lake J would be backfilled with overburden and process wash fines during the course of mining elsewhere at the site. Then, as part of the proposed project, the Lake J area would be returned to open space and/or agriculture.

Silt and other fine-grained material that is washed from the aggregate would be deposited in several areas of the site. The current location is the Main Silt Pond in the northeast corner of the project site, adjacent to Stanley Boulevard. However, prior to the completion of the project, the Main Silt Pond would become filled and additional capacity would be required in other locations. These locations include Lake J and Ponds C & D along the east side of the project site, located adjacent to Lakes C & D, respectively. Lake J is anticipated to be converted for use as the next primary silt pond once the Main Silt Pond reaches its capacity.

Lake J

During the course of mining (not part of the proposed project), approximately 6.4 million cubic yards of backfill materials (silts and overburden) would be placed in Lake J, to an elevation of 360 ft msl to 380 ft msl. As part of the proposed project, the backfilled area would be contoured to achieve the final reclaimed ground surface, as shown on Sheets R-1 and R-3. In the reclaimed condition, the ground in the Lake J area would be mostly comprised of a combination of silts and overburden. The lowest elevation of silt would be at approximately 130 ft msl while the anticipated post-mining groundwater elevation at Lake J is anticipated to be 330 ft msl, coincident with the water level in the Shadow Cliffs Lake to the west. Thus, the silt backfill would extend 30 feet to 50 feet above the groundwater surface after reclamation. The width of the top of the silt backfill at the groundwater surface elevation would be approximately 1,450 feet, in the direction perpendicular to groundwater flow. The width of the silt at the bottom of Lake J, at 130 ft msl, would be about 200 feet. The cross-sectional area of the silt placement relative to the total cross-sectional area of the aquifer is identified in Table 4.6-9, "Cross-Sectional Areas Perpendicular to the Direction of Groundwater Flow: Northern Reclamation Area." These cross-sectional areas are oriented perpendicular to the direction of groundwater flow.

TABLE 4.6-9
CROSS-SECTIONAL AREAS PERPENDICULAR TO THE DIRECTION OF GROUNDWATER FLOW: NORTHERN RECLAMATION AREA

Location	Silt Backfill				Across Project Site			Percent of Area Backfilled	Open Water Area Relative to Backfill
	Top Width	*Bottom Width*	*Thickness*	*Area*	*Width*	*Thickness*	*Area*		
Lake J Fill	1,450	200	200	165,000	2,250	200	450,000	37%	--
Ponds C & D Fill	1,400	900	170	195,500	5,150	220	1,133,000	17%	--
C & D Above Fill	1,560	1,400	200	59,200	--	--	--	--	30%

Source: EMKO 2020a

As shown in Table 4.6-9, the cross-sectional area of the fill in Lake J below the water table would be 165,000 square feet, while the cross-sectional area of the aquifer across this part of the project is 450,000 square feet. The cross-sectional area of the aquifer is calculated based on the width of the project site across the Lake J area (2,250 feet) and the vertical distance between the bottom elevation of proposed mining (130 ft msl) and the groundwater surface elevation for Lake J (330 ft msl), or 200 feet, as shown in Table 4.6-9. Based on the cross-sectional area of the fill and the cross-sectional area of the aquifer, the fill would replace about 37 percent of the aquifer cross section with silt. While the backfilling at Lake J will reduce part of the area available for groundwater flow, the water in the aquifer would have large areas to move around the subject silt fill areas. As a result, reclamation of Lake J would have a less than significant impact due to depletion of groundwater supplies or interference with groundwater recharge.

Ponds C & D

Additional mining is planned to occur in Pond D to an elevation of 200 ft msl. Approximately 140,000 cubic yards of silt backfill could then be placed in Pond C and approximately 1.6 million cubic yards of silt backfill could be placed in Pond D during the course of mining, up to an elevation of 330 ft msl. The anticipated groundwater surface elevation in the vicinity of Ponds C & D after mining and

dewatering is completed at both SMP-23 and SMP-16 is approximately 370 ft msl. The width of the top of the silt would be approximately 1,400 feet and the width of the bottom of the silt would be approximately 900 feet, in the direction perpendicular to groundwater flow. As shown in Table 4.6-9, the cross-sectional area of the fill would be 195,500 square feet, while the cross-sectional area of the aquifer across this part of the project site is 1,133,000 square feet. The cross-sectional area of the aquifer is calculated based on the width of the Eliot Quarry across the Pond D area (5,150 feet) and the vertical distance between the bottom elevation of proposed mining under the Reclamation Plan Amendment (150 ft msl) and the groundwater surface elevation for Ponds C and D (370 ft msl), or 220 feet, as shown in Table 4.6-9. Based on the cross-sectional area of the fill and the cross-sectional area of the aquifer, the fill would replace about 17 percent of the aquifer cross section with silt. However, the silt would not extend to the top of the water surface in Ponds C and D. The cross-sectional area of water above the silt would be 59,200 square feet, which is roughly 30 percent of the fill cross-sectional area.

While the silt placement in Ponds C and D during mining would reduce part of the area available for groundwater flow, the open-water area above the fill provides the ability for unrestricted water flow across Ponds C and D. In addition, Ponds C and D will be dedicated to Zone 7 for water storage, conveyance, and recharge management upon reclamation. As a result, the reclamation of the backfilled Ponds C and D would not reduce the transmissivity or area through which water may flow. Thus, the reclamation of Ponds C & D would have a less than significant impact due to depletion of groundwater supplies or interference with groundwater recharge.

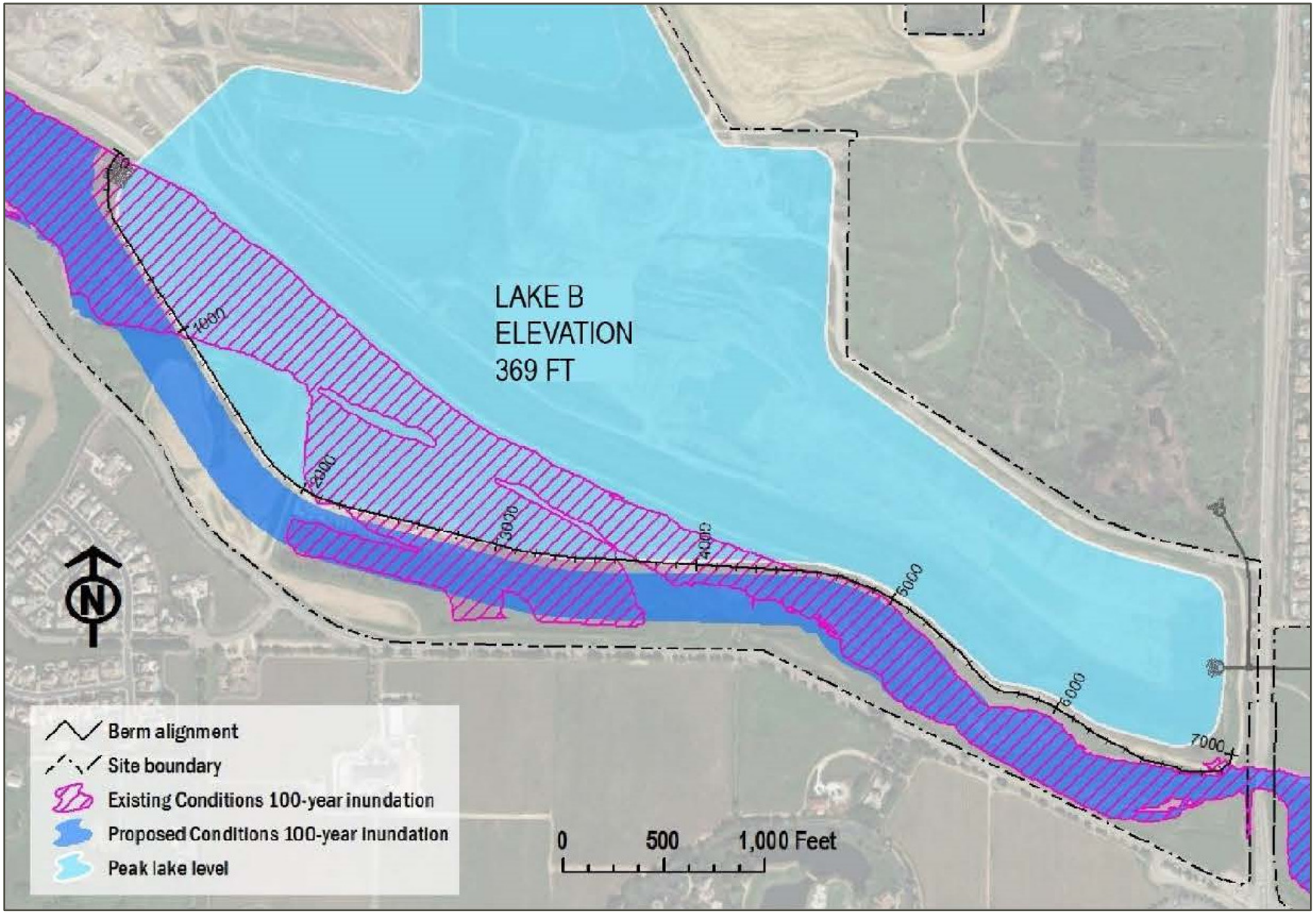
Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-2d: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding Reclamation of Lake B

Lake B Spillway

Various spillway or berm elevations for Lake B have been proposed over the past 37 years. The LAVQAR Specific Plan and approved SMP-23 Reclamation Plan ("approved plan") both show a spillway elevation of 360 ft msl. The proposed approved Reclamation Plan sheets show the spillway elevation at 369 ft msl. The 100-year flood elevation in the area of the spillway is just below 369 ft msl, as shown in Figure 4.6-27, "100-Year Water Surface Profiles for Existing and Proposed Conditions at Lake B" (Brown and Caldwell 2019). A spillway elevation of 369 ft msl is assumed to be the minimum design elevation to exclude the 100-year flood along the ADV from entering Lake B at the spillway location. To achieve the recommended four feet of freeboard, the minimum berm height adjacent to the spillway is 373 ft msl. The berm and spillway design for Lake B are further limited by the area needed to realign the ADV, such that the berms along the southwest side of Lake B do not encroach into the necessary floodway for the arroyo. Taller berms would require a wider footprint given the angle of the side-slopes, which would limit the width of the realigned arroyo and constrain the floodplain.



SOURCE: Brown and Caldwell 2020, Hydraulic Design Study Figures ES-5; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

100-Year Water Surface Profiles for Existing and Proposed Conditions at Lake B
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Figure 4.6-27

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Lake B Reclamation

Approximately 2.1 million cubic yards of dry silt and overburden may be placed in the east end of Lake B, as shown on Sheets R-2 and R-3 of Appendix B-1. The lowest elevation of silt would be at approximately 230 ft msl, whereas the top elevation would be 340 ft msl, which is 29 feet below the anticipated water surface elevation in Lake B of 369 ft msl. The width of the top silt elevation would be approximately 630 feet. The cross-sectional area of the silt placement relative to the total cross-sectional area of the aquifer is identified in Table 4.6-10, "Cross-sectional Areas Perpendicular to the Direction of Groundwater Flow: Lake B." These cross-sectional areas are oriented perpendicular to the direction of groundwater flow.

TABLE 4.6-10
CROSS-SECTIONAL AREAS PERPENDICULAR TO THE DIRECTION OF GROUNDWATER FLOW: LAKE B

Location	Silt Backfill				Across Project Site			Percent of Area Backfilled	Open Water Area Relative to Backfill
	Top Width	*Bottom Width*	*Thickness*	*Area*	*Width*	*Thickness*	*Area*		
Lake B Fill	630	0	110	34,650	1,350	223	301,050	12%	--
Lake B Above Fill	770	630	29	20,300	--	--	--	--	59%

Source: EMKO 2020a

As shown in Table 4.6-10, the cross-sectional area of the fill would be 34,650 square feet, while the cross-sectional area of the aquifer across this part of the Eliot Quarry is 301,050 square feet. The cross-sectional area of the aquifer is calculated based on the width of the Eliot Quarry in the east side of Lake B (1,350 feet) and the vertical distance between the bottom elevation of proposed mining (150 ft msl) and the average groundwater surface elevation for Lake B (373 ft msl), or 223 feet, as shown in Table 4.6-10.

Based on the cross-sectional area of the fill and the cross-sectional area of the aquifer, the fill would replace about 12 percent of the aquifer cross section in this limited area with silt and overburden. However, the silt would not extend to the top of the water surface in Lake B. The cross-sectional area of the unimpeded water above the silt would be 20,300 square feet, which is roughly 60 percent of the fill cross-sectional area.

In accordance with the Alameda County Surface Mining Ordinance (ACSMO—Title 6, Chapter 6.80.240.C.2), while the silt and overburden placement in the east end of Lake B would reduce part of the area available for groundwater flow, the open-water area above the fill provides for unrestricted water flow across the east end of Lake B. Assuming that the natural aquifer material has a porosity of 30 percent, the cross-sectional area of the pore space available for groundwater movement across the area that would be backfilled with silt would have been about 10,400 square feet (34,650 X 0.3) prior to mining in the east part of Lake B. The cross-sectional area of the pore space in the area that would become open water from 340 ft msl to 369 ft msl would have been about 6,100 square feet (20,300 X 0.3) prior to mining. The cross-sectional area of open water of 20,300 square feet, with unrestricted transmissivity, exceeds the cross-sectional area of the pore space present prior to mining of 16,500 square feet. Thus, the silt placement in the east end of Lake B would not reduce the transmissivity or area through which water may flow. As a result, reclamation of Lake B would have a less than significant impact due to depletion of groundwater supplies or interference with groundwater recharge.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-3a: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding Lake A Reclamation and Diversion Structure Construction, Construction of the Infiltration Gallery, and Construction of Conduit from Lake A to Lake C with a Turnout to Lake B

A description of the Lake A Reclamation and Diversion Structure Construction is provided in Impact 4.6-1a. Please see the impact discussion for Impact 4.6-1a for a discussion regarding infiltration gallery, construction of the diversion structure and construction of the conduit from Lake A to Lake C with a turnout to Lake B as the primary impacts were water quality issues associated with drainage pattern alternations that could cause erosion or siltation.

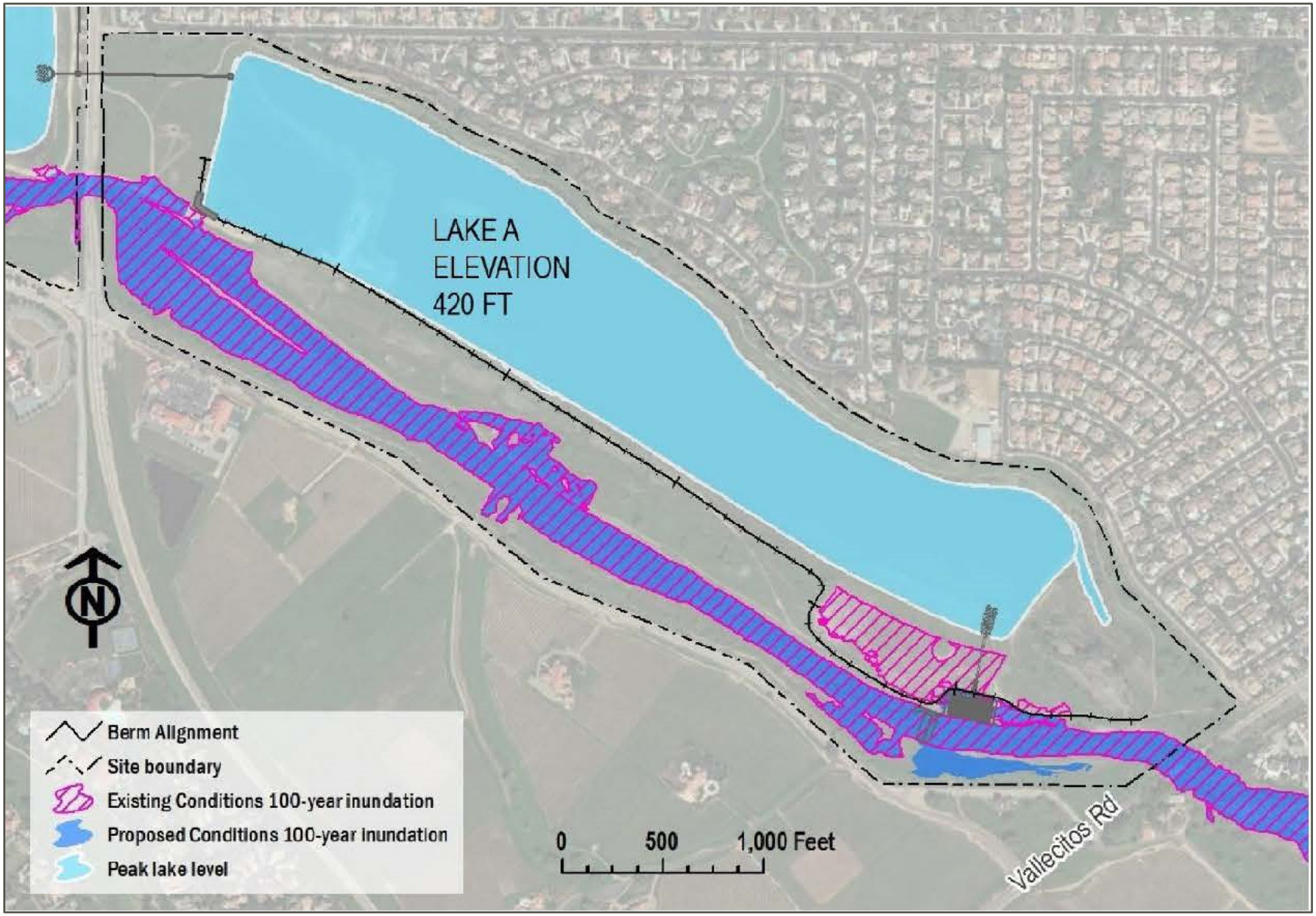
Overflow Structure from Lake A back into ADV

Historic high groundwater elevations present a challenge for design and construction of berms and spillways that would be capable of retaining groundwater that enters Lake A and Lake B, while maintaining appropriate freeboard. In addition, it is uncertain what groundwater levels would be once Zone 7 begins diverting water from the ADV and actively recharging the Shallow Aquifer through the Chain of Lakes. At a minimum, the berms and spillways for Lake A and Lake B should prevent the 100-year flood on Arroyo del Valle from flowing into the reclaimed lakes. The 100-year water surface profiles for the existing and proposed conditions at Lake A are provided in Figure 4.6-28, "100-Year Water Surface Profiles for Existing and Proposed Conditions at Lake A."

As part of the project, a small overflow spillway would be installed at the top of the berm along the south side of Lake A, near the western end of the berm. If a flooding event on the ADV or a mechanical failure affected the ability of the upstream diversion structure into Lake A to shut off, and Lake A began to overfill, the overflow channel would allow the excess water to return to the ADV before flooding adjacent properties or eroding the berm. The overflow channel would be rock lined to prevent erosion and siltation. If Lake A were to overfill, most if not all of the water in Lake A would consist of water diverted from the ADV, or water from the arroyo that seeped into the lake through the porous and permeable gravel material present between Lake A and the ADV. Therefore, the overflow channel would not result in erosion or siltation in the ADV. As a result, the overflow structure would have a less than significant impact due to erosion, siltation, or increases in surface runoff.

Level of Significance: Less than significant.

Mitigation Measure: None required.



SOURCE: Brown and Caldwell 2020, Hydraulic Design Study Figures ES-6; modified by Benchmark Resources in 2020.
NOTE: Figure is not printed to scale.

100-Year Water Surface Profiles for Existing and Proposed Conditions at Lake A
ELIOT QUARRY SMP-23 SEIR
Figure 4.6-28

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Impact 4.6-3b: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding ADV Realignment

A description of the ADV Realignment is provided in Impact 4.6-1b. Regarding erosion and sedimentation impacts and mitigation regarding the ADV realignment, please see the analysis for Impact 4.6.1b, which adequately describes these issues. In addition, compliance with Mitigation Measure 4.6-1 and obtaining and complying with regulatory permits would ensure that impacts such as surface runoff that would result in flooding, additional sources of runoff, or impeding or directing flood flows would be reduced to a less than significant level.

Level of Significance: Potentially Significant

Mitigation Measure: Implement Mitigation Measure 4.6-1 (see Impact 4.6-1a, above).

Significance after Mitigation: Less than significant

Impact 4.6-3c: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding the Northern Reclamation Area

A description of the reclamation activities in the Northern Reclamation Area and potential impacts that could cause erosion and sedimentation are provided Impact 4.6-1c, above. In summary, reclamation would be conducted in accordance with the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, which would require development of a SWPPP for the reclamation construction activities. A SWPPP would identify the potential erosion issues and sources of sediment and other pollutants that could affect the quality of stormwater discharges from the site. The SWPPP would also identify BMPs that would eliminate or reduce to acceptable levels erosion and sedimentation and other pollutants in stormwater discharges from the site. As noted above, the General Permit and SWPPP are required by Mitigation Measure 4.6.1, which would eliminate or reduce any impacts associated with erosion control and sedimentation to a level of insignificance. In addition, compliance with Mitigation Measure 4.6-1 would ensure that impacts such as surface runoff that would result in flooding, additional sources of runoff, or impeding or directing flood flows would be reduced to a less than significant level.

Level of Significance: Potentially Significant

Mitigation Measure: Implement Mitigation Measure 4.6-1, "Development of SWPPP" (see Impact 4.6-1a, above).

Significance after Mitigation: Less than significant.

Impact 4.6-3d: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding Reclamation of Lake B

A description of the Reclamation of Lake B is provided in Impact 4.6-1d. Regarding erosion and siltation impacts and mitigation regarding the ADV realignment, please see the analysis for Impact 4.6-1d, which describes issues associated with erosion control and siltation.

Conveyance of Water from Lake A to Lake C with a turnout to Lake B

The conveyance of water from Lake A to Lake C with a turnout to Lake B could also result in flooding, erosion, or siltation impacts. The following water conveyance structures would be installed in or near the east end of Lake B:

- 84" pipe from Lake A to Lake C capable of conveying up to 500 cfs;
- 30" pipe between Lake B and Lake C at an invert elevation of 349 ft msl capable of conveying up to 100 cfs in either direction, depending on water-level differences in the two lakes; and
- 84" pipe from Lake A to Lake B capable of conveying up to 400 cfs.

As indicated on Sheet R-2 of Appendix B-1, the pipe between Lake B and Lake C would be located in the northeastern portion of Lake B and be separated from the backfills that would occur in the east panhandle of Lake B.

The 84" pipe from Lake A to Lake B would discharge water down the east slope of Lake B. Energy dissipation and erosion protection along the east face of Lake B would be included to prevent the discharge from eroding the east face of Lake B if the discharge occurred at times when Lake B was not full. If discharge to Lake B occurred at times when the water level in Lake B was below or within roughly 10 feet above the elevation of the top of the silt (e.g., when Lake B is first being filled after mining is completed), the flow could temporarily disturb the silt and cause it to be redistributed throughout Lake B where it would likely settle.

To prevent any disruption to the silt caused by conveyance of water from Lake A to Lake B, with associated erosion and sedimentation, implementation of Mitigation Measure 4.6-3 is required. Mitigation Measure 4.6-3 requires implementation of one of two options to convey water around the Lake B silt storage area, including a high-density polyethylene (HDPE) pipe connected to the Lake B pipeline turnout or a lined channel across the top of the compacted backfill surface of the silt storage facility at the east end of Lake B. With the implementation of Mitigation Measure 4.6-3, erosion and siltation impacts due to conveyance of water from Lake A to Lake C and Lake A to Lake B would be less than significant.

EMKO estimated the volume of water that may spill from Lake B based on the rate of groundwater flow into Lake B. An overflow outlet would be created in the crest of the berm installed at the west end of Lake B at an elevation of 369 feet msl to allow water to flow back into ADV through a controlled and stable pathway. The outlet would consist of an armored trapezoidal weir and chute, with an armored outlet apron. The outlet crest would be 60 feet wide perpendicular to the flow with 4H:1V side slopes. The outlet crest is 120 feet wide in the direction of the flow.

The Lake B area is mostly dry because it is actively dewatered to facilitate mining. The current controlling (baseline) water level elevation for Lake B is 373 ft msl, assuming a non-operating (no

mine dewatering) condition. At this elevation, the total groundwater flow through Lake B would be approximately 7,900 AF per year. The median Lake B water level elevation is 373 ft msl, which by coincidence is the same as the controlling baseline elevation.

Since the actual water level is constantly fluctuating, the median value infers that half the time the water level would be above that elevation and half the time the water level would be below that elevation. With a maximum potential Lake B water level of about 395 ft msl, the average elevation of the water surface during the times when the water surface is above the median water level would be 384 ft msl. Based on these parameters, under non- operating baseline conditions, the average rate of overflow from Lake B would be approximately 465 AF/yr for periods when the water level is above the median. However, since the water level is above the median only half the time, the long-term average non-operating baseline overflow would be one-half that value, or approximately 235 AF/yr.

Under operating baseline conditions, there would be no overflow from Lake B since the mining excavation is dewatered. The fluctuations in water levels follow major climatic cycles of 10 to 20 years. Thus, under actual conditions, there may be no overflow for a decade or more, followed by a period of several years where there may be constant overflow above the non-operating baseline controlling elevation. The annual averages described above and, in the paragraph, below are not meant to infer that overflow might occur every year. The annual averages are provided solely as a means for comparison of baseline and proposed project conditions.

As part of the project, the proposed spillway elevation for Lake B is 369 ft msl. At this elevation, the total groundwater flow through Lake B would be approximately 7,700 AF/yr under reclaimed proposed conditions. Thus, the amount of water that overflows from Lake B via the spillway under project conditions would be 200 AF/yr greater, on average, than under non-operating baseline conditions (i.e., 7,900 AF/yr minus 7,700 AF/yr). This represents only about a 2.6 percent increase in water that would overflow from Lake B under the non-operating baseline condition. Based on the Lake B water levels presented in the EMKO report (Appendix F-2), water would flow over the spillway at 369 ft msl over 80 percent of the time, on a long-term basis.

Although not germane to the evaluation of the project's impacts pursuant to CEQA (since existing conditions are used to define baseline), the 200 AF/yr (or 2.6 percent) increase of water overflow under project conditions as compared to non-operating baseline and the total average annual overflow of 435 AF/yr under project conditions constitute much less water loss than would occur under implementation of SMP-23 with a spillway at 360 ft msl (i.e. nine feet lower than proposed project conditions).

In addition, the overflow outlet flow path and apron would be lined with riprap to mitigate the potential for erosion to occur. This stable pathway would ensure that construction of the Lake B spillway would have a less than significant impact on erosion, siltation, surface runoff that would result in flooding, polluted runoff, or impeded or redirected flood flows. However, as noted above, the conveyance of water from Lake A to Lake B could result in a significant impact in this regard. As a result, Mitigation Measure 4.6-3, below, is required to reduce this impact to a less than significant level.

Level of Significance: Potentially significant.

Mitigation Measure 4.6-4: Conveyance to Avoid Lake B Silt Storage Area

The Permittee, or its contractor, shall implement one of the following two water conveyance options for the pipeline turnout from Lake A to Lake B:

1) *Install a high-density polyethylene (HDPE) pipe, connected to the Lake A to Lake B pipeline turnout, that will be capable of conveying the flow from the end of the Lake A to Lake B pipeline across or around the overburden/silt backfill area in the eastern end of Lake B.*
2) *Compact the backfill surface in the eastern end of Lake B and construct a lined channel across the top of the backfill that will be capable of conveying the flow from the end of Lake A to Lake B pipeline turnout across the backfill area. This channel shall be lined with gravel or cobbles to minimize the potential for erosion or sediment transport.*

Significance after Mitigation: Less than Significant.

Impact 4.6-4a: Release of Pollutants In Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding Lake A Reclamation and Diversion Structure Construction, Construction of the Infiltration Gallery, and Construction of Conduit from Lake A to Lake C with a Turnout to Lake B

A description of the Lake A Reclamation and Diversion Structure Construction is provided in Impact 4.6-1a. Please see the impact discussions for Impact 4.6-1a and Impact 4.6-3a for a discussion regarding infiltration gallery, construction of the diversion structure and construction of the conduit from Lake A to Lake C with a Turnout to Lake B as the primary impacts were water quality issues associated with flood hazard are discussed.

Seiche

A seiche could be cause by wind or by an earthquake. A seiche could incrementally increase the amount of water leaving Lake A during periods when the groundwater level is above the minimum freeboard level, or 3.5 ft (see Table 4.6-11, "Wave Amplitude and Run-Up Values"). The recommended design water level is 420 ft msl in Lake A, and the recommended freeboard is four feet. Thus, the Lake A minimum berm elevation should be 424 ft msl, which is above the historic peak water level elevation. Consideration was given to including a spillway at 420 ft msl near the southwest corner of Lake A to address the potential for overfilling of the lake due to excess diversion of water to or insufficient release of water from Lake A.

The 100-year flood elevation at the west end of Lake A is approximately 410 ft msl (Brown & Caldwell 2019). A spillway at an elevation of 420 ft msl would exclude flood waters from entering Lake A through the spillway and, therefore, meets the applicable design criteria.

Since the predominant wind direction is generally from west to east, wind-generated waves would move away from the west side of Lake A, where the berms would be at or near the minimum design elevation. The wind-generated waves would reach their maximum height at the east side of Lake A, where the minimum natural topographic elevation around the edge of the lake is greater than 430 ft msl. Thus, wind-generated waves would only affect the east end of Lake A, where the natural ground surface is well above the design elevations. In addition, the localized influence of wave run-up would occur substantially below any neighboring developments to the north of Lake A, which vary in elevation from approximately 425 ft msl on the north side of Alden Lane to over 450 ft msl at Lakeside Circle (EMKO 2020a). The maximum elevation of a seiche would depend on the elevation of the water in Lake A at the time the seiche occurred, but the critical point is when the lake is full

(elevation 420 ft msl). Thus, if the max seiche wave height is 3.5 ft, the max elevation is the sum of 420 and 3.5, or 423.5 ft msl.

TABLE 4.6-11
WAVE AMPLITUDE AND RUN-UP VALUES

Wave Type	Lake A			Lake B		
	Amplitude	*Run-up*	*Total Height*	*Amplitude*	*Run-up*	*Total Height*
Seiche	1.5	2.0	3.5	1.5	2.0	3.5
30 mph Wind-generated	1.2	1.6	2.8	1.1	1.4	2.5
40 mph Wind-generated	1.7	2.2	3.9	1.5	2.0	3.5

Source: EMKO 2020a
Note: All values in feet

The spillway elevation of 420 ft msl may not provide sufficient freeboard to fully retain a seiche if one were to occur during a time when the peak water level existed in Lake A. The historic peak groundwater elevation occurred for a period of only two to three weeks in February 1980. The second-highest historic groundwater elevation in the Lake A area occurred for a period of two to three weeks in March 1991, at an elevation of 417.8 ft msl.

EMKO estimated the volume of water that would potentially overtop and flow over the Lake A spillway as the result of a seiche, assuming the initial water level in Lake A was at the spillway elevation. The first order seiche period for Lake A is 33 seconds, as described above. This means that the water level during a seiche at any specific location in the lake would exceed the normal water level for 16.5 seconds per wave cycle and would be less than the normal water level for 16.5 seconds per wave cycle. The average water height of a seiche above the spillway elevation during the 16.5-second timeframe above the normal water level would be 0.75 ft. The rate of flow over the spillway under these conditions would be approximately 3,855 cfs. For each 16.5-second overtopping event, the total volume of water that would spill into the arroyo from Lake A would be approximately 63,600 cubic feet, or about 1.46 acre-feet. Due to friction loss from wave run-up on the sides of Lake A and the loss of water over the berm, it is anticipated that the seiche would attenuate relatively rapidly. If the seiche oscillated for five periods before the amplitude became too small to result in any additional water loss, then less than 8.85 acre-feet of water would be released to ADV. These results are based on the predominant earthquake, ground shaking with a period comparable to that for a seiche in Lake A, and Lake A being full to the spillway level all occurring at the same time. Such a coincidental event is extremely unlikely.

Based on the above analysis, the recommended design elevation and freeboard would retain all naturally occurring groundwater, prevent overtopping from wind-generated waves, and would only allow a minimal release of water into the ADV in the unlikely occurrence of a seiche during the relatively brief periods that water levels would reach the elevation of the spillway. Thus, the potential impacts due to release of pollutants caused by seiches would be less than significant.

Tsunami

The site is located about 36 miles from the Pacific Ocean and about 18 miles from the nearest part of the San Francisco Bay (Google 2020), therefore, there is no reasonable likelihood of induction caused by a tsunami at the project site.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-4b: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding the ADV Realignment

A description of the ADV realignment is provided in Impact 4.6-1b. Please see Impact 4.6-1b and Impact 4.6-3b for discussions regarding impacts from the potential release of pollutants associated with flood hazards. Due to the limited size of the ADV realignment, no reasonably foreseeable project inundation would occur from a seiche. In addition, the site is located about 36 miles from the Pacific Ocean and about 18 miles from the nearest part of the San Francisco Bay; therefore, no reasonably foreseeable project inundation would occur from a tsunami.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-4c: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation at the Northern Reclamation Area

A description of the Northern Reclamation Area is provided in Impact 4.6-1c. Please see Impact 4.6-1b and Impact 4.6-3b for discussions regarding impacts from the potential release of pollutants associated with flood hazards. The Lake J excavation area would be reclaimed to open space and/or non-prime agriculture. Ponds C and D in the North reclamation area may be repurposed as silt ponds. For these ponds, silts may be deposited up to elevation 330 feet msl with groundwater above that. Ultimately, these ponds would either be reclaimed as independent open water bodies with a projected water surface elevation of 370 feet msl or merged with the larger future Lakes C and D, to be developed by Vulcan on its adjoining property. Due to the limited sizes of Ponds C and D, no reasonably foreseeable project inundation would occur from a seiche. In addition, the site is located about 36 miles from the Pacific Ocean and about 18 miles from the nearest part of the San Francisco Bay; therefore, no reasonably foreseeable project inundation would occur from a tsunami.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-4d: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding Reclamation of Lake B

A description of the Reclamation of Lake B is provided in Impact 4.6-1d. Please see Impact 4.6-1b and Impact 4.6-3b for discussions regarding impacts from the potential release of pollutants associated with flood hazards.

A seiche could incrementally increase the amount of water leaving Lake B during periods when the groundwater level is above the minimum freeboard level, or 3.5 ft (see Table 4.6-11, above). Similar to Lake A, a 40-mph wind event occurs less than 0.2 percent of the time in Livermore (EMKO 2020a). Thus, the maximum potential combined wave height due to seiche and wind-generated waves would be contained with 3.5 feet of freeboard 99.8 percent of the time at Lake A and Lake B. Based on the EMKO report (Appendix F-2), under non-operating baseline conditions, the average rate of overflow

from Lake B would be approximately 465 AF/yr for periods when the water level is above the median. However, since the water level is above the median only half the time, the long-term average non-operating baseline overflow would be one-half that value, or approximately 235 AF/yr. Under operating baseline conditions, there would be no overflow from Lake B since the mining excavation is dewatered.

The quality of the water in Lake B and the design of the spillway, which has been designed to prevent erosion and the discharge of sediment to the ADV during releases, would neither result in any incremental overflow due to a seiche nor the potential release of any pollutants.

In addition, the site is located about 36 miles from the Pacific Ocean and about 18 miles from the nearest part of the San Francisco Bay; therefore, no reasonably foreseeable project inundation would occur from a tsunami.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan

Unlike the previous thresholds of significance that require impact statements for each major component of the proposed project, this impact statement applies to the entire site and each component. Zone 7's Alternative Plan requires implementation of the Chain of Lakes to comply with the Sustainable Groundwater Management Plan. The proposed reclamation plan is a component of the implementation of the Chain of Lakes. The Applicant would continue to adhere to all applicable plans, permits, and regulations governing water quality. During construction related to reclamation, the Applicant would comply with its NPDES permit (NPDES No. CAG982001), effective January 1, 2021, and Mitigation Measure 4.6-1, discussed above, which includes obtaining a Stormwater General Permit with an associated SWPPP that would require BMPs for construction. Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan, and impacts would be less than significant.

Level of Significance: Potentially Significant

Mitigation Measure: Implement Mitigation Measures 4.6-1 (see Impact 4.6-1a, above), 4.4-1 (see Section 4.4), 4.6-2, and 4.6-3 (see Impact 4.6-1d, above).

Significance after Mitigation: Less than significant

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4.7—LAND USE AND PLANNING

This section of the subsequent environmental impact report (SEIR) describes the existing land uses, adopted general plan land use classifications and zoning designations on and around the project site, and other applicable management plans and policies pertinent to the project area. This chapter also describes the applicable plans and policies that guide development in the project area, and it evaluates the project's consistency with these plans and policies and other existing land use regulations.

This chapter also identifies any potentially significant land use impacts and, if necessary, appropriate mitigation measures to avoid or reduce such impacts. Pursuant to Section 15358(b) of the CEQA Guidelines, mitigation measures are proposed only to address physical impacts that may result from the project.

4.7.1 Land Use Conditions at the Time of the LAVQAR EIR

Land use at the time of the *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) included agricultural and industrial uses. Agricultural use predominated in the northern portion of the project area, on which land had not yet been quarried. Some areas functioned as open space prior to mining. The central and southern portions of the project area were used for the quarry operation, including working pits, process water storage, settling ponds, and operators' buildings and corporation yards (Alameda County 1980: 41-42).

4.7.2 Environmental Setting

The project site is predominated by mining and processing facilities associated with CEMEX's operation (see Figure 2-6, "Existing Facilities" and Figure 2-7, "Plant Site Area Utilities"). The eastern portion of the site (east of Isabel Avenue) contains Lake A, a formerly mined area that contains water primarily from groundwater infiltration. South of Lake A is the eastern portion of the segment of the Arroyo del Valle (ADV), which is a perennial drainage channel that runs east-west along the southern portion of the site. The portion of the site west of Isabel Avenue contains Lake B, which is a recently mined area with a mine pit approximately 100 to 130 feet deep. The ADV continues east-west along the southern portion of this area of the site before merging with Alameda Creek near Interstate 680. North of Lake B are CEMEX's currently operating materials processing facility and stockpile areas. CEMEX's current mining operations are being conducted in the areas referred to as Lake B and Lake J. Additional uses include processing activities, stockpiles, administrative offices, a truck scale, and other facilities related to mining and processing. Topcon Positioning Systems, Inc. (a lessee) currently operates a heavy equipment geopositioning training facility within a southern portion of the project boundary between Vineyard Avenue and the ADV. This use is temporary because it is an unpermitted facility and not authorized by the zoning ordinance. The Topcon use must be moved elsewhere to accommodate the ADV realignment (anticipated to occur between 2022 and 2023).

Land uses adjacent to the project site include other mining operations, open space areas, agricultural uses, recreational facilities, transportation corridors, and residential development (see Figure 2-6). A separate mining operation subject to Surface Mining Permit and Reclamation Plan 16 (SMP-16), currently operated by Vulcan Materials Company, abuts the project site's eastern and northern border of Lake B. The East Bay Regional Park District (EBRPD) Shadow Cliffs Recreation Area, a reclaimed surface mine that now includes a lake and shoreline facilities available for public use, abuts the project site's northwestern border. The Ruby Hills residential subdivision in the city of Pleasanton is located across Vineyard Avenue to the south of the Lake B portion of the project site. Residential uses are also located in the city

of Livermore, north of the Lake A area of the project site. Vineyards for two wineries (Ruby Hill Winery and Rubino Estates Winery) and two event centers (Casa Real at Ruby Hill Winery and Palm Event Center in the Vineyard) are also located along the south side of Vineyard Avenue. Residential uses are also located in the City of Livermore to the north of Lake A. The nearest residential developments are contiguous to the northern boundary of the Lake A area, with the nearest home approximately 35 feet from the northwest corner of the Lake A property (CEMEX 2019).

4.7.3 Regulatory Setting

The site is located in unincorporated Alameda County, in a portion of the county where the *East County Area Plan* (ECAP) serves as the applicable general plan document (County General Plan). ECAP provides overall land use policy direction, and the Alameda County Code of Ordinances provides the applicable land use regulations. Additionally, the project site is part of the *Specific Plan for Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR Specific Plan) (Alameda County 1981). The LAVQAR Specific Plan comprises the 3,820 acres designated for "Sand and Gravel Quarry" use between Pleasanton and Livermore in the Livermore-Amador Valley.

Applicable county planning policies and zoning regulations that pertain to the project site are described below, as are applicable LAVQAR Specific Plan management goals and policies, followed by a discussion of the project's consistency or inconsistency with each relevant policy. Potential conflicts with planning policies as contained in the County General Plan and other applicable regulatory and management plans do not inherently result in a significant effect on the environment. Instead, "effects analyzed under CEQA must be related to a physical change in the environment" (CEQA Guidelines Section 15358.b). CEQA Guidelines Section 15125.d provides that an EIR shall discuss any inconsistencies between a proposed project and the applicable general plan in the setting section of the document rather than as an impact (see Table 4.7-1 at the end of this "Regulatory Setting" section). Appendix G of the CEQA Guidelines indicates that a project would result in a significant impact related to land use and plans if it would "conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect." Therefore, while this section of the SEIR provides an analysis of the project's consistency with applicable plans, policies, and regulations, any impacts that may result from such conflicts are analyzed elsewhere in this SEIR.

4.7.3.1 Alameda Countywide Conservation Element of the General Plan

The County General Plan consists of area plans, which contain elements for their respective geographic areas, and countywide elements. The countywide Conservation Element contains goals, policies, and actions that apply to the entire unincorporated area. This subsection lists the applicable land use goals of the countywide Conservation Element.

Minerals, Extractive Resources

Goal: To insure extraction of minerals and reclamation of land to the fullest extent possible consistent with sound management policies.

Agriculture and Soils Resources Management:

Goal: To protect agriculture and agricultural lands.

The Conservation Element also recognizes sand and gravel sourced from Alameda County as "a principle source of aggregate materials for the San Francisco Bay Area," and it identifies the ADV as one of the primary sources of sand and gravel.

4.7.3.2 Alameda County (Unincorporated Areas) Community Climate Action Plan Element of the General Plan

The County General Plan consists of area plans, which contain elements for their respective geographic areas, and countywide elements. The Alameda County (Unincorporated Areas) Community Climate Action Plan Element of the General Plan (CAP) addresses reduction of greenhouse gas emissions through a series of 37 local programs and policy measures related to transportation, land use, building energy, water, waste, and green infrastructure. The purpose of the CAP is to allow the County to reduce its community-wide emissions by more than 15 percent by the year 2020. The Plan was approved by the Board of Supervisors on February 4, 2014. This subsection lists the applicable policies of the countywide CAP Element.

Energy Performance in New Construction

Policy E-10: Require new construction to use building materials containing recycled content.

Water Conservation: Building and Landscape Efficiency

Policy WT-2: Require new landscape projects to reduce outdoor potable water use by 40 percent.

4.7.3.3 East County Area Plan

The purpose of the ECAP is to present a clear statement of the County's intent concerning future development and resource conservation within East County. The ECAP contains land use policies pertaining to quarries and Regionally Significant Aggregate Resource Areas. The goal for these special land use policies is to "recognize the regional value of the County's construction aggregate resources and to ensure compatibility between quarry operations and surrounding land uses."

The ECAP also contains policies that place strict limits on where new mine excavations may be conducted. ECAP Policy 155 provides that, "Except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry." The project does not propose a new quarry.

The ECAP also contains special land use policies pertaining to quarries and Regionally Significant Construction Aggregate Resource Areas. Per the ECAP, the goal for these special land use policies is to "recognize the regional value of the County's construction aggregate resources and to ensure compatibility between quarry operations and surrounding land uses."

Passed by the voters of the County in November 2000, and now fully incorporated into the Alameda County General Plan (County General Plan), Measure D placed strict limits on where new mine excavations may be conducted. The policies introduced by the initiative are intended to stay in effect indefinitely, or until modified by Alameda County voters. A quarry that has received all necessary discretionary County and other approvals and permits before the effective date of the ordinance, but that has not yet exercised those approvals and permits, is to be considered an "existing" rather than a "new" quarry. The project involves reclamation of an existing quarry.

The ECAP includes the definition and designation of various land use categories, with corresponding allowable uses, intensities, and densities. The project site is designated on the Alameda County ECAP

Land Use Diagram as Water Management and Large Parcel Agriculture. Subject to the provisions of Measure D, the Water Management land use designation provides for sand and gravel quarries, reclaimed quarry lakes, watershed lands, arroyos, and similar and compatible uses. The Large Parcel Agriculture designation provides for agricultural uses and processing facilities, limited agricultural support service uses, secondary residential units, visitor-serving commercial facilities, recreational uses, public and quasi-public uses, solid waste landfills and related waste management facilities, quarries, windfarms and related facilities, utility corridors, and similar uses compatible with agriculture.

This subsection lists the applicable land use goals, policies, and programs of the ECAP:

Allowable Uses:

Designation: Subject to the provisions of Measure D, the Water Management land use designation provides for sand and gravel quarries, reclaimed quarry lakes, watershed lands, arroyos and similar and compatible uses.

Accessory Uses:

Designation: Sand and gravel quarries allow a range of uses including sand and gravel processing, associated manufacturing and recycling uses requiring proximity to quarries, reclamation pits, and public use areas.

Parcel Size and Building Intensity:

Designation: Water Management Lands allows for a minimum parcel size of 100 acres and a maximum building intensity of .01 FAR.

Residential Use:

Designation: One single family home per parcel is allowed, provided that all other County standards are met for adequate road access, sewer and water facilities, building location, visual protection, and public services. Residential and residential accessory buildings shall have a maximum floor space of 12,000 square feet.

Development Envelope:

Designation: Apart from infrastructure (under Policy 13), all buildings shall be located on a contiguous development envelope not to exceed 2 acres, except they may be located outside the envelope if necessary for security reasons or, if structures for agricultural use, necessary for agricultural use.

Agricultural Support Services:

Policy 78: In areas designated Large Parcel Agriculture, the County shall permit agricultural processing facilities (for example wineries, olive presses) and limited agricultural support service uses that primarily support Alameda County agriculture, are not detrimental to existing or potential agricultural uses, demonstrate an adequate and reliable water supply, and comply with the other policies and programs of the Initiative.

Recreational Opportunities

Policy 101: The County shall encourage public water management agencies to explore recreational opportunities on watershed lands, particularly reclaimed quarries, where recreational use would not conflict with watershed protection objectives.

Biological Resources

Policy 122: The County shall encourage that wetland mitigation be consolidated in areas that are relatively large and adjacent to or otherwise connected to open space. To the extent possible areas should be included in, adjacent to, or linked through open space corridors with lands designated as "Resource Management" that are managed specifically for the preservation and enhancement of biological resources.

Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands in order to establish a continuous open space system in East County and to provide for long term protection of biological resources.

Policy 125: The County shall encourage preservation of areas known to support special status species.

Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.

Policy 127: The County shall encourage the preservation of East County's oak woodland plant communities.

Policy 128: The County shall ensure that, where quarries will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.

Policy 129: The County shall protect existing riparian woodland habitat present along the Arroyo Mocho, Arroyo Del Valle, Arroyo Las Positas, Arroyo de la Laguna; and Alamo, Tassajara, and Alameda Creeks. Exceptions to these requirements shall apply for those portions of the Arroyo del Valle to be excavated for water transfer Lakes A and B under the Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation, which shall instead be subject to riparian habitat restoration as specified by Policies 128 and 164; and for any approved quarry operations in Regionally Significant Construction Aggregate Resource Sector C (Arroyo Mocho) or any other streambeds, which shall also be subject to habitat restoration under Policies 128 and 164, and according to applicable State Public Resources Code requirements, to the extent that proposed reclamation specifies riparian habitat as the end use.

Limitations on New Quarries:

Policy 155: Except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry. A quarry that has received all necessary discretionary County and other approvals and permits prior to the effective date of the ordinance — but has not yet exercised those approvals and permits — is to be considered an “existing” rather than a “new” quarry.

Development on State-Designated Regionally Significant Construction Aggregate Resource Areas:

Policy 157: The County shall review proposals for development within or adjacent to state-designated Regionally Significant Construction Aggregate Resource Sectors. If the development is proposed on unincorporated land, the County shall consider the effects of such development on the future or continued extraction of the resource and shall approve such development only if conditions are applied to minimize the potential of the new use to preclude continued or future access to the resource. If the development is proposed within a city, the County shall encourage the city to do the same.

Minimizing Conflicts

Policy 158: The County shall require that, where conflicts between a new use and existing quarry are anticipated, notifying future residents and mitigating the conflict shall be the responsibility of the new use.

Protection of Nearby Uses

Policy 159: The County shall impose conditions on approval of new Surface Mining Permits and Reclamation Plans to protect nearby uses from potential traffic, noise, dust, health and safety, visual and other impacts generated by sand and gravel quarries. Conversely, the County shall not approve land uses adjacent to any existing quarry or Regionally Significant Construction Aggregate Resource Sector if the development of the new uses would result in exposure of residential or other sensitive uses to possible adverse impacts of the quarry, unless the new uses can effectively mitigate the significant adverse impacts and notify potential homeowners of the risk, as required by Policy 158.

Reclamation for Water Management

Policy 160: The County shall ensure that where quarry operations are located in areas designated as Water Management, extraction of the aggregate resource shall be allowed in the short-term. Reclamation of the land for water management and other compatible uses shall occur subject to conditions of Surface Mining Permits and Reclamation Plans and consistent with the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation or the comparable plan prepared for the Sunol Valley/San Francisco Water Department watershed lands pursuant to Policy 161 and Program 71, whichever is applicable.

Manufacturing Uses

Policy 162: The County shall allow manufacturing uses which make extensive use of harvested aggregate to locate near sand and gravel quarries.

Concurrent Mining and Agricultural Uses

Policy 163: The County shall encourage concurrent mining and agricultural uses on sites where aggregate deposits are overlain by agriculturally valuable soils to minimize the premature disturbance of such soils. To this end, the County shall consider phasing of quarry operations in the approval of Surface Mining Permits and Reclamation Plans.

Revegetation

Policy 164: The County shall ensure that where quarry operations will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees**.**

Water Conservation

Policy 165: The County shall require that water-conserving practices are incorporated into mining and reclamation operations.

Land Use Buffers

Program 69: The County shall amend the Surface Mining Ordinance to require permit applicants for any Surface Mining Permit and Reclamation Plan to provide appropriate buffering of quarry operations from adjacent land uses, such as setbacks, landscaping, and use restrictions**.**

Consistency with SMARA

Program 70: The County shall amend the Surface Mining Ordinance to include reclamation guidelines consistent with the Surface Mining and Reclamation Act (SMARA).

4.7.3.4 County Zoning Ordinance

The zoning for the project site is principally Agriculture, but portions of the site also include Unclassified and Planned Development zoning designations (see Figure 2-9, "Zoning Designations"). Agricultural districts are established to "promote implementation of General Plan land use proposals for agricultural and other non-urban uses, to conserve and protect existing agricultural uses, and to provide space for and encourage such uses in places where more intensive development is not desirable or necessary for the general welfare."[1]

Mining activities may be permitted within any County zoning designation, including lands designated as Agricultural, subject to the provisions of the County Surface Mining and Reclamation Ordinance. As the local land use authority, Alameda County authorizes mining activities on unincorporated lands through the issuance of surface mining permits and approval of reclamation plans pursuant to Alameda County Code of Ordinances, Title 6: Health and Safety, Section 6.80: Surface Mining and Reclamation. The provisions of the County's Surface Mining and Reclamation Ordinance apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit (or existence of vested rights), reclamation plan, and financial assurances for reclamation. Thus, the existing quarry and the proposed project are consistent with the County Zoning Ordinance.

4.7.3.5 County Surface Mining and Reclamation Ordinance

As the local land use authority, Alameda County authorizes surface mining activities on unincorporated lands through the issuance of surface mining permits pursuant to Alameda County Code of Ordinances, Title 6: Health and Safety, Section 6.80: Surface Mining and Reclamation. The project site currently operates under such a County surface mining permit (SMP-23), which was approved by Alameda County

[1] Alameda County Code of Ordinances, Title 17: Zoning, Section 17.06.010.

in 1987. This permit regulates the mining of sand and gravel within 966 acres of the project site to a depth of up to 150 feet and authorizes reclamation. Quarrying operations are vested.

The provisions of the County's Surface Mining and Reclamation Ordinance (Section 6.80 et. seq. of the County Ordinance Code) are summarized below and apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit (or determination of a vested right), reclamation plan, and financial assurances for reclamation.

Agricultural Use

6.80.060 (A): If a mining operation is being conducted in an A District, all other uses permitted pursuant to the district regulations may be conducted on the site provided such uses do not interfere with meeting any of the requirements of this chapter, and provided any such uses are not prohibited by conditions of the surface mining permit or approved reclamation plan.

Accessory Uses

6.80.060 (C): Sorting, crushing, reducing, refining, mixing, packaging or other processing of minerals, or the operation of an asphalt or concrete batch plant; or any operation that uses or supplies materials produced, imported or used by mining and/or processing operations or an asphalt or concrete batch plant, may be permitted in conjunction with mining operations if conducted within an A, M-1 or M-2 district, upon securing of a surface mining permit, when such uses are found by the planning commission to be an accessory use to the mining operations and when the planning commission finds that the effects of such processing, use, storage or transport of materials, including noise, odor, smoke, dust, bright lights, vibration, traffic, and production of waste, can be controlled so as to be compatible with adjacent uses and so as not to degrade natural resources.

Periodic Review

6.80.190: Surface mining permits and approved reclamation plans shall be reviewed by the planning commission, in accordance with the schedule adopted at the time of approval according to Section 6.80.180(C) of this chapter, to consider new or changed circumstanced [sic] within the general area of the mining operations that should be accommodated by the permit or plan. The review shall include a public hearing as specified by Section 6.80.150.

At the conclusion of the public hearing, the planning commission may modify the permit or reclamation plan to conform to with this chapter [sic], and such modified permit or plan shall be binding upon the operation. Any fees for periodic reviews shall be collected as specified by Section 6.80.100.

Temporary Slopes

6.80.210 (A)(2): Temporary slopes steeper than the finished slopes, in areas where finished slopes are to occur, shall be constructed and maintained in accordance with the recommendations, as approved by the planning director, or a soil engineer or a civil engineer registered in the state or an engineering geologist registered and certified in the state. Temporary slopes shall not be created or maintained in a

manner that will interfere with the construction of finished slopes conforming to subsection (A)(1) of this section, and the soil engineer or engineering geologist shall make specific recommendations for the conversion of such temporary slopes to finished slopes.

Benches

6.80.210 (B): Benches shall be provided where necessary to control drainage on slopes or to provide for access or public safety.

Parcel Setbacks

6.80.210 (C)(1): Unless the Planning Commission approves a lesser setback pursuant to Section 6.80.210(C)(3), surface mining excavations shall not be conducted closer than twenty-five (25) feet of the common property line of any parcel, except where the adjacent property is being mined in the same manner with respect to such line; and fifty (50) feet of the right-of-way or future width line of any street.

Watercourse Setbacks

6.80.210 (C)(2): Mining excavations shall be set back from water courses, flood control channels, reservoirs and water conservation facilities a distance as may be determined by the Planning Commission on recommendation of Alameda County Flood Control and Water Conservation District (including the Zone 7 Water Agency) or Community Development Agency to be sufficient to protect existing or planned facilities.

6.80.210 (C)(3): The Planning Commission, after receipt of a complete application and with public notice and hearing in accordance with the provisions of Article II of this Chapter, if required by the public need, may authorize setbacks less than those provided in Section 6.80.210(C)(1)(a) and (b) if the Planning Commission makes the following findings, supported by the conclusions of a geotechnical study prepared by a qualified professional licensed by the State of California:

- The lesser setback is required by the public need, and is not related to the demand for additional mineral resource;
- A lesser setback and any associated resultant slope are acceptable based on the specific characteristics of the location and are supported by the conclusions of the geotechnical study prepared by a qualified professional licensed by the State of California;
- A lesser setback and any associated resultant slope will not present a risk to the adjacent property or any users thereof;
- A lesser setback and any associated resultant slope will permit adequate access for the owner of the mined land to the permitted area both during mining and following reclamation to the end use;
- A lesser setback and any associated resultant slope will safely accommodate any existing or planned utilities or facilities, including, but not limited to, water diversion and conveyance structures; maintenance roads, safety berms and guardrails; drainage features; and screening landscapes, where required; and

- A lesser setback will be in the interest of, and not compromise, the public health, safety and welfare.

Use of Explosives

6.80.210 (F): No explosives shall be used except as authorized by the surface mining permit. When authorized, the specific times of use shall be approved by the director of public works.

Grading Controls

6.80.210 (G)(1): Grades in areas being mined shall be maintained so as to avoid accumulations of water that could serve as breeding areas for mosquitoes.

Groundwater Flows

6.80.210 (G)(3): Excavations that may penetrate near or into usable water bearing strata shall not reduce the transmissivity or area through which water may flow (unless approved equivalent transmissivity or area has been provided for elsewhere), nor subject such groundwater basin or sub-basin to pollution or contamination.

Water Storage

6.80.210 (G)(4): Nothing in this chapter shall be construed to prevent the use of mined lands for the conservation or storage of water, or for the control of flood or storm waters, by a public agency duly authorized to engage in such work, provided that any such use will not conflict with nor prevent reclamation required under an approved Reclamation Plan, and provided such use is approved by the County Flood Control and Water Conservation District and/or Public Works Agency.

Water Discharge Standards

6.80.210 (G)(5): Any waters discharged from the site to adjacent lands, streams, or bodies of water or to any groundwater body shall meet all applicable water quality standards of the Regional Water Quality Control Board and any other agency with authority over such discharges. Records of any water quality monitoring conducted in conjunction with the requirements of such agency or agencies shall be made available to the Planning Director and the Director of Public Works on request. Discharges of water to designated on-site settling ponds or de-silting basins shall not be deemed to be in violation of this chapter solely on the basis of sediment content.

Erosion, Sedimentation, and Pollutant Discharge

6.80.210 (H): During the period mining operations are being conducted, and prior to final reclamation of mined lands, the operator shall take measures to prevent erosion of adjacent lands from water discharged from the site of mining operations and the off-site discharge of sediment. Such measures may include the construction of properly designed retarding basins, settling ponds and other water treatment facilities, ditches, diking and revegetation of slopes. No discharge of sediment to off-site bodies of water shall be permitted that will result in higher concentrations of silt than existed in off-site waters prior to mining operations. Stockpiles of overburden and minerals shall be managed to

minimize water and wind erosion. The removal of vegetation and overburden in advance of surface mining shall be kept to a minimum.

Control of Noise, Dust, and Bright Lights

6.80.210 (I): All activities of mining and processing minerals shall be conducted in a manner that noise, dust and bright lights do not exceed levels compatible with the uses of adjacent lands as determined by the planning commission in the issuance of the surface mining permit or as a result of its periodic review of any permit.

Final Slope Gradient

6.80.240 (E): Finished slopes shall conform to the requirements of Section 6.80.240E. These requirements include; a) final slopes shall be of such gradient as necessary to provide for slope stability, maintenance of required vegetation, public safety, and the control of drainage, as may be determined by engineering analysis of soils and geologic conditions and by taking into account probable future uses of the site. Final slopes shall not be steeper than two feet horizontal to one foot vertical (2:1) unless the applicant can demonstrate to the satisfaction of the planning commission that any such steeper slope will not be incompatible with the alternate future uses approved for the site; be hazardous to persons that may utilize the site under the alternate future uses approved for the site; and reduce the effectiveness of revegetation and erosion control measures where such are necessary. In no event shall the steepness of slopes exceed the critical gradient as determined by an engineering analysis of the slope stability.

4.7.3.6 Livermore-Amador Valley Quarry Area Reclamation Specific Plan

The project site is subject to the 1981 LAVQAR Specific Plan (Alameda County 1981). The LAVQAR Specific Plan was adopted as a master reclamation plan that would shape mined pit areas into a "Chain of Lakes" and return the remaining mined lands to productive uses after the removal of sand and gravel reserves (see Figure 2-5, "Anticipated Zone 7 Land Dedications").

The general objectives of the LAVQAR Specific Plan are:

1. To enable the competing resources of land, water, and sand and gravel to be utilized with a minimum of conflict and disruption;
2. To plan for reclamation, productive reuse, and rehabilitation of the Quarry Area;
3. To mitigate adverse effects of mining;
4. To satisfy requirements of the State Surface Mining and Reclamation Act of 1975 and the Alameda County Surface Mining Ordinance;
5. To provide a coordinated plan for arrangement of mining-produced land and water masses into a coherent, flexible form, reflecting interrelatedness of geology, hydrology, land use, and other factors throughout the Quarry Area.

The key concept of the project is the shaping of pit areas, which will eventually contain water, into a "chain of lakes" during the course of mining over the 50- to 60-year period that sand and gravel reserves are expected to last in the quarry area. The Chain of Lakes is intended to provide a surface water storage and conveyance system to replace a portion of the preexisting subsurface water storage and conveyance

system feeding the groundwater basin. Connecting conduits between the lakes and structures necessary to capture and carry local runoff waters will be provided by the operators at no cost to the public through the Alameda County Flood Control and Water Conservation District, Zone 7. At the conclusion of mining, water from Arroyo del Valle will be capable of being diverted into the Chain of Lakes, and a bypass channel for that watercourse will also be provided to maintain downstream flows necessary to Zone 7 and Alameda County Water District.

Approved reclamation plans within the LAVQAR Specific Plan boundary provide each water body in the "Chain of Lakes" with an intended end use for water management. The LAVQAR Specific Plan requires the operators to dedicate to the Alameda County Flood Control and Zone 7, at no cost, all excavated Chain of Lakes basins within the LAVQAR Specific Plan, all exterior perimeter areas, interior perimeter areas sufficient to provide a minimum 25-foot-wide access, and appurtenant levees, conduits, and diversion structures. Areas not intended for water management in the LAVQAR Specific Plan area are designated, within approved reclamation plans, for agriculture, recreation, and open space land uses, consistent with the ECAP.

The LAVQAR Specific Plan developed staging for the Quarry Area to provide reference points as reclamation progressed to permit planning for future land and water capabilities and to ensure the feasibility of carrying out the LAVQAR Specific Plan. The LAVQAR Specific Plan assumed that sales would average 6,500,000 tons annually, gradually increasing to 8,500,000 tons over a 20-year period and maintaining that rate until depletion in about the year 2030. This estimate formed the basis for the interim staging plan years of 1995 and 2010.

Although all objectives and policies of the LAVQAR Specific Plan were analyzed, only those policies relevant to the proposed project are discussed below:

- To mitigate alteration/impedance of groundwater movement and storage due to mining operations.
- To mitigate exposure of groundwater to evaporative losses due to mining operations.
- To mitigate exposure of groundwater to increased risk of quality degradation due to surface exposure as a result of mining operations.
- To provide uninterrupted and undiminished satisfactory water quantity and quality in the upper aquifer of the mined area for beneficial uses.
- To provide a surface water storage and transmission system to replace a portion of the existing subsurface system to mitigate mining impacts and enhance the ability to utilize, develop, and manage the water resources of the Livermore-Amador Valley for public benefit.
- To provide land areas capable of productive use and with minimum residual hazards.

Policies

Policy 11: The operators shall dedicate to Zone 7, upon terms mutually acceptable to the operators and Zone 7, all water areas and necessary supporting land areas to operate the chain of lakes in the public interest. The right of the public to manage and use water resources of the chain of lakes and area groundwater undiminished with respect to quantity and quality shall be expressly asserted and any other uses permitted in said areas shall be compatible with said right.

Policy 13: Land areas may appropriately be used for mining, mining-related industry in conjunction with ongoing mining, agriculture, open space, and watershed uses.

New or expanded uses in the Quarry Area shall be allowed only upon securing Zoning Approval to ensure compatibility with the LAVQAR and reclamation of the area. Reclaimed land should be capable of supporting beneficial uses. No uses shall be permitted which may unacceptably pollute the lakes.

4.7.3.7 East Alameda County Conservation Strategy

The East Alameda County Conservation Strategy (EACCS) (ICF International 2010) is a joint effort among several federal, state, and local agencies intended to provide an effective framework to protect, enhance, and restore natural resources in eastern Alameda County while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The EACCS is intended to focus on impacts on biological resources such as endangered and other special-status species as well as sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS will enable local projects to comply with state and federal regulatory requirements within a framework of comprehensive conservation goals and objectives, and be implemented using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies can more easily address the legal requirements relevant to these species. The EACCS will not result in permits, but rather will serve as guidance for project-level permits, and the federal and state Resource Agencies are participating in the development of the EACCS with the intent that it becomes the blueprint for all mitigation and conservation in the study area.

The EACCS study area encompasses 271,485 acres, or approximately 52 percent of Alameda County, including the cities of Dublin, Livermore, and Pleasanton. The western boundary of the study area runs along the Alameda Creek watershed and the northern, southern and eastern boundaries follow the Alameda County line with its adjacent counties. The EACCS study area has been divided into 18 discrete units, or conservation zones to identify locations for conservation actions in areas with the same relative ecological function as those areas where impacts occur. The project site is located in Conservation Zone 15. The overall conservation priorities for Conservation Zone 15 are:

- protection and restoration along Alameda Creek to conserve sycamore alluvial woodland and improve habitat value for central California coast steelhead and Alameda whipsnake
- protection of critical habitat and recovery unit habitat for Alameda whipsnake
- protection of potential breeding and movement habitat for foothill yellow-legged frog
- protection of serpentine bunchgrass grassland and northern coastal scrub/Diablan sage scrub land cover
- protection and enhancement opportunities for ponds to increase potential breeding habitat for California red-legged frog
- complete surveys in annual grassland habitat for callippe silverspot butterfly larval host /food plants and map occurrences of plant populations, and
- protection of annual grassland in area between SR 84 and San Antonio Reservoir to support potential habitat for callippe silverspot butterfly, western burrowing owl and American badger.

4.7.3.8 Alameda County SMP-23

On April 6, 1987, via County Resolution 87-18, CEMEX's predecessors obtained SMP-23, a reclamation plan for the Project site on the areas of CEMEX's existing permitted rights under the Q-1 and Q-76 permits. SMP-23 was not a conditional use permit for mining; rather, it was the reclamation plan for the site as required by SMARA and the ACSMO. The County prepared and approved a Negative Declaration

for the SMP-23 Reclamation Plan, on the basis that SMP-23 was consistent with the LAVQAR Specific Plan. The SMP-23 Reclamation Plan has been modified several times since its initial approval. See Figure 2-2, "Approved 1987 Reclamation Plan," for a map of approved site boundaries.

The proposed project is being proposed in response to Condition 7 of SMP-23, as adopted under Planning Commission Resolution 12-20 on December 17, 2012. Condition 7 requires the following:

a) The need to reflect the current boundaries of SMP-23 as referenced by lands both presently owned by CEMEX and previously authorized for mining operations and reclamation activities.
b) As to Lake A, the need for long-term mining and reclamation plans to address geologic hazards associated with and remedied by the Lakeside Circle Corrective Action Plan.
c) As to Lake B, the need for long-term mining and reclamation plans to address a depth and configuration which are inconsistent with the approved reclamation plans.
d) The need for SMP-23 to include provisions for the management of water flows, during both the pre- and post-reclamation conditions, between the groundwater basin, the Arroyo del Valle, and Lakes A, B and C of the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation ("Specific Plan").
e) The need for revised plans for all water conveyance facilities that: (i) reflect existing topographic conditions and desired future topographic conditions of CEMEX; (ii) fulfill the requirements and intent of the water management objectives of the Specific Plan; and (iii) may be constructed in conformance with all laws and regulations.
f) The need to coordinate the planning, design, and construction of all water conveyance structures between Lakes A, B, and C with adjacent mine operator, property owners and the Zone 7 Water Agency.
g) The geographic locations of approved end uses over the entire site once reclaimed.
h) Relative to public roadways, the need to specify, in plan and text format, authorized vehicular access points and haul routes.
i) The need to establish an estimated schedule which correlates the timing of completion for reclamation components to specific stages in the mining plan.
j) The need to establish reclamation plans that accommodate a trail as depicted in the Specific Plan, along the entire southern boundary of SMP-23 in the vicinity of Vineyard Avenue.

4.7.3.9 Project Consistency with Local Planning Documents

See Table 4.7-1, "Project Consistency with Local Planning Documents," below for an analysis of relevant policies and their consistency with the proposed project.

TABLE 4.7-1
PROJECT CONSISTENCY WITH LOCAL PLANNING DOCUMENTS

Goals/Objectives/Policies	Consistency Analysis
ALAMEDA COUNTY CONSERVATION ELEMENT	
Minerals, Extractive Resources	
Goal: To insure extraction of minerals and reclamation of land to the fullest extent possible consistent with sound management policies.	**Consistent:** The proposed project provides for the ultimate reclamation of the entire project site, including post-reclamation management. No new mining operations are proposed, as the site is already permitted to be mined to the fullest extent possible.

Goals/Objectives/Policies	Consistency Analysis
Agriculture and Soils Resources Management:	
Goal: To protect agriculture and agricultural lands.	**Consistent:** The General Plan land use designation for the project site is principally Water Management and Large Parcel Agriculture. The zoning designation is principally Agriculture, with a small portion of the site zoned as Planned Development and Unclassified. Mining activities may be permitted within any County zoning designation, including lands designated as Agricultural, subject to the provisions of the County Surface Mining and Reclamation Ordinance. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit (or existence of vested rights), reclamation plan, and financial assurances for reclamation. Thus, the existing quarry and the proposed project are consistent with the goal to protect agriculture and agricultural lands.
ALAMEDA COUNTY COMMUNITY CLIMATE ACTION PLAN ELEMENT	
Energy Performance in New Construction	
Policy E-10: Require new construction to use building materials containing recycled content.	**Consistent.** With implementation of Mitigation Measure 4.5-1f (see Section 4.5, "Greenhouse Gas Emissions"), the proposed project would include recycling or reusing of construction waste or demolition materials, to the extent feasible.
Water Conservation: Building and Landscape Efficiency	
Policy WT-2: Require new landscape projects to reduce outdoor potable water use by 40 percent.	**Consistent.** The proposed landscape plan at Lake and the proposed revegetation of the ADV realignment A (see Appendix B) is designed to improve water-efficiency compared to existing conditions.
EAST COUNTY AREA PLAN	
Allowable Uses	
Designation: Subject to the provisions of Measure D, the Water Management land use designation provides for sand and gravel quarries, reclaimed quarry lakes, watershed lands, arroyos and similar and compatible uses.	**Consistent:** The existing use of the project site is a sand and gravel quarry with similar and compatible land uses. The project provides for the ultimate reclamation of Lakes A and B for water management.
Accessory Uses	
Designation: Sand and gravel quarries allow a range of uses including sand and gravel processing, associated manufacturing and recycling uses requiring proximity to quarries, reclamation pits, and public use areas.	**Consistent:** The project site is primarily a sand and gravel quarry for processing of raw aggregate materials and includes accessory and associated manufacturing uses that benefit from (though do not necessarily require) proximity to the quarry. As a reclamation plan for the quarry, the project would not introduce new operational accessory uses.
Parcel Size and Building Intensity	
Designation: Water Management Lands allows for a minimum parcel size of 100 acres and a maximum building intensity of .01 FAR	**Consistent:** The project site is approximately 920 acres under currently active quarry operations (pursuant to SMP-23). At 920-acres, a maximum floor-area ratio

Goals/Objectives/Policies	Consistency Analysis
	(FAR) of 0.01 would permit a total of approximately 400,572 square feet of building space on-site.[2] The County Code of Ordinances (Section 17.04.010) defines the term "building" to mean "any structure erected for the support, shelter or enclosure of persons, animals or property." The proposed project does not include any new structures which would qualify as buildings. Existing buildings are under the maximum square footage of building space on the project site.
Residential Use	
Designation: One single family home per parcel is allowed, provided that all other County standards are met for adequate road access, sewer and water facilities, building location, visual protection, and public services. Residential and residential accessory buildings shall have a maximum floor space of 12,000 square feet.	**Consistent:** The proposed project does not propose residential use at the site.
Development Envelope	
Designation: Apart from infrastructure (under Policy 13), all buildings shall be located on a contiguous development envelope not to exceed 2 acres, except they may be located outside the envelope if necessary for security reasons or, if structures for agricultural use, necessary for agricultural use.	**Consistent:** As indicated above, the proposed project does not include new structures that qualify as buildings.
Biological Resources	
Policy 122: The County shall encourage that wetland mitigation be consolidated in areas that are relatively large and adjacent to or otherwise connected to open space. To the extent possible areas should be included in, adjacent to, or linked through open space corridors with lands designated as "Resource Management" that are managed specifically for the preservation and enhancement of biological resources.	**Consistent.** Wetland mitigation required for approval of the proposed project encompasses the entirety of the project site. The mitigation features a wetland compensation ratio of 1:1 for ground disturbing activity associated with the construction of the Lake A diversion structure, realigned Arroyo del Valle, or in other areas identified as containing wetlands in the project aquatic resource delineation report. No lands on or adjacent to the project site are designated "Resource Management."
Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands in order to establish a continuous open space system in East County and to provide for long term protection of biological resources.	**Consistent.** The proposed project is located outside of the Urban Growth Boundary. Numerous mitigation measures to protect biological resources are required for approval of the proposed project. These mitigation measures, described in Section 4.3, "Biological Resources," are complementary with the goals and objectives of the ECAP.
Policy 125: The County shall encourage preservation of areas known to support special status	**Consistent.** The proposed project would have a less than significant impact on special status species with

[2] 920 acres x 43,560 sq.f.t/acre x 0.01 = approx. 400,572 sq. ft.

Goals/Objectives/Policies	Consistency Analysis
species.	mitigation incorporated. The project would also improve existing special status species habitat conditions compared to existing conditions. See Section 4.3, "Biological Resources."
Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.	**Consistent.** The proposed project would have a less than significant impact on riparian and seasonal. The project would also improve existing wetlands compared to existing conditions with the realignment and revegetation of the ADV. See Section 4.3, "Biological Resources."
Policy 127: The County shall encourage the preservation of East County's oak woodland plant communities.	**Consistent.** The proposed project is not expected to have an adverse impact on oak woodland plant communities. Therefore, the proposed project is consistent with this policy.
Policy 128: The County shall ensure that, where quarries will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.	**Consistent.** The proposed project includes reclaiming an existing quarry operation to open space and plans that restore biological value through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees.
Policy 129: The County shall protect existing riparian woodland habitat present along the Arroyo Mocho, Arroyo Del Valle, Arroyo Las Positas, Arroyo de la Laguna; and Alamo, Tassajara, and Alameda Creeks. Exceptions to these requirements shall apply for those portions of the Arroyo del Valle to be excavated for water transfer Lakes A and B under the Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation, which shall instead be subject to riparian habitat restoration as specified by Policies 128 and 164; and for any approved quarry operations in Regionally Significant Construction Aggregate Resource Sector C (Arroyo Mocho) or any other streambeds, which shall also be subject to habitat restoration under Policies 128 and 164, and according to applicable State Public Resources Code requirements, to the extent that proposed reclamation specifies riparian habitat as the end use.	**Consistent.** Policies 128 and 164 apply to the proposed project. Therefore, the propose project meets the exception criteria. See also Impact 4.3-5 in Section 4.3, "Biological Resources."
Limitations on New Quarries	
Policy 155: Except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry. A quarry that has received all necessary discretionary County and other approvals and permits prior to the effective date of the ordinance — but has not yet exercised those approvals and permits — is to be considered an "existing" rather than a "new" quarry.	**Consistent:** The project site is located outside of the Urban Growth Boundary established under Measure D, but is not a new quarry. All sand and gravel excavations occurring at the project site occur immediately adjacent to the existing quarry (i.e., immediately adjacent to the existing SMP-23 operations). The currently effective SMP-23 was issued in 1987, well before the effective provisions of Measure D, and thus the SMP-23 quarry is an "existing" quarry. Ongoing quarrying operations at the project site are not a "new" quarry, as they occur adjacent to, and on the same and an adjoining parcel. The proposed project does not expand or address

Goals/Objectives/Policies	Consistency Analysis
	ongoing quarrying operations at the site, but only the final reclamation of this existing quarry.
Development on State-Designated Regionally Significant Construction Aggregate Resource Areas	
Policy 157: The County shall review proposals for development within or adjacent to state-designated Regionally Significant Construction Aggregate Resource Sectors. If the development is proposed on unincorporated land, the County shall consider the effects of such development on the future or continued extraction of the resource and shall approve such development only if conditions are applied to minimize the potential of the new use to preclude continued or future access to the resource. If the development is proposed within a city, the County shall encourage the city to do the same.	**Consistent:** The project site is within a state-designated Regionally Significant Construction Aggregate Resource Sector. Rather than precluding continued access to that aggregate resource, the project would provide for reclamation of the site following completion of the extraction of that aggregate resource.
Minimizing Conflicts	
Policy 158: The County shall require that, where conflicts between a new use and existing quarry are anticipated, notifying future residents and mitigating the conflict shall be the responsibility of the new use.	**Consistent:** The proposed project is a reclamation plan for the eventual closure of the existing quarry, and thus would not conflict with the existing quarry operations. The project would not introduce any new residents to the area, and would not create conflicts with existing uses.
Protection of Nearby Uses	
Policy 159: The County shall impose conditions on approval of new Surface Mining Permits and Reclamation Plans to protect nearby uses from potential traffic, noise, dust, health and safety, visual and other impacts generated by sand and gravel quarries. Conversely, the County shall not approve land uses adjacent to any existing quarry or Regionally Significant Construction Aggregate Resource Sector if the development of the new uses would result in exposure of residential or other sensitive uses to possible adverse impacts of the quarry, unless the new uses can effectively mitigate the significant adverse impacts and notify potential homeowners of the risk, as required by Policy 158.	**Consistent:** This SEIR provides an analysis of the project's potential traffic, noise, dust, health and safety, visual, and other impacts on nearby uses and recommends mitigation measures (where necessary) to avoid or reduce such impacts to less-than-significant levels where feasible.
Reclamation for Water Management	
Policy 160: The County shall ensure that where quarry operations are located in areas designated as Water Management, extraction of the aggregate resource shall be allowed in the short-term. Reclamation of the land for water management and other compatible uses shall occur subject to conditions of Surface Mining Permits and Reclamation Plans and consistent with the Specific Plan for Livermore-Amador Valley Quarry Area Reclamation or the comparable plan prepared for the Sunol Valley/San Francisco Water Department watershed lands pursuant to Policy 161 and Program 71, whichever is applicable.	**Consistent:** The project site is located in an area designated as Water Management, and extraction of aggregate resources is expected to continue as previously approved, except in "Lake A." The proposed reclamation plan would allow for use of the completed quarry pit for Zone 7 water management. The portion of the site known as "Lake B," is a recently mined area with a current pit depth of approximately 100 to 130 feet. At completion of quarrying, the expanded surface area of this lake will have been mined to a depth of 150 to 250 feet below ground surface with resulting side slope of 2:1.

Goals/Objectives/Policies	Consistency Analysis
Manufacturing Uses	
Policy 162: The County shall allow manufacturing uses which make extensive use of harvested aggregate to locate near sand and gravel quarries.	**Consistent:** Within the North Reclamation Area is CEMEX's currently operating materials processing facilities and stockpile areas. Uses include processing activities, stockpiles, administrative offices, a truck scale, and other facilities related to mining and processing. The proposed project does not propose addition of any on-site manufacturing uses.
Concurrent Mining and Agricultural Uses	
Policy 163: The County shall encourage concurrent mining and agricultural uses on sites where aggregate deposits are overlain by agriculturally valuable soils to minimize the premature disturbance of such soils. To this end, the County shall consider phasing of quarry operations in the approval of Surface Mining Permits and Reclamation Plans.	**Consistent:** As indicated in the initial study prepared with the notice of preparation for this SEIR, the project site is not overlain by agriculturally valuable soils (neither prime, statewide significant or locally significant farm soils). Based on the current mining plan and existing conditions at the site, concurrent mining and agricultural uses on the site would not be compatible.
Revegetation	
Policy 164: The County shall ensure that where quarry operations will be reclaimed as open space, reclamation plans are designed to restore biological value to sites through appropriate revegetation, contouring of lakes to simulate natural bodies of water, and protection or in-kind replacement of significant trees**.**	**Consistent:** The proposed project provides for the ultimate use of the completed quarry pit for Zone 7's water management, and it includes planting of native plants to minimize visual impacts, and re-vegetation of stream banks in a manner that would restore habitat value.
Water Conservation	
Policy 165: The County shall require that water-conserving practices are incorporated into mining and reclamation operations.	**Consistent:** One of the major objectives of this project is to implement the LAVQAR Specific Plan and associated Zone 7 agreement by reclaiming the quarry pits (Lakes A and B) for use as basins for water storage, conveyance, and recharge facilities pursuant to and consistent with the LAVQAR Specific Plan. Implementation of the Chain of Lakes concept will allow Zone 7 to conserve water by enhancing and improving the reliability and sustainability of the groundwater supplies through groundwater recharge in the valley.
Land Use Buffers	
Program 69: The County shall amend the Surface Mining Ordinance to require permit applicants for any Surface Mining Permit and Reclamation Plan to provide appropriate buffering of quarry operations from adjacent land uses, such as setbacks, landscaping, and use restrictions**.**	**Consistent:** The Surface Mining Ordinance requires setbacks from adjacent uses of 25 feet or 50 feet from a right-of-way, the existing and expected future quarry operations do maintain setbacks from Vineyard Road (100 feet), from Stanley Blvd. (46 feet), from Shadow Cliffs Park (100 feet), and from the adjacent residential subdivisions (25 feet). These setbacks are consistent with the requirements of the currently effective SMP-23 issued by the County in 1987 and will be maintained as part of the reclamation plan amendment.

Goals/Objectives/Policies	Consistency Analysis
Consistency with SMARA	
Program 70: The County shall amend the Surface Mining Ordinance to include reclamation guidelines consistent with the Surface Mining and Reclamation Act (SMARA).	**Consistent:** The proposed project is a proposed update to the currently effective reclamation plan for SMP-23, and it specifically incorporates current reclamation standards consistent with SMARA reclamation standards pursuant to CCR Section 3700, et seq. The California Division of Mine Reclamation has review authority and reviewed the proposed project to determine consistency on May 30, 2019 with no comments (DMR 2019).
Recreational Opportunities	
Policy 101: The County shall encourage public water management agencies to explore recreational opportunities on watershed lands, particularly reclaimed quarries, where recreational use would not conflict with watershed protection objectives.	**Consistent:** The proposed project includes a proposal to build a trail along the southern border of Lake B, to be maintained by the East Bay Regional Park District. Additionally, the project proposes to create a total of 137 acres of open space (including a 25-foot setback) at the Lake A site. Additionally, the project proposes additional open space surrounding the approximately 5,800 linear foot reach of the to-be realigned ADV around Lake B (see Figure 2-4, "Realigned Arroyo del Valle Concept" in Chapter 2, "Project Description," of this SEIR.). The North Reclamation Area is located in the northwestern portion of the site, south of Stanley Boulevard and east of the Shadow Cliffs Regional Recreation Area. Mining is underway in the Lake J area, and the processing facilities that had been previously located here were relocated to areas south of the Lake J mining area. Pursuant to the proposed project, when the North Reclamation Area is reclaimed, it will not be part of the Chain of Lakes and will not be granted to Zone 7, with the exception of Pond A, Pond C, and Pond D, which will be encompassed within the ultimate footprints of Lake B, future Lake C, and future Lake D, respectively, and dedicated to Zone 7. Instead, the project proposes that the North Reclamation Area, except for Pond A, Pond C, and Pond D, be reclaimed by CEMEX or its successors for open space and/or agricultural purposes.
COUNTY SURFACE MINING AND RECLAMATION ORDINANCE	
Agricultural Use	
6.80.060(A): If a mining operation is being conducted in an A District, all other uses permitted pursuant to the district regulations may be conducted on the site provided such uses do not interfere with meeting any of the requirements of this chapter, and provided any such uses are not prohibited by conditions of the surface mining permit or approved reclamation plan.	**Consistent:** As this provision indicates, surface mining activities are permitted with an A: Agriculture zoning district upon approval of a surface mining permit. The project site is located within an A: Agriculture zoning district. The proposed end use for the North Reclamation Area includes agriculture.

Goals/Objectives/Policies	Consistency Analysis
Accessory Uses	
6.80.060(C): Sorting, crushing, reducing, refining, mixing, packaging or other processing of minerals, or the operation of an asphalt or concrete batch plant; or any operation that uses or supplies materials produced, imported or used by mining and/or processing operations or an asphalt or concrete batch plant, may be permitted in conjunction with mining operations if conducted within an A, M-1 or M-2 district, upon securing of a surface mining permit, when such uses are found by the planning commission to be an accessory use to the mining operations and when the planning commission finds that the effects of such processing, use, storage or transport of materials, including noise, odor, smoke, dust, bright lights, vibration, traffic, and production of waste, can be controlled so as to be compatible with adjacent uses and so as not to degrade natural resources.	**Consistent:** Sorting, crushing, and other processing of aggregate is expected to continue pursuant to the previously approved surface mining permit. Changes or expansion of these activities are not proposed with this reclamation plan amendment.
Periodic Review	
6.80.190: Surface mining permits and approved reclamation plans shall be reviewed by the planning commission, in accordance with the schedule adopted at the time of approval according to Section 6.80.180(C) of this chapter, to consider new or changed circumstanced [sic] within the general area of the mining operations that should be accommodated by the permit or plan. The review shall include a public hearing as specified by Section 6.80.150 of this chapter. At the conclusion of the public hearing, the planning commission may modify the permit or reclamation plan to conform to with [sic] this chapter, and such modified permit or plan shall be binding upon the operation. Any fees for periodic reviews shall be collected as specified by Section 6.80.100.	**Consistent.** Compliance with this requirement would be required as part of Conditions of Approval for the proposed project.
Final Slope Design	
6.80.210(A)(1): Finished slopes shall conform to the requirements of Section 6.80.240E. These requirements include; a) final slopes shall be of such gradient as necessary to provide for slope stability, maintenance of required vegetation, public safety, and the control of drainage, as may be determined by engineering analysis of soils and geologic conditions and by taking into account probable future uses of the site. Final slopes shall not be steeper than two feet horizontal to one foot vertical (2:1) unless the applicant can demonstrate to the satisfaction of the planning commission that any such steeper slope will not be incompatible with the alternate future uses approved for the site; be hazardous to persons that may utilize the site under the alternate future uses approved for the site; and reduce the effectiveness of revegetation and erosion control	**Consistent:** Pursuant to the project, the final slopes of all quarry operations are proposed to be no steeper than 2 feet horizontal to 1 foot vertical (2:1) throughout the project site, consistent with the ordinance requirements. As indicated in Section 4.4, "Geology and Soils," proposed slope designs provide for appropriate slope stability, public safety, and drainage control. Also, as indicated in Section 4.4, "Geology and Soils," and Section 4.6, "Hydrology and Water Quality," the proposed project would be required to implement an erosion control plan for the ADV realignment (see Mitigation Measure 4.4-1 and Appendix B-4, "Improvement Plans for Arroyo del Valle Realignment"), berm and embankment grading (see Mitigation Measure 4.4-2), fill slopes at an inclination of 2H:1V or flatter (see Mitigation Measure

Goals/Objectives/Policies	Consistency Analysis
measures where such are necessary. In no event shall the steepness of slopes exceed the critical gradient as determined by an engineering analysis of the slope stability.	4.4-3), and cut slope requirements for Lake B (see Mitigation Measure 4.4-4) to provide for appropriate slope stability, public safety, and drainage control.
Temporary Slopes	
6.80.210(B)(2): Temporary slopes steeper than the finished slopes, in areas where finished slopes are to occur, shall be constructed and maintained in accordance with the recommendations, as approved by the planning director, or a soil engineer or a civil engineer registered in the state or an engineering geologist registered and certified in the state. Temporary slopes shall not be created or maintained in a manner that will interfere with the construction of finished slopes conforming to subsection (A)(1) of this section, and the soil engineer or engineering geologist shall make specific recommendations for the conversion of such temporary slopes to finished slopes.	**Consistent:** The extraction of raw aggregate material for the vested mining operations is expected to continue using conventional mining equipment. The sand and gravel material is usually mined by developing a working face through excavation or pushing the material down-slope into a "dozer trap," and then transporting the material to the processing plant site for processing. For excavations below groundwater levels, dewatering is customarily conducted at the site to achieve planned mining depths. Where dewatering is not practical, mining will continue to be conducted by conventional excavator, dredge, and/or drag-line excavator. These excavation processes do not require temporary side slopes to be excavated steeper than 2H:1V where finished slopes are to occur. The proposed project does not include any slope designs (permanent or temporary) that would be incompatible with the intended future use as water management, open space, or non-prime agriculture, or that would be hazardous to persons that may use the site after reclamation, or that would reduce the effectiveness of revegetation and erosion control measures.
Benches	
6.80.210(B): Benches shall be provided where necessary to control drainage on slopes or to provide for access or public safety.	**Consistent:** As excavation of the quarry pits deepen, it is anticipated that temporary benches will be provided within the pits to enable large equipment to access the bottom of the pit. As discussed at Impact 4.4-1, the proposed slopes on-site would be acceptable under static and seismic conditions (Geocon 2020).
Parcel Setbacks	
6.80.210(C)(1): Unless the Planning Commission approves a lesser setback pursuant to Section 6.80.210(C)(3), surface mining excavations shall not be conducted closer than twenty-five (25) feet of the common property line of any parcel, except where the adjacent property is being mined in the same manner with respect to such line; and fifty (50) feet of the right-of-way or future width line of any street.	**Consistent:** The current 25-foot setback from the adjacent residential subdivision is consistent with the requirements of the currently effective SMP-23 issued by the County in 1987. The proposed project would not alter these setbacks.
Watercourse Setbacks	
6.80.210(C)(2): Mining excavations shall be set back from water courses, flood control channels, reservoirs and water conservation facilities a distance as may be determined by the Planning Commission on recommendation of Alameda County Flood Control and Water Conservation District (including the Zone 7 Water	**Consistent:** One of the major changes in the proposed project as compared to the approved reclamation plan is that the project proposes to realign the Arroyo del Valle to go around Lake B, rather than ultimately through Lake A and Lake B, as was indicated in the currently approved reclamation plan for SMP-23 as

Goals/Objectives/Policies	Consistency Analysis
Agency) or Community Development Agency to be sufficient to protect existing or planned facilities.	issued by the County in 1987. The project's proposal maintains a separation between Arroyo del Valle and the Lakes, and provides for creek restoration within the preserved Arroyo del Valle creek corridor.
6.80.210(C)(3): The Planning Commission, after receipt of a complete application and with public notice and hearing in accordance with the provisions of Article II of this Chapter, if required by the public need, may authorize setbacks less than those provided in Section 6.80.210(C)(1)(a) and (b) if the Planning Commission makes the following findings, supported by the conclusions of a geotechnical study prepared by a qualified professional licensed by the State of California: The lesser setback is required by the public need, and is not related to the demand for additional mineral resource; • A lesser setback and any associated resultant slope are acceptable based on the specific characteristics of the location and are supported by the conclusions of the geotechnical study prepared by a qualified professional licensed by the State of California; • A lesser setback and any associated resultant slope will not present a risk to the adjacent property or any users thereof; • A lesser setback and any associated resultant slope will permit adequate access for the owner of the mined land to the permitted area both during mining and following reclamation to the end use; • A lesser setback and any associated resultant slope will safely accommodate any existing or planned utilities or facilities, including, but not limited to, water diversion and conveyance structures; maintenance roads, safety berms and guardrails; drainage features; and screening landscapes, where required; and • A lesser setback will be in the interest of, and not compromise, the public health, safety and welfare.	**Consistent:** The project does not propose any lesser setbacks than provided under Section 6.80.210(c1a) and (c1b) as described above, and no authorization for lesser setbacks need be considered for the project.
Use of Explosives	
6.80.210(F): No explosives shall be used except as authorized by the surface mining permit. When authorized, the specific times of use shall be approved by the director of public works.	**Consistent:** No explosives are used in the mining process, and no explosives are proposed to be used for any reclamation purposes for the project.

Goals/Objectives/Policies	Consistency Analysis
Grading Controls	
6.80.210(G)(2): Grades in areas being mined shall be maintained so as to avoid accumulations of water that could serve as breeding areas for mosquitoes	**Consistent:** All grading and erosion control performed at the project site is required to conform to the design standards and geotechnical requirements of the Alameda County Grading Ordinance, and erosion and sedimentation control plans are submitted to the Director of Public Works for review and approval. These standards, requirements, and monitoring provisions ensure that proper grades throughout the site are maintained during active mining operations. Use of the quarried pits for water management will be implemented under Zone 7's requirements and will include appropriate mosquito control.
Groundwater Flows	
6.80.210(G)(3): Excavations that may penetrate near or into usable water bearing strata shall not reduce the transmissivity or area through which water may flow (unless approved equivalent transmissivity or area has been provided for elsewhere), nor subject such groundwater basin or sub-basin to pollution or contamination.	**Consistent:** One of the major objectives of the proposed project is to implement the LAVQAR Specific Plan and the Zone 7 agreement for reclaiming the excavated Chain of Lakes areas (Lakes A and B) as basins for water storage, conveyance, and recharge facilities for the Chain of Lakes. Implementation of the Chain of Lakes concept will allow Zone 7 to enhance groundwater recharge and improve reliability and sustainability of groundwater supplies in the Valley. Chapter 4.6, "Hydrology and Water Quality," contains an analysis of this potential impact and provides applicable mitigation to ensure that such impacts are less than significant.
Water Storage	
6.80.210(G)(4): Nothing in this chapter shall be construed to prevent the use of mined lands for the conservation or storage of water, or for the control of flood or storm waters, by a public agency duly authorized to engage in such work, provided that any such use will not conflict with nor prevent reclamation required under an approved Reclamation Plan, and provided such use is approved by the County Flood Control and Water Conservation District and/or Public Works Agency.	**Consistent:** One of the major objectives of this project is to implement the LAVQAR Specific Plan and associated Zone 7 agreement by reclaiming the quarry pits (Lakes A and B) for use as basins for water storage, conveyance, and recharge facilities pursuant to and consistent with the Chain of Lakes plan. Implementation of the Chain of Lakes concept will allow Zone 7 to enhance groundwater recharge and improve reliability and sustainability of groundwater supplies in the Valley.
Water Discharge Standards	
6.80.210(G)(5): Any waters discharged from the site to adjacent lands, streams, or bodies of water or to any groundwater body shall meet all applicable water quality standards of the Regional Water Quality Control Board and any other agency with authority over such discharges. Records of any water quality monitoring conducted in conjunction with the requirements of such agency or agencies shall be made available to the Planning Director and the Director of Public Works on request. Discharges of water to designated on-site settling ponds or de-silting basins shall not be deemed to	**Consistent:** Water discharges from project site are currently regulated by the Central Valley Regional Water Quality Control Board (RWQCB) and are subject to permitting requirements of the currently applicable National Pollutant Discharge Elimination System (NPDES) General Waste Discharge Requirements for Discharges of Process Wastewaters from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters (Aggregate Mining General Permit). The current quarry operations (SMP-23) will operate under a Notice of

Goals/Objectives/Policies	Consistency Analysis
be in violation of this chapter solely on the basis of sediment content.	General Permit Coverage for Discharge issued by the Central Valley RWQCB in October 2020, which will become effective on January 1, 2021 and will expire on December 31, 2025.
Erosion Control	
6.80.210(H): During the period mining operations are being conducted, and prior to final reclamation of mined lands, the operator shall take measures to prevent erosion of adjacent lands from water discharged from the site of mining operations and the off-site discharge of sediment. Such measures may include the construction of properly designed retarding basins, settling ponds and other water treatment facilities, ditches, diking and revegetation of slopes. No discharge of sediment to off-site bodies of water shall be permitted that will result in higher concentrations of silt than existed in off-site waters prior to mining operations. Stockpiles of overburden and minerals shall be managed to minimize water and wind erosion. The removal of vegetation and overburden in advance of surface mining shall be kept to a minimum.	**Consistent:** Based on the project's reclamation and phasing plan, erosion control facilities such as silt fences, berms, hay bales, or similar means to deter erosion will be employed. The specifics of where and when such measures will be implemented will depend upon the particular configuration of grading work being conducted at any given time.
Land Use Compatibility	
6.80.210(I): All activities of mining and processing minerals shall be conducted in a manner that noise, dust and bright lights do not exceed levels compatible with the uses of adjacent lands as determined by the planning commission in the issuance of the surface mining permit or as a result of its periodic review of any permit.	**Consistent:** The potential noise, dust, and lighting and glare impacts associated with ongoing quarrying operation are not addressed in this SEIR, but they are conducted pursuant existing permits. The potential for lighting and glare and noise impacts related to the proposed project are addressed in Section 4.1, "Aesthetics," and Section 4.8, "Noise," respectively. Those impacts would be less than significant.
LIVERMORE-AMADOR VALLEY QUARRY AREA RECLAMATION SPECIFIC PLAN	
Water from Arroyos del Valle and Mocho (and possibly Las Positas and other waters) will be diverted into the Chain of Lakes.	**Consistent:** The proposed project continues to provide for the diversion of water from Arroyo del Valle into to the Chain of Lakes. The project proposes to accomplish this objective without relying on direct flow of the Arroyo through the lakes, but rather by maintaining the separation between the Arroyo and the lakes and using a diversion structure to convey Arroyo water into Lake A.
The diversion structure from Arroyo del Valle within Lake A and into Lake C will be capable of diverting at least the first 500 cubic feet per second of flow from the Arroyo.	**Consistent:** Although the proposed project no longer provides for Arroyo del Valle to flow through Lake A, the proposed project does maintain the 500 cubic feet per second diversion capability from Arroyo del Valle at its Lake A diversion structure. Furthermore, water will still be conveyed from Lake A to future Lake C via a water conveyance pipeline.
The operators will dedicate to Zone 7, at no cost, all lakes comprising the chain of lakes, all exterior perimeter areas, sufficient interior perimeter areas to provide a minimum 2.5' wide access, and appurtenant levees, conduits, and diversion structures.	**Consistent:** The proposed project adheres to the general requirement to dedicate to Zone 7, at no cost, all excavated Chain of Lakes basins within the LAVQAR Specific Plan, all exterior perimeter areas, interior perimeter areas sufficient to provide a

Goals/Objectives/Policies	Consistency Analysis
	minimum 25-foot-wide access, and appurtenant levees, conduits, and diversion structures. Areas not intended for water management in the LAVQAR Specific Plan are designated under the proposed project for agriculture and open space end uses, consistent with the ECAP.
Policy 11: The operators shall dedicate to Zone 7, upon terms mutually acceptable to the operators and Zone 7, all water areas and necessary supporting land areas to operate the chain of lakes in the public interest. The right of the public to manage and use water resources of the chain of lakes and area groundwater undiminished with respect to quantity and quality shall be expressly asserted and any other uses permitted in said areas shall be compatible with said right.	**Consistent:** As stated above, the proposed project adheres to the general requirement under the LAVQAR Specific Plan that the operators are to dedicate to Zone 7, at no cost, all excavated Chain of Lakes basins within the LAVQAR Specific Plan, all exterior perimeter areas, interior perimeter areas sufficient to provide a minimum 25-foot-wide access, and appurtenant levees, conduits, and diversion structures. Areas not intended for water management in the LAVQAR Specific Plan area are designated, within the proposed reclamation plan for agriculture and open space end uses, consistent with the ECAP.
Policy 13: Land areas may appropriately be used for mining, mining-related industry in conjunction with ongoing mining, agriculture, open space, and watershed uses. New or expanded uses in the Quarry Area shall be allowed only upon securing Zoning Approval to ensure compatibility with the LAVQAR and reclamation of the area. Reclaimed land should be capable of supporting beneficial uses. No uses shall be permitted which may unacceptably pollute the lakes.	**Consistent:** The proposed project does not propose new or expanded uses.

4.7.4 Significance Thresholds and Analysis Methodology

The project description was compared to the local governing plans that are applicable to the physical location of the project site. It was determined which policies within those plans are applicable to the project. In this case, the project is an amendment to an existing operation and not a proposed new development. Therefore, only those policies where changes to the existing project that have the potential to be inconsistent with the local plans are listed in the analysis.

4.7.4.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to land use and planning if it would:

a) physically divide an established community; or
b) cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

4.7.4.2 Analysis Methodology

The above methodology was used to determine whether the project conflicts with the above significance criteria for land use polices as found in Appendix G of the CEQA Guidelines.

4.7.5 Project Impacts and Mitigation Measures

4.7.5.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, land use and planning impacts were determined to be less than significant with mitigation. The 1981 project included mining and reclamation activities in an area zoned for agricultural and open space uses.

The approved project includes the following mitigation measures relevant to land use and planning impacts:

- To mitigate impacts of untimely or illogical development on reclaimed lands, policies should be adopted in the Specific Plan to implement the Reclamation Plan as part of Livermore-Amador Valley General Plan to guide such uses during the Plan period. To avoid impacts of commitment to intensive land uses, an assumption could be made in the Specific Plan that Open Space and mining related industrial uses of reclaimed lands are appropriate as a present designation until it can be demonstrated that agricultural, industrial, or residential uses would not conflict with other land uses, policies, plans, and environmental quality existing at that future time. If it can be so demonstrated, then commitment to such uses should be made through revisions in the Specific Plan as early as possible. As quarrying is phased out and much land becomes available for development, planning will have to continue to ensure minimization of impacts. This can be accomplished through the 5-year review of Reclamation Plans required by the Alameda County Surface Mining Ordinance. It is impossible to be more specific at this time with scarce knowledge to predict what environmental and other issues will dominate planning for the area 50 years hence. Any specific land uses or infrastructure (roads, utility extensions, etc.) would undergo environmental review at the time of proposal.
- Impacts caused by 1:1 slopes could be reduced if 2:1 slopes were adopted as the conceptual standard in reclamation. This measure is discussed in Section IV.C.l.c. (Mitigation of Topographic Impacts). An explicit trade-off is involved between this mitigation measure and maximization of extraction and sale of the gravel resource. For example, assuming a yield of saleable materials at 90% of total volume of materials, average excavation depth of 100' and weight of saleable materials of 100 pounds per cubic foot, the difference between 1:1 and 2:1 is approximately 225 tons per foot of frontage. Taken altogether, the 10 lake pits proposed have a combined frontage of about 142,000 feet. Of this total, about 60% is interior frontages which abut impermeable fills, which are not critical for groundwater movement and which thus can be excavated and then backfilled to 2:1. The remaining frontage, if harvested to only 2:1, represents a loss of about 12.6 million tons of gravel resource, about 3.2% of the 400 million tons expected to be excavated from the Quarry Area. The actual loss would be less because of overburden and the thinning of deposits to the north and west, where much exterior frontage is concentrated. Perhaps between 2% and 3% would be lost, roughly equivalent to about one to one and one-half years current production in the Quarry Area. (Alameda County 1980: 43)

Project Revisions

The proposed project does not include mining and would consist of reclamation activities, similar to the 1981 project. Therefore, as discussed in section 4.7.5.2, below, the proposed project would not create a new or increased significant impact.

Changed Circumstances

Since 1981, new residential subdivisions have been developed to the north of Lake A (e.g., Pulte Oaks and Kristopher Ranch) and to the south of Lake B (e.g. Ruby Hills). SMP-23 was originally approved when this property was zoned agricultural and was within the jurisdiction of the County. Over the years, the property was annexed to the City of Livermore, the zoning was changed to residential, and the houses were built adjacent to Lake A. These land uses are changed circumstances that could create a new or increased significant impact.

New Information

Current regulatory requirements are addressed above. No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the LAVQAR EIR was adopted.

Significance Determination

Based on project revisions and changed circumstances that may create a new or increased significant impacts, the County has amplified and augmented the analysis contained in the LAVQAR EIR. This evaluation is provided in the following impact analysis.

4.7.5.2 Subsequent Environmental Analysis

Impact 4.7-1: Physically Divide an Established Community

The proposed project is adjacent to several established communities. However, the proposed project would occur on an existing mining operation and does not include modified boundaries or any action that would result in the physical division of any of these existing communities.

The project site is situated between the cities of Pleasanton and Livermore. The project site is already an established, operating quarry, and no aspect of the proposed project would result in a division, physically or perceptually, of these adjacent communities. A triangular-shaped property within the reclamation plan boundary was originally included as part of the 1987 approved reclamation plan, but was subsequently sold by the project Applicant's predecessor to a housing developer and currently is a residential subdivision. The proposed project adjusts the reclamation plan boundary to exclude this subdivision. Therefore, the proposed project would have no impact related to physically dividing an established community.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations

The proposed project would not conflict with applicable land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect.

Conflicts between a project and applicable land use policies do not constitute significant physical environmental impacts in and of themselves. A policy inconsistency is considered a significant adverse environmental impact only when it is related to a policy adopted for the purpose of avoiding or mitigating an environmental effect, and if it is anticipated that the inconsistency would result in a significant adverse physical impact based on established significance criteria.

Under the proposed project, Lake B would not transfer to Zone 7 until 2056, which would be beyond the date anticipated in the LAVQAR Specific Plan (2030). However, the 2030 horizon anticipated in the Specific Plan was an estimate at the time of the Specific Plan's adoption. Determining consistency with the LAVQAR Specific Plan primarily depends on whether the proposed project is consistent with the physical elements of the staging plans outlined in the LAVQAR Specific Plan, with less importance attributed to dates of implementation. The proposed project implements the key elements of the LAVQAR staging plans, despite the later transfer date of Lake B to Zone 7.

As discussed in detail in Table 4.7-1, the proposed project would not substantially conflict with any land use policies adopted by Alameda County for the purpose of avoiding or mitigating environmental effects. As a result, no significant land use impacts related to the project's consistency with land use policies would occur. The changes related to reclamation plans for the existing quarry are consistent with the County's General Plan land use designations, ECAP policies, and applicable zoning regulations. The project's ultimate reclamation plan is also substantially consistent with the LAVQAR Specific Plan goals, policies, actions, and guidelines applicable to the project site, as more fully discussed above. Therefore, this impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

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4.8—NOISE

This section of the subsequent environmental impact report (SEIR) describes the environmental and regulatory settings for noise and documents noise impacts, if any, that would occur as a result of the proposed project.

The information in this section is based on a peer review of an applicant-prepared study and publicly available sources. The applicant-prepared study used is *Environmental Noise Analysis, Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (Bollard Acoustical Consultants 2019) (Appendix G, "Environmental Noise Analysis," of this SEIR).

Saxelby Acoustics, retained by the County, peer reviewed this analysis in April of 2019. The peer review letter report is on file with the County. The applicant revised the referenced analysis and provided a response to the peer reviewer comments, which is also on file with the County. The revision and response, located in Appendix G of this SEIR and dated October 11, 2019, adequately address the peer reviewer's comments and questions.

4.8.1 Noise Conditions at the Time of the LAVQAR EIR

The *Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) primarily notes high noise levels in the project area in specific areas in which mining is taking place, with heavy equipment used for extraction and processing of gravel and trucks used to transport materials off site generating the most noise. The LAVQAR EIR also notes the potential for individual equipment to generate 90dBA or greater and for overall operational noise to reach l00 dBA (Alameda County 1980: 48-49).

4.8.2 Environmental Setting

4.8.2.1 Sensitive Receptors in the Project Vicinity

The majority of proposed project reclamation activities will occur in Lake A and Lake B. For the Lake A work, which is east of Highway 84 (Isabel Avenue), noise-sensitive receptors consist of single-family residential uses along the entire northern boundary of Lake A. The residences are located along Alden Lane, Old Oak Road, Lakeside Circle, and Siena Road. On the south side of Vallecitos Road is a cluster of residences on Tolentino Court. Finally, a few large-lot residential uses are located on the south side of East Vineyard Avenue. These residences are setback approximately 300 to 500 feet from East Vineyard Avenue.

The nearest noise-sensitive receptors for Lake B work are primarily residences located on the south side of Vineyard Avenue. An exception is a small cluster of residences located on Yolanda Court. The residences on the South side of Vineyard are generally dispersed along on Ruby Hill Drive, Old Vineyard Avenue, Mingoia Street, Safreno Way, Manor Lane, Vineyard Heights Lane, and Vineyard Terrace.

4.8.2.2 Ambient Noise Environment at Nearest Sensitive Receptors

Appendix G, Section XII of the CEQA guidelines state that a project would result in a significant noise impact if it causes noise levels to exceed applicable noise standards or if it causes a substantial increase in ambient noise levels. To determine the threshold at which a project would result in a substantial noise increase, the baseline ambient conditions at potentially impacted noise-sensitive land uses must be established.

The existing ambient noise environment in the immediate project vicinity is defined primarily by local and distant traffic. Existing operations at the CEMEX facility also periodically contribute to the noise environment at the nearest sensitive receptors, but at lower levels than existing traffic noise. Little activity occurs in the Lake A area, however, as excavation operations are currently occurring within the Lakes B and J areas.

To quantify the existing ambient noise environment in the immediate project vicinity, continuous noise level measurements were conducted at the five (5) locations identified on Figure 4.8-1, "Ambient Noise Measurement Sites," during the period of September 27 to October 8, 2018. The monitoring survey sites were intended to represent the ambient noise environment at the nearest residences to the proposed project operations. CEMEX mining and processing activities were active at the Eliot facility during the noise monitoring periods.

In addition to the five noise monitoring sites indicated on Figure 4.8-1, Bollard Acoustical Consultants, Inc. (BAC) attempted to conduct monitoring within the private Ruby Hill neighborhood but was not granted access. However, traffic on Vineyard Avenue is the dominant noise source at the residences on the south side of that roadway; therefore, the data collected at Site 4 was used to project ambient noise conditions at the nearest residences within the Ruby Hill community.

Weather conditions present during the ambient noise monitoring program were typical for the season, with no anomalous conditions present which would adversely affect the validity of the survey results in describing typical ambient conditions.

Larson Davis Laboratories (LDL) Model 820, LxT and 831 precision integrating sound level meters were used for the noise level measurement survey. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4). The numerical summaries of the ambient noise level measurements are provided in Table 4.8-1, "Statistical Summary of Ambient Noise Measurement Results CEMEX Eliot Mine Site Vicinity."

TABLE 4.8-1
STATISTICAL SUMMARY OF AMBIENT NOISE MEASUREMENT RESULTS CEMEX ELIOT MINE SITE VICINITY

Site	Date	Daytime (7 a.m. - 10 p.m.)		Nighttime (10 p.m. to 7 a.m.)		L_{dn}
		Median (L_{50})	*Maximum* (L_{max})	*Median* (L_{50})	*Maximum* (L_{max})	
1	Oct 4	46	64	43	65	47
	Oct 5	45	67	44	62	55
	Oct 6	44	68	44	61	53
	Oct 7	41	66	40	59	52
	Oct 8	43	65	42	63	51
	Averages	**44**	**66**	**43**	**62**	**52**
2	Oct 4	47	61	45	64	48
	Oct 5	41	51	43	57	52
	Oct 6	44	63	41	57	50
	Oct 7	44	62	39	56	50
	Oct 8	44	61	41	57	48
	Averages	**44**	**60**	**42**	**58**	**50**

Site	Date	Daytime (7 a.m. - 10 p.m.)		Nighttime (10 p.m. to 7 a.m.)		
		Median (L_{50})	*Maximum (L_{max})*	*Median (L_{50})*	*Maximum (L_{max})*	L_{dn}
3	Sept 27	46	68	41	61	54
	Sept 28	45	61	40	54	49
	Sept 29	44	59	41	56	50
	Sept 30	41	61	37	55	48
	Oct 1	40	60	40	55	49
	Averages	**43**	**62**	**40**	**56**	**50**
4	Sept 27	56	77	43	71	62
	Sept 28	47	75	39	70	61
	Sept 29	54	75	36	70	61
	Sept 30	51	77	34	69	62
	Oct 1	56	76	42	73	67
	Averages	**53**	**76**	**42**	**73**	**67**
5	Sept 27	46	68	41	61	54
	Sept 28	41	59	35	56	50
	Sept 29	44	68	30	58	50
	Sept 30	43	64	28	56	48
	Oct 1	46	65	35	60	52
	Averages	**44**	**65**	**34**	**58**	**51**

Source: Bollard Acoustical Consultants, Inc. 2019
Notes:
The noise measurement locations are identified on Figure 4.8-1.
Noise level data shown in this table represent averages for the periods. For a complete depiction of hourly measurement results, please refer to Appendix B of the Noise Study (see Appendix G of this SEIR).

The Table 4.8-1 data indicate that measured ambient noise levels were fairly consistent at the Sites 1-3, located along the northern side of Lake A. Site 4 was located 75 feet from the centerline of Vineyard Avenue whereas Site 5 was 300 feet from the centerline of that roadway. This explains why the data collected at Site 4 was considerably higher than at Site 5. When the distance between the microphone and centerline of Vineyard Road is normalized, the data collected at Sites 4 and 5 were found to be comparable.

4.8.2.3 Ambient Vibration Environment at Nearest Sensitive Receptors

Existing sources of ambient vibration in the immediate project vicinity consist of traffic on the local roadway network, aggregate processing operations at the project site, and existing excavation activities in the Lake B and Lake J areas. However, no discernible traffic or excavation-related vibration were observed at any of the nearest residential areas to the project site. As a result, existing ambient vibration levels in the project vicinity are considered to be negligible.

4.8.3 Regulatory Setting

The following sections discuss federal, state, and local regulations pertaining to noise that warrant consideration during the environmental review of the project.

4.8.3.1 Federal

Occupational Health and Safety Administration

Federal codes, primarily the Occupational Safety and Health Act of 1970 (OSHA), govern worker exposure to noise levels. These regulations would be applicable to all phases of the proposed project and are designed to limit worker exposure to noise levels of 85 dB or lower over an 8-hour period (Title 29, CFR Section 1910.95). Additionally, this regulation also establishes maximum impulse or impact noise (e.g., blasting noise) of 140 dB peak sound pressure level. Noise exposure of this type is dependent on work conditions and is addressed through a facility's Health and Safety Plan, as required under OSHA.

4.8.3.2 State

California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) criteria applicable to damage and annoyance potential from transient and continuous vibration that is usually associated with construction activity are presented in Table 4.8-2, "Guideline Vibration Damage Potential Threshold Criteria," and Table 4.8-3, "Guideline Vibration Annoyance Potential Criteria." Equipment or activities typical of continuous vibration include: excavation equipment, static compaction equipment, tracked vehicles, traffic on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. Equipment or activities typical of single-impact (transient) or low-rate repeated impact vibration include: impact pile drivers, blasting, drop balls, "pogo stick" compactors, and crack-and-seat equipment (California Department of Transportation 2013).

TABLE 4.8-2
GUIDELINE VIBRATION DAMAGE POTENTIAL THRESHOLD CRITERIA

Structure and Condition	Maximum PPV (inches/second)	
	Transient Sources	*Continuous/Frequent Intermittent Sources*
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013)
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = peak particle velocity.



SOURCE: BAC 2019, Noise Analysis Measurement Location Fig. 1; modified by Benchmark Resources in 2020.

NOTE: Figure is not printed to scale.

Ambient Noise Measurement Sites

ELIOT QUARRY SMP-23 SEIR

Figure 4.8-1

BENCHMARK RESOURCES

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TABLE 4.8-3
GUIDELINE VIBRATION ANNOYANCE POTENTIAL CRITERIA

Human Response	Maximum PPV (inches/second)	
	Transient Sources	*Continuous/Frequent Intermittent Sources*
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013)
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = peak particle velocity.

Given the relatively short-term nature of the proposed project, and to be consistent with CEQA policy for noise, project generated vibration levels should be strongly perceptible prior to the finding that a significant vibration impact will occur, not just perceptible or distinctly perceptible. Therefore, vibration thresholds of 0.9 and 0.1 inches/second are applied for transient and continuous vibration sources, respectively.

General Plan Guidelines

The State of California's General Plan Guidelines discuss how ambient noise should influence land use and development decisions. They also include a table of conditionally acceptable, normally unacceptable, and clearly unacceptable uses at different noise levels expressed in Community Noise Equivalent Level (CNEL). A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements. Local municipalities adopt these compatibility standards as part of their general plan and modify them as appropriate for their local environmental setting.

4.8.3.3 Local

Alameda County Noise Ordinance

The Alameda County noise standards are contained in the County's Noise Ordinance (County Code Section 6.60—Noise). The provisions of the County's Noise Ordinance which are germane to this evaluation are provided below:

Noise

6.60.020—Definitions.

"Construction" means construction, erection, enlargements, alteration, conversion or movement of any building, structures or land together with any scientific surveys associated therewith.

6.60.030—Noise measurement criteria.

A. Any noise measurement made pursuant to the provisions of this chapter shall be made with a sound level meter using the 'A' weighted network (scale) at slow meter response. Fast meter response shall be used for an impulsive noise. Calibration of the measurement

equipment, utilizing an acoustic calibrator, shall be performed immediately prior to recording any noise date.

B. The exterior noise levels shall be measured at any point on the affected residential property, school, hospital, church, public library or commercial property. Where practical, the microphone shall be positioned three to five feet above the ground and away from reflective surfaces.

6.60.040—Exterior noise level standards.

A. It is unlawful for any person at any location within the unincorporated area of the county to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any single- or multiple-family residential, school, hospital, church, public library or commercial properties situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth in Table 6.60.040A or Table 6.60.040B:

Alameda County Code Tables 6.60.040A and B are reproduced below as Table 4.8-4, "Noise Level Standards Applicable to Residential and Other Noise Sensitive Land Uses," and Table 4.8-5, "Noise Level Standards Applicable to Commercial Properties."

TABLE 4.8-4
NOISE LEVEL STANDARDS APPLICABLE TO RESIDENTIAL AND OTHER NOISE SENSITIVE LAND USES
(ALAMEDA COUNTY CODE TABLE 6.60.040A)

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

TABLE 4.8-5
NOISE LEVEL STANDARDS APPLICABLE TO COMMERCIAL PROPERTIES
(ALAMEDA COUNTY CODE TABLE 6.60.040B)

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	65	60
2	15	70	65
3	5	75	70
4	1	80	75
5	0	85	80

B. In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal said ambient noise level:

C. Each of the noise level standards specified in Tables 6.60.040A and B shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the applicable noise level standards in Table 6.60.040A and Table 6.60.040B.

E. Notwithstanding the noise level standards set forth in this section, the noise level standard applicable to the emission of sound from transformers, regulators, or associated equipment in electrical substations shall be 60 dB(A).

6.60.070—Special provisions or exceptions.

E. Construction. The provisions of this chapter shall not apply to noise sources associated with construction, provided said activities do not take place before seven a.m. or after seven p.m. on any day except Saturday or Sunday, or before eight a.m. or after five p.m. on Saturday or Sunday.

Alameda County General Plan

The *Alameda County General Plan* Noise Element (Countywide Noise Element), adopted in 1975, provides a framework to regulate excessive noise levels and promotes compatibility of land uses with respect to noise. The Countywide Noise Element does not explicitly define the acceptable outdoor noise levels within residential areas, but it does recognize the Federal Environmental Protection Agency (EPA) noise level standards for residential land uses. The following goal contained within the *Alameda County General Plan* Noise Element pertains to the proposed project:

Countywide Policies

Goal 1: The peace, health, safety, and welfare of the residents of Alameda County require protection from excessive, unnecessary, and unreasonable noises from any and all sources in the cities and unincorporated territory.

East County Area Plan

The goals and policies in the *East County Area Plan* are intended to inform decision makers, the general public, public agencies and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The ECAP includes the following policies specific to noise, and applicable to the proposed project.

Noise

Goal : To minimize East County residents' and workers' exposure to excessive noise

Policy 288: The County shall endeavor to maintain acceptable noise levels throughout East County.

Policy 289: The County shall limit or appropriately mitigate new noise sensitive development in areas exposed to projected noise levels exceeding 60 dB based on the California Office of Noise Control Land Use Compatibility Guidelines.

City of Livermore Noise Standards

The City of Livermore noise standards which would be most applicable to the proposed project are contained in the *City of Livermore General Plan* Noise Element. The City's Land Use Compatibility Guidelines for Exterior Noise are contained in Table 9-7 of the City's Noise Element. That table establishes an exterior noise environment of 60 dB L_{dn} as normally acceptable for single-family residential uses.

Objective N-1.5—Reduce the level of noise generated by mechanical and other noise generating equipment by means of public education, regulation, and/or political action.

P1. The City shall require that industrial and commercial uses be designed and operated so as to avoid the generation of noise effects on surrounding sensitive land uses (e.g., residential, churches, schools, hospitals) from exceeding the following noise levels for exterior environments.

(a) 55 dBA L50 (7 am to 10 pm)

(b) 45 dBA L50 (10 pm to 7 am).

P4. The following sources of noise are exempt from the standard in N-1.5.P1: motor vehicles on public streets; trains; emergency equipment, vehicles, devices, and activities; temporary construction, maintenance, or demolition activities conducted between the hours of 7:00 a.m. and 8:00 p.m.

City of Pleasanton Noise Standards

The *City of Pleasanton General Plan* Noise Element establishes a noise level standard of 60 dB L_{dn} as normally acceptable for exterior spaces of residential land uses. The City of Pleasanton noise standards which would be most applicable to the proposed project are contained in the City's Municipal Code (Section 9.04 Noise Regulations). Those standards are provided below:

9.04.035 Noise Limits—Commercial or industrial use adjacent to residential zone

Any commercial or industrial use, not including a special downtown accessory entertainment use in the downtown hospitality transition area, which is located within 300 feet from any residential zone and which remains open for business at any time between the hours of 10 pm and 6 am shall adhere to the following standards of performance:

A. The noise level produced on the business premises between the hours of 10 pm and 6 am shall not exceed the residential noise standard at the property plane between the residential zoning district and the commercial zoning district.

9.04.050 Noise Limits—Industrial property.

No person shall produce or allow to be produced by any machine, animal, device or any combination of the same on commercial property, a noise level in excess of 75 dBA at any point outside the property plane unless otherwise provided in this chapter.

9.04.070 Daytime Exceptions.

Any noise which does not produce a noise level exceeding 70 dBA at a distance of 25 feet under its most noisy condition of use shall be exempt from the provisions of sections 9.04.030, 9.04.040, and 9.04.060(A) of this Chapter between the hours of 8 am and 8 pm daily, except Sundays and holidays, when the exemption herein shall apply between 10 am and 6 pm.

9.04.100 Construction Daytime Exceptions.

Notwithstanding any other provision of this chapter, between the hours of 8 am and 8 pm daily, except Sunday and holidays, when the exemption shall apply between 10 am and 6 pm, construction,

alteration or repair activities which are authorized by a valid city permit shall be allowed if they meet at least one of the following noise limitations:

A. No individual piece of equipment shall produce a noise level exceeding 83 dBA at a distance of 25 feet. If the device is housed within a structure on the property, the measurements shall be made outside the structure at a distance as close to 25 feet from the equipment as possible; or

B. The noise level at any point outside of the property plane of the project shall not exceed 86 dBA.

4.8.4 Significance Criteria and Analysis Methodology

4.8.4.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant noise impact if it would result in:

a) generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
b) generation of excessive groundborne vibration or groundborne noise levels;
c) for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

4.8.4.2 Analysis Methodology

Noise Fundamentals and Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, which is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. Figure 4.8-2, "Noise Levels Associated with Common Noise Sources," illustrates common noise sources associated with a range of decibel levels.

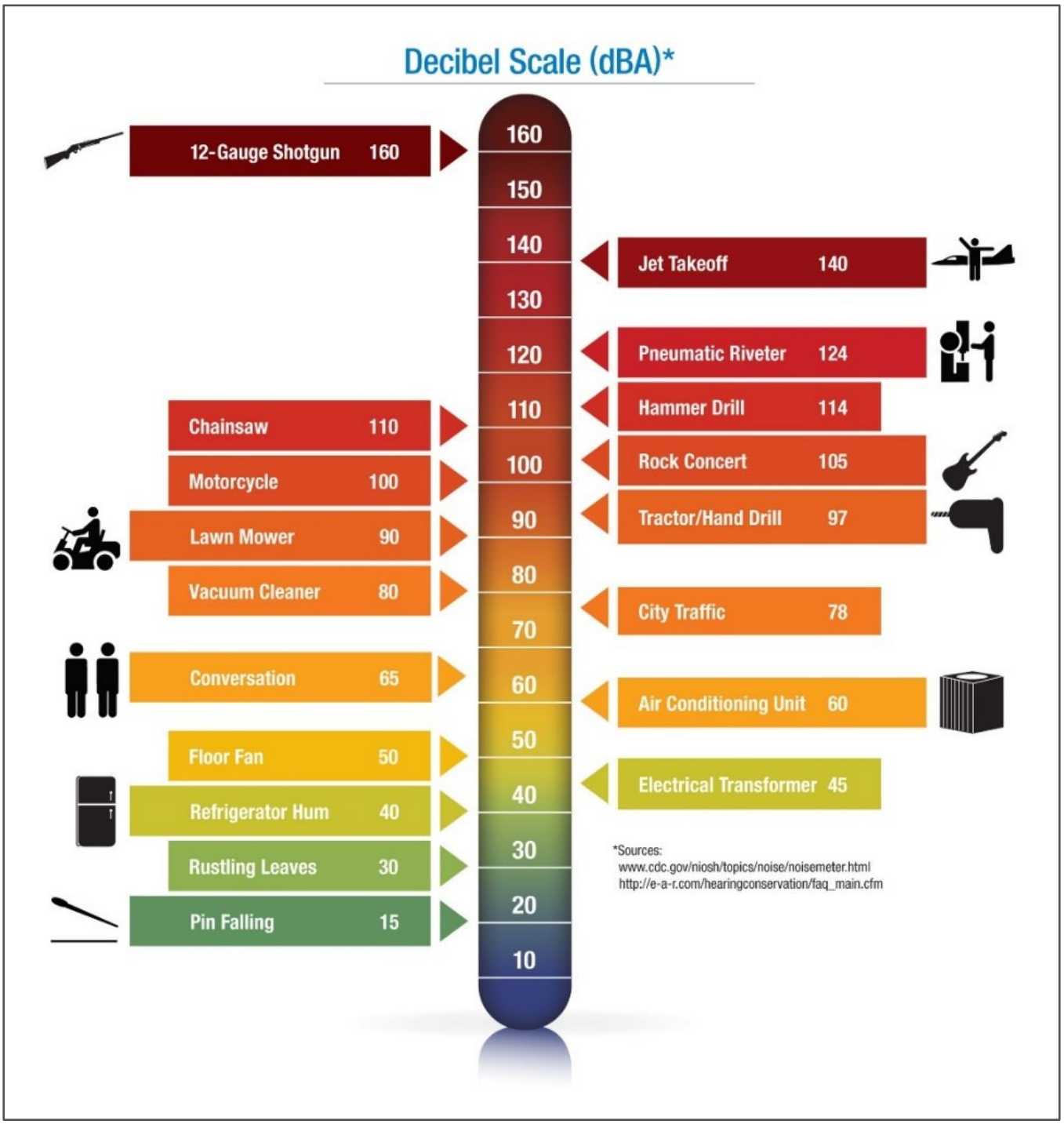
The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels in decibels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}) over a given time period (usually one hour). The L_{eq} is the foundation of the Day-Night Average Level noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The Day-night Average Level (L_{dn}) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. L_{dn}-based noise standards are commonly used to assess noise impacts associated with traffic, railroad and aircraft noise sources.

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise unwanted.
- **Decibel (dB).** A unit-less measure of sound on a logarithmic scale.
- **Vibration Decibel (VdB).** A unit-less measure of vibration expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ($1x10^{-6}$ in/sec).
- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Equivalent Continuous Noise Level (L_{eq}).** also called the Energy-Equivalent Noise Level. The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.
- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."
- **Day-Night Level (L_{dn} or DNL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m. This is a measure of the cumulative noise exposure in a community.
- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7:00 a.m. to 10:00 p.m. and 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.



SOURCE: BAC 2019, Noise Analysis Fig 2; modified by Benchmark Resources in 2020.
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For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as being equivalent in this assessment.

- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Vibration Fundamentals and Terminology

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration "strength".

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans 2004), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.

Analysis Methodology

As noted previously, the CEQA guidelines state that a project would result in a significant noise impact if the project would result in a substantial increase in ambient noise levels at a sensitive receptor location. However, CEQA does not define what constitutes a "substantial" increase in noise levels.

An increase of at least 3 dB is generally recognized as the threshold for similar noise sources before most people will perceive a change in noise levels, and an increase of 6 dB is required before the change will be clearly noticeable. A 10 dB increase in noise levels is considered to be the level at which a doubling of loudness is perceived (Egan 1988: 21).

The California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance. The California Energy Commission (CEC) considers project-related noise level increases between 5-10 dB significant, depending on local factors.

To assess the significance of changes in 24-hour aircraft noise exposure, the Federal Interagency Commission on Noise (FICON) has developed the graduated scale ranging from 1.5 to 5 dB shown in Table 4.8-6, "Criteria for Determining Significance of Permanent Changes in Noise Exposure." The rationale for the graduated scale used in the FICON standards is that test subject's reactions to increases in noise levels varied depending on the starting level of noise. Specifically, with lower ambient noise environments, such as those below 60 dB Ldn, a larger increase in noise levels was required to achieve a negative reaction than was necessary in more elevated noise environments.

However, the FICON standards were developed to evaluate permanent changes in 24-hour noise exposure related to aircraft noise. Therefore, their use as criteria for assessing temporary impacts related to construction activities is considered overly conservative (BAC 2019). A more appropriate threshold for assessing the significance of changes in short-term noise exposure would be temporary doubling of loudness, or 10 dB, which is more consistent with Caltrans and CEC criteria.

TABLE 4.8-6
CRITERIA FOR DETERMINING SIGNIFICANCE OF PERMANENT[1] CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, L_{dn}	Increase Required for Significant Impact
Less than 60 dB	+5.0 dB or more
60 to 65 dB	+3.0 dB or more
Greater than 65 dB	+1.5 dB or more

Notes
1. For temporary changes in noise exposure, such as those resulting from construction-related activities unrelated to ongoing operations, a 10 dB increase is considered the threshold of significance.
2. Source: Federal Interagency Committee on Noise (FICON)

The proposed reclamation activities related to water diversion and conveyance improvements in Lake A, and the realignment of the ADV, are considered construction-related activities as they are not related to the long-term excavation or processing operations at the project site. As noted above, construction-related activities are exempt from the local noise standards in the City of Livermore and Alameda County provided the construction activities occur during certain hours and days of the week which are considered to be less noise-sensitive. For sensitive receptors located in the City of Pleasanton, construction noise levels at any point outside of the property plane shall not exceed 86 dBA.

The Alameda County and City of Livermore noise standards, which would be most applicable to the proposed project, are expressed in terms of hourly statistical descriptors (L_n) for both daytime and nighttime periods. The City of Pleasanton noise standards utilize maximum (L_{max}) noise level limits. As a result, the approach to noise impact assessment for the proposed project is to apply the City of Livermore's noise standards at noise-sensitive receptors located within the City of Livermore, and to apply the City of Pleasanton's noise standards at noise-sensitive receptors located within the City of Pleasanton.

For the assessment of noise impacts related to CEQA criteria, 10 dB is added to the ambient noise measurement results shown in Table 4.8-1. The Table 4.8-1 data indicate that existing median daytime ambient noise levels at the nearest residences to the north of the project area, within the City of

Livermore, were generally in the mid 40 dB L50 range (44 dB L50 on average). As a result, this analysis applies a noise criterion of 54 dB L50 at those residences between the hours of 7 am and 10 pm. During the hours of 10 pm to 7 am, measured median ambient noise levels at the Livermore residences on the north side of Lake A averaged 42 dBA L50. As a result, this analysis applies a noise criterion of 52 dB L50 at those residences between the hours of 10 pm and 7 am.

The residences located in closer proximity to Vineyard Avenue experience higher noise levels of approximately 53 dB L50 during the daytime hours of 7 am – 10 pm (Site 4 of Table 4.8-1). As a result, this analysis applies a noise criteria of 63 dB L50 at those residences between the hours of 7 am and 10 pm. During the hours of 10 pm to 7 am, measured median ambient noise levels at Site 4 averaged 42 dB L50. As a result, this analysis applies a noise criteria of 52 dB L50 at the residences on the south side of Vineyard Road (both City of Pleasanton and Livermore), between the hours of 10 pm and 7 am.

For the assessment of noise impacts relative to CEQA significance criteria for temporary construction activities, a 10 dB increase over baseline ambient conditions is considered significant.

In addition to applying the applicable cities of Pleasanton and Livermore and the County noise standards to the proposed project, CEQA requires that noise impacts be assessed relative to ambient noise levels that are present without the project. As a result, ambient noise surveys were conducted, and comparisons of project to no-project noise levels were used to assess noise impacts (in addition to comparison to Alameda County, City of Livermore, and City of Pleasanton noise standards). Specifically, single-event maximum (L_{max}) noise levels and hourly median (L50) noise levels, both with and without the proposed project, were compared so that the assessment of noise impacts was based on an assessment of project-generated noise in short-term fluctuations in the ambient noise environment.

When impacts are deemed significant, mitigation measures are identified to avoid or minimize the impact. Some of the mitigation measures are based on specific agency guidelines and performance standards and may also be conditions of permits or other approvals ultimately required for the project.

4.8.5 Project Impacts and Mitigation Measures

4.8.5.1 LAVQAR EIR Impact Analysis

Under the LAVQAR EIR, noise impacts were determined to be less than significant with implementation of mitigation. The LAVQAR EIR recognizes that noise impacts would occur as a result of mining operations and use of city streets for transportation of haul trucks and construction vehicles, for example. However, the LAVQAR EIR notes the incremental increase in noise resulting from reclamation as compared to the 90 dBA or greater estimate from mining activity is not considered significant (Alameda County 1980: 49).

The approved project includes the following mitigation measures relevant to impacts to mineral resources:

- Reduction of noise at the source can be accomplished by proper maintenance of equipment and usage of newer equipment. Newer trucks, for example, are quieter than old trucks because of recent noise emission standards. Use of quieter trucks will increase over the life of the Reclamation Plan as older trucks are replaced. (Alameda County 1980: 49)

Project Revisions

The proposed project would not include mining activities as those are vested activities and not subject to discretionary approval. Reclamation activities would result in similar or reduced levels of noise as reclamation activities under the 1981 project and would occur during the same hours evaluated under the 1981 project. Truck traffic hauling materials from the site would be replaced by truck traffic hauling fill and stream restoration materials (rock) to the site. As outlined in the analysis below, the proposed project's maximum noise generation would fall below the 90 dBA or greater estimate for mining and reclamation noted in the LAVQAR EIR.

Changed Circumstances

Since 1981, new residential subdivisions have been developed to the north of Lake A (e.g., Pulte Oaks and Kristopher Ranch) and to the south of Lake B (e.g. Ruby Hills). SMP-23 was originally approved when this property was zoned agricultural and was within the jurisdiction of the County. Over the years, the property was annexed to the City of Livermore, the zoning was changed to residential, and the houses were built adjacent to Lake A. These land uses are changed circumstances that could create a new or increased significant impact regarding noise and vibration.

New Information

No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the LAVQAR EIR was adopted.

Significance Determination

Based on project revisions and changed circumstances that may create a new or increased significant impacts, the County has amplified and augmented the analysis contained in the LAVQAR EIR. This evaluation is provided in the following impact analysis.

4.8.5.2 Subsequent Environmental Analysis

Impact 4.8-1: Construction Noise Impacts Relative to Locally Adopted Noise Standards

As noted in the project description, different activities are proposed within the Lake A and Lake B reclamation areas as follows:

Lake A Area: Lake A reclamation will include installation of a surface water diversion from the ADV to Lake A, conversion of a berm that is currently located in Lake A to a small island to allow water to flow across the lake, installation of a water conveyance pipeline from Lake A to future Lake C (located northwest), and an overflow outlet to allow water to flow back into ADV when Lake A water levels are high to prevent flooding in the localized area. These components are considered to be short-term construction activities rather than long-term operational activities.

Lake B Area: Lake B reclamation will include installation of a pipeline turn-out from Lake A, a water pipeline conduit to future Lake C, and an overflow outlet to allow water to flow back into ADV when Lake B water levels are high. The final bottom elevation of Lake B is proposed at 150 feet above mean sea level (msl), in order to maximize the available aggregate resource. The proposed project includes realignment and restoration of an approximately 5,800 linear foot reach of the ADV. The proposed ADV realignment will result in an enhanced riparian corridor that flows around, rather than through (as currently anticipated in SMP-23), Lake B. These components are considered to be short-term construction activities rather than long-term operational activities.

The proposed reclamation operations would involve relatively minor earthmoving and construction activities in Lake A, with more intensive earthmoving to occur in the Lake B area as part of the ADV realignment. The proposed earthmoving operations and installation of pipelines would not result in any fundamental changes to existing operations (e.g., mining methods, processing operations, production levels, truck traffic, or hours of operation).

According to information provided by the project applicant, the most significant noise generating equipment to be utilized for the proposed project would consist of the following:

- Caterpillar Model 330 and 349 Excavators
- Caterpillar Model 966 Front Loaders
- Caterpillar Model 623 Scraper
- Caterpillar Model 14H Motor Grader
- Caterpillar Model 815 & 825 Compactors
- Caterpillar D10 Dozer

To quantify the noise generation of equipment identified above, reference data contained within the Federal Highway Administration Roadway Construction Noise Model (RCNM) was utilized. The equipment was assigned to the approximate closest point of proximity to existing residences where it will be in operation during the various phases of the proposed project, and estimated offsets were applied to account for shielding by intervening topography and differences between median (L_{50}) values and maximum (L_{max}) values.

Specifically, median (L50) levels were assumed to be 10 dB below maximum noise levels reported in the RCNM. This assumption is based on the fact that the mobile equipment will vary in terms of both distance from the locations where the noise standards are applicable and in terms of percentage of the hour during which the equipment will operate at the highest sound output.

In addition, shielding by intervening topography was estimated to be between 5 and 10 dB depending on the extent by which intervening topography is expected to intercept line of sight between the project noise sources and nearby sensitive receptors. These shielding offsets are based on the fact that the majority of the proposed reclamation operations would occur below grade at positions which would not be visible from the nearest sensitive receptors, particularly sensitive receptors to the south of Vineyard Avenue.

The noise levels were then projected to the locations of the nearest residences. Table 4.8-7, "Maximum Noise Generation of Construction Equipment" presents the maximum noise levels generated by the various types of project-related earth-moving equipment to be used during the proposed project. Table 4.8-8, "Predicted Noise Levels for Various Project-Related Components at Nearest Residences Eliot Quarry SMP-23 Reclamation Plan Amendment Project," shows the predicted noise levels at the nearest potentially affected residences for the various aspects of the project.

TABLE 4.8-7
MAXIMUM NOISE GENERATION OF CONSTRUCTION EQUIPMENT

Equipment Type	Maximum Noise Level (L_{max}) at 50 feet, dBA
Compactor	83
Dozer	82
Excavator	81
Loader	79
Motor Grader	83
Pad Drum Roller	80
Scraper	84

Source: FHWA Roadway Construction Noise Model

As noted previously, the realignment of the ADV, the ADV to Lake A Diversion, and the installation of conduits and pipelines fall under the category of temporary construction components of the overall proposed project as they are not associated with long-term, ongoing operation of the CEMEX facility. Both Alameda County and the City of Livermore exempt construction activities from the provisions of their local noise standards provided those activities occur during the hours of 7 am and 8 pm (Livermore) and 8 am – 8 pm (Alameda County). The City of Pleasanton applies a construction noise standard of 86 dBA at any point outside of the property plane.

As indicated in Table 4.8-8, noise generated by construction activities would be a maximum of 68 dB, thus satisfactory relative to the City of Pleasanton 86 dBA standard applicable at the property plane of the proposed project during daytime hours.

In addition, construction noise is exempt from the requirements of the Alameda County and City of Livermore noise standards provided construction activities are limited to the hours of 7 am – 8 pm, Monday through Friday, and 8 am – 8 pm on Saturday or Sunday. However, if construction activities were to occur during nighttime hours after 8 pm, such activities would not be exempt from the local noise standards and the applicable nighttime noise level standards would be exceeded at the residences to the south of Vineyard Avenue. As a result, this nighttime noise impact is considered potentially significant. This impact would be reduced to less than significant with implementation of Mitigation Measure 4.1-1, "Hourly Limitation of Construction Activities," which is described in Section 4.1, "Aesthetics and Visual Resources," of this SEIR.

Level of Significance: Potentially significant.

Mitigation Measure 4.1-1: Daily Limitation of Construction Hours
(see Section 4.1, "Aesthetics and Visual Resources," of this SEIR)

All construction activities shall be limited to the hours of 7 am – 7 pm Monday through Friday, and 8 am – 5 pm on Saturday and Sunday.

Significance after Mitigation: Less than significant.

TABLE 4.8-8
PREDICTED NOISE LEVELS FOR VARIOUS PROJECT-RELATED COMPONENTS AT NEAREST RESIDENCES ELIOT QUARRY SMP-23 RECLAMATION PLAN AMENDMENT PROJECT

Operation	Receiver Location	Approximate Distance to Nearest Receiver, feet	Predicted Maximum Noise Level at Receiver L_{max} dBA	Predicted Median Noise Level at Receiver L_{50} dBA
Realign Arroyo del Valle	CEMEX Southern Property Plane	100	68	64
	Pleasanton Residences South of Vineyard Avenue	250	60	56
	Livermore Residences South of Vineyard Avenue	1,400	45	41
	Livermore Residences North of Lake A	2000	42	38
Arroyo del Valle to Lake A Diversion	CEMEX Southern Property Plane	300	60	54
	Pleasanton Residences South of Vineyard Avenue	3,500	39	33
	Livermore Residences South of Vineyard Avenue	400	58	52
	Livermore Residences North of Lake A	1,000	50	44
Install Conduits and Pipelines	CEMEX Southern Property Plane	1,000	53	49
	Pleasanton Residences South of Vineyard Avenue	2,000	47	43
	Livermore Residences South of Vineyard Avenue	3,500	42	38
	Livermore Residences North of Lake A	250	65	61

Source: FHWA Roadway Construction Noise Model with inputs from BAC and distance scaling from aerial imagery.

Impact 4.8-2: Construction Noise Impacts Relative to Existing Ambient Conditions

Despite the finding in Impact 4.8-1 that construction noise impacts relative to locally adopted noise standards would be less than significant after implementation of mitigation measure MM 4.1-1 (see Section 4.1), construction noise impacts are also evaluated relative to changes in ambient conditions. The threshold for a finding of a significant temporary noise impact relative to construction activities is 10 dB above ambient conditions.

As indicated in Table 4.8-1, ambient noise levels at the nearest residences to the north of Lake A in the City of Livermore are approximately 44 dBA L_{50} and 63 dB L_{max} during daytime hours. As a result, the threshold of significance for those residences for short-term construction noise would be 54 dB L_{50} and 73 dB L_{max}.

According to Table 4.8-8, predicted construction noise levels at the residences on the north side of Lake A would range from 42 to 65 dB L_{max} and 38 to 61 dB L_{50}. The predicted noise levels would satisfy the maximum (L_{max}) noise level criteria for all aspects of the project construction. In addition, predicted median (L_{50}) noise levels would be satisfactory at the northern residences during the construction activities related to the realignment of the Arroyo Del Valle and Arroyo Del Valle to Lake A diversion. These impacts are considered less-than-significant relative to baseline ambient conditions at the residences on the north side of Lake A.

However, the predicted median noise level of 61 dB L_{50} at the northern residences during the conduit and pipeline installation would exceed the 54 dB L_{50} project standard of significance by 7 dB. As a result, this impact is considered potentially significant relative to baseline ambient conditions at the residences on the north side of Lake A. Mitigation Measure 4.1-1 (see Section 4.1) and Mitigation Measures 4.8-1a and 4.8-1b, "Notice of Activities" and "Mufflers," are provided to reduce construction noise impacts relative to ambient conditions to a less than significant level.

At the nearest residences located on the south side of Vineyard Avenue, Table 1 Indicates that the ambient noise levels are approximately 53 dBA L_{50} and 76 dB L_{max} during daytime hours. As a result, the threshold of significance for those residences for short-term construction noise would be 63 dB L_{50} and 86 dB L_{max}.

According to Table 4.8-8, predicted construction noise levels at the residences on the south side of Vineyard Avenue would range from 39 to 60 dB L_{max} and 33 to 56 dB L_{50}. The predicted noise levels are well below the maximum (L_{max}) and median (L_{50}) noise level criteria for all aspects of the project construction. As a result, construction noise impacts at the residences located south of Vineyard Avenue are predicted to be less-than-significant relative to ambient conditions.

Level of Significance before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure: *Implement Mitigation Measure 4.1-1, "Hourly Limitation of Construction Activities" (see Section 4.1, "Aesthetics and Visual Resources," of this SEIR)*

Mitigation Measure 4.8-1a: *Notice of Activities*

All residences within 500 feet of the conduit and pipeline installation components of the proposed project should be provided notice of the pipeline installation schedule and informed that short-term periods of elevated daytime ambient noise levels could occur during that period.

Mitigation Measure 4.8-1b: *Mufflers*

All mobile equipment shall be fitted with mufflers consistent with manufacturers recommendations & shall be well maintained.

Significance after Mitigation: Less than significant.

Impact 4.3-3: Construction Vibration Impacts Relative to Existing Ambient Conditions

The typical vibration levels generated by construction equipment to be used in the proposed reclamation activities is presented in Table 4.8-9, "Vibration Source Levels for Construction Equipment," at various distances.

TABLE 4.8-9
VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Maximum PPV (inches/second)				
	PPV at 25 feet	PPV at 50 feet	PPV at 75 feet	PPV at 100 feet	PPV at 175 feet
Vibratory roller	0.210	0.074	0.040	0.026	0.011
Large bulldozer	0.089	0.032	0.017	0.011	0.005
Loaded trucks	0.076	0.027	0.015	0.010	0.004
Small bulldozer	0.003	0.001	0.001	0.000	0.000

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual (2018)
PPV = peak particle velocity.

The vibration data shown in Table 4.8-9 indicate that heavy equipment vibration levels dissipate rapidly with distance.

The nearest residences to the proposed reclamation areas would be 150 feet or more from the earthmoving equipment. As indicated in Table 4.8-9, at distances of 100 feet or more vibration levels are expected to be below 0.03 inches/second. As noted in the criteria section, the threshold for annoyance resulting from project construction is 0.1 inches/second and the threshold for damage to structures is 0.3 inches/second (for older residences). The predicted vibration levels of 0.03 inches/second at the nearest residence is below these thresholds for annoyance and damage to structures. As a result, this impact is less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

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5—CUMULATIVE IMPACTS

5—CUMULATIVE IMPACTS

CEQA Guidelines Section 15130 requires that an Environmental Impact Report (EIR) discuss cumulative impacts of a project and determine whether the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in Section 15065(a)(3):

> "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

According to Section 15130(b) of the CEQA Guidelines:

> [t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

For purposes of this Subsequent EIR (SEIR), the project would have a significant cumulative effect if:

- the cumulative effects of other past, current, and probable future projects without the project are not significant and the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact; or
- the cumulative effects of other past, current, and probable future projects without the project are already significant and the project contributes measurably to the effect. The standards used herein to determine measurability are that either the impact must be noticeable or must exceed an established threshold of significance.

This SEIR identifies potentially significant environmental impacts associated with implementation of the proposed project, which are addressed by resource topic in Chapter 4. These issues, and others that could be cumulatively considerable significant effects, are discussed below in the context of cumulative development.

5.1 GEOGRAPHIC SCOPE AND TEMPORAL SCOPE

The geographic area that could be affected by the proposed project varies depending on the type of environmental resource being considered. When the effects of the project are considered in combination with those other past, present, and reasonably foreseeable future projects to identify cumulative impacts, the other projects that are considered may also vary depending on the type of environmental effects being assessed. The general geographic area associated with different environmental effects of the project defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. For example, the analysis of some air quality impacts is based on regional-scale growth; thus a regional perspective must be used to assess cumulative air quality impacts. In the case of aesthetic impacts, given the localized impact area of concern, a smaller more localized area surrounding the immediate project area, as well as a community scale that encompasses the larger community within which the proposed project is located, would be appropriate for consideration. Table 5-1, "Geographic

Scope of Cumulative Impacts," presents the geographic scales associated with the different resources addressed in this SEIR analysis.

TABLE 5-1
GEOGRAPHIC SCOPE OF CUMULATIVE IMPACTS

Resource Issue	Geographic Scale of Impacts
Aesthetics and Visual Resources	Local and community
Air Quality	Local (carbon monoxide, particulate matter, air toxics) Air basin/regional (ozone, particulate matter, and other criteria pollutants)
Biological Resources	Local and areas within the same watershed
Greenhouse Gases	Global (greenhouse gases)
Geology and Soils	Local
Hydrology and Water Quality	Local, upstream, and downstream areas within the same watershed and aquifer
Land Use and Planning	Local
Noise	Local and community

Source: Data compiled by Benchmark Resources in 2020

The proposed project may result in a long-range beneficial cumulative impact to fish passage by removing existing obstacles and detrimental conditions for listed fisheries, as well as by restoring native habitats with permanent conservation. The project is also limited in temporal scope because its effects would extend between the time the project is approved and initiated (reclamation under the revised plan is scheduled to take place as early as 2022) and 2056 (approximately 34 years), when reclamation activities would be completed. Thus, the proposed project would have few cumulative impacts with respect to other projects that would be completed before this project begins and after this project is completed. Cumulative impacts that would occur are related to air quality and are described in Section 5.3, below.

5.2 RELATED PROJECTS

5.2.1 Analysis Method

The CEQA Guidelines allow for the use of two methods to determine the scope of related projects for the cumulative impact analysis (CEQA Guidelines Section 15130):

> **List Method:** A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency.
>
> **Regional Growth Projections Method:** A summary of projections contained in an adopted general plan or related planning document that is designed to evaluate regional or areawide conditions.

For the purpose of this SEIR, the list approach is used because of the localized nature and specific land use of the proposed project. This method allows for a project-based cumulative analysis within the defined geographic area of the proposed project.

5.2.2 List of Nearby Projects

A summary of the projects identified at or near the project site is provided in Table 5-2, "List of Nearby Projects," and shown in Figure 5-1, "Approximate Location of Cumulative Projects." This is not intended to be an all-inclusive list of projects in the region, but rather a list of projects nearby that have some relation to the setting conditions of the project and are: (1) completed, (2) currently under construction or

implementation or beginning construction or implementation, (3) proposed and under environmental review, or (4) reasonably foreseeable. The proposed project is located in an industrial area surrounded by residential neighborhoods, recreational uses, and vineyards; thus, projects related to mining, recreation, and water management or having the potential to interact with the operation of these uses were considered as part of this analysis and included on the project list. While the project site is located in an unincorporated area of Alameda County, it is in also near the cities of Pleasanton and Livermore. For this reason, relevant projects in each of the aforementioned jurisdictions are also included in Table 5-2.

5.3 CUMULATIVE IMPACTS EVALUATION

Each resource section below provides a summary listing the impacts identified in each resource section (Sections 4.1 through 4.8) and is followed by a discussion of the potential for these project impacts to contribute to cumulative impacts.

5.3.1 Aesthetics

Project impacts pertaining to aesthetics, as described in Section 4.1, are as follows:

- Impact 4.1-1: Substantial Degradation of the Approved Visual Character or Quality of the Site and Its Surroundings (less than significant) and
- Impact 4.1-2: Creation of a New Source of Substantial Light and Glare that Would Adversely Affect Day or Nighttime Views in the Area (less than significant with mitigation incorporated)

Potential effects to aesthetic conditions are primarily local- and community-level issues. Consideration of cumulative effects would include whether the effects of the proposed project would be viewed in combination with other projects that could affect or change the visual environment. Therefore, cumulative projects listed in Table 5-2 and shown on Figure 5-1 that are located within a one-mile radius are identified as potential contributors to the aesthetics cumulative setting. These projects, as numbered in Table 5-2, are cumulative projects 4, 15, and 16.

The ongoing mining operations and existing recreation area are visible from Stanley Boulevard, north of the proposed project, and Isabel Avenue, which passes between Lakes A and B. As shown on Figure 5-1, the SR 84 widening project (16) is the only project directly adjacent to the site. However, widening of the road has already taken place on the segment that is directly adjacent to the proposed project. Future widening planned would only occur between I-680 and Pidgeon Pass, south of the project site. Furthermore, because cumulative project 16 is the widening of an existing road, activities related to this project would not result in changing the overall visual character of the project area and is not considered to be a significant impact.

Visual resources impacts that could be associated with other nearby projects, such as buildout of the EPSP (15) or the Arroyo Lago Residential Project (4), would be localized and would not contribute to visual impacts of the proposed project.

Reclamation activities related to Lake A would begin during 2022 and would contribute temporary views of construction workers and vehicles to the area. The proposed project would not include nighttime activities. Because construction activities would be temporary, and the results of the activities (e.g., landscaping featuring more native species and habitat, improved bike paths, a riparian channel, and lakes) would result in improved views, the proposed project would not cause a cumulatively considerable contribution to a significant visual effect.

TABLE 5-2
LIST OF NEARBY PROJECTS

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
1	Monte Vista Memorial Gardens Project	Conditional Use Permit to allow construction of a funeral home and cemetery at 3656 Las Colinas Road in Livermore. The Project would include a funeral home with crematorium, burial lots, an entry plaza, internal roadways, parking, landscaping, new wetlands, lakes, and other associated infrastructure and improvements.	47-acre site in Southern portion of an approximately 104-acre Assessor's Parcel Number (APN) 099-0015-016-03.	Alameda County / Monte Vista Memorial Investment Group, LLC	Notice of Preparation of an EIR circulated June 29, 2020 and public scoping meeting held July 20, 2020.
2	Aramis Solar Energy Generation and Storage Project	Conditional Use Permit (CUP) to allow construction of a solar energy production (up to 100 megawatts, or MW) facility with associated battery storage using photovoltaic panels. A parcel map subdivision to separate a roughly 150-acre portion of one project parcel from the project development site is also proposed.	Mostly contiguous 533-acre site, featuring large portions of four privately-owned parcels.	Alameda County/IP Aramis, LLC	Draft and Final EIR certified, and project approved by East County Board of Zoning Adjustments in November 2020. Appealed to Board of Supervisors, pending hearing likely in February 2021.
3	Beyer Ranch Winery Development	Subdivide a roughly 244-acre project site into 12 lots, with a minimum area of 20 acres and a maximum area of 21.28 acres. The six lots on the north half of the site would permit commercial winery facilities, and four of these six lots would allow winery-related uses such as cultural and social events, banquets, receptions, concerts, food and wine festival events, and other wine marketing activities. Two of these four lots are proposed to accommodate up to four incubator wineries with tasting rooms while the other two would include one large winery	260-acre site	Alameda County / Wente Brothers	CUP approved; awaiting site review.

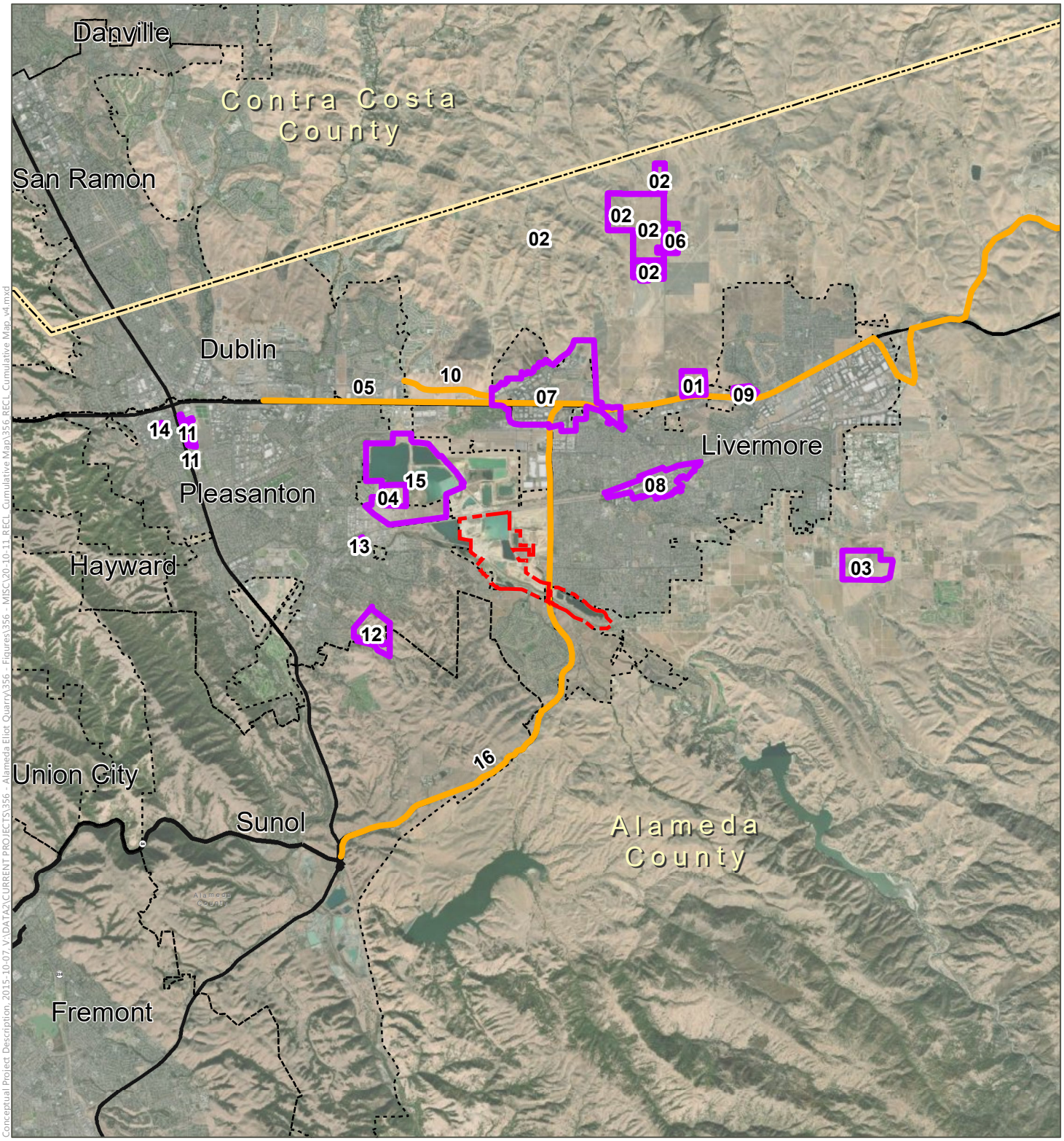
Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
		hospitality/events center and another with a moderately large tasting room. The other six lots, on the south half and east side of the site, would be developed with one single-family residence each.			
4	Arroyo Lago Residential Project	USL Pleasanton Lakes, L.P. (Pleasanton Lakes), has filed an application with Alameda County for the approval of Arroyo Lago, a residential development project that would be developed on approximately 26.6 acres of land located in unincorporated Alameda County adjacent to Pleasanton city limits.	26.6 acres	County of Alameda / USL Pleasanton Lakes, L.P.	Notice of Preparation of EIR issued on September 5, 2018
5	Valley Link Rail Project	Provide transit connectivity between the BART system in the Tri-Valley, the Altamont Commuter Express, and the San Joaquin Valley. The project also proposes several new stations and facilities, also spanning Alameda and San Joaquin Counties.	Within the I-580 freeway median through Dublin, Pleasanton, and Livermore; follow the Alameda County Transportation Corridor (formerly the Southern Pacific line) over the Altamont Hills; and then follow along existing rail lines through Tracy to Lathrop and Stockton	Tri-Valley – San Joaquin Valley Regional Rail Authority	Draft EIR released December 2, 2020.
6	Livermore Community Solar Farm	Develop a 58.7-acre solar photovoltaic (PV) facility with a capacity of 6 megawatt (MW) alternating current (AC).	58.7-acre site on a 71.64-acre parcel located at 4871 North Livermore Avenue in Alameda County.	Alameda County/	Draft and Final EIR certified, and project approved by East County Board of Zoning Adjustments in December 2020. Appealed to Board of Supervisors, pending hearing likely in March 2021.

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
7	Isabel Neighborhood Specific Plan (INSP)	Develop 4,095 new multi-family housing units and approximately 2.1 million square feet of net new office, business park, and commercial development (including a neighborhood commercial center). It also envisions three new neighborhood parks, pedestrian and bike facilities, and infrastructure improvements.	Approximately 1,138 acres in northwest Livermore about 2.5 miles from the Downtown.	City of Livermore	Public Draft Supplemental EIR released June 23, 2020. Review period ended August 7, 2020.
8	Livermore Downtown Specific Plan Amendments	Amend the existing Downtown Specific Plan to increase the size of a proposed performing arts theater, increase number of movie screens from 12 to 15, increase hotel rooms to 300 rooms, increase commercial development from 855,000 square feet to 1,000,000 square feet, and increase office development from 217,000 to 356,000 square feet, include a new parking structure.	272 acres near the geographic center of Livermore	City of Livermore	Subsequent EIR certified March 2009. Addendum to Subsequent EIR for subdivision of 9 parcels adopted by City Council on October 26, 2020.
9	Lassen Road Townhomes	Develop 186 town home units, including new streets, lighting, landscaping, and preservation of 23 acres of open space	35 acres	City of Livermore / WestGate Ventures, Adam Tennant	Initial Study / Mitigated Negative Declaration (IS / MND) Adopted by Livermore City Council on November 23, 2020.
10	Dublin Boulevard Extension	1.5 mile extension of Dublin Boulevard from Fallon Road to North Canyons Parkway in Livermore. The extension is planned to have four to six travel lanes, bike lanes, sidewalks, curb and gutter, traffic signals, street lighting, landscaped raised median islands, bus stops, and all city street utilities.	1.5-miles and 29 acres	City of Dublin	Final EIR certified in summer of 2019. Draft Environmental Assessment circulated, with comment period ending on March 24, 2020. Final Environmental Assessment (EA) still in progress.
11	Johnson Drive Economic Development Zone (EDZ)	Rezone vacant land to spur investment and create a new commercial corridor along Johnson Dive near I-680 and Stroneridge Drive in Pleasanton.	40 acres	City of Pleasanton	Supplemental EIR certified in February 2020. Second lawsuit challenging EIR. Certification filed March 2020

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
12	Lund Ranch II	PUD rezoning and development plan approvals to construct 43 single-family two-story homes and related site improvements on the approximately 195- acre Lund Ranch II property located at 1500 Lund Ranch Rd. Project includes approximately 160-acres of dedicated open space.	195 acres	City of Pleasanton/ GHC Lund Ranch, LLC	Approved by City Council on Jan. 5, 2016. Vesting Tentative Map approved by Planning Commission on Feb. 22, 2017. Final Map and Improvement Plans approved by City Council on June 18, 2019. Anticipated construction start date is Spring 2021.
13	3988 First St. and 3878 and 3780 Stanley Blvd.	Application for PUD development plan to construct 87 single-family homes.	15 acres	City of Pleasanton/Meritage Homes	Approved by City Council on Feb. 21, 2017. Construction underway.
14	1008 and 1700 Stoneridge Mall Road	Construct 486 apartment units and parking structure on a site designated for housing at Stoneridge Mall. The project will be integrated into a redesigned version of the previously approved commercial project (P18-0340) that included the demolition and replacement of the existing Sears Department store with a 255,420-square-foot development including new retail, grocery, cinema, and specialty lifestyle health club uses (net increase of 79,269 square feet). The project is located the northwest corner of Stoneridge Mall Road and Stoneridge Mall Road.	255,420-square feet	City of Pleasanton/Simon Properties	Application submitted August 2019 and is under review. The Planning Commission held a workshop on March 11, 2020. The applicant is currently working on revising the proposed project for resubmittal.
15	East Pleasanton Specific Plan (EPSP)	Comprehensive long-range land use plan for an approximately 1,100-acre area on the east side of the city, extending into unincorporated Alameda County.	1,100 acres	City of Pleasanton	City staff is coordinating the formation of a project team for the EPSP that will provide professional services to assist with the effort, and to develop a more detailed scope of work for City Council consideration.

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
16	State Route (SR) 84	Construction of the segment of SR 84 from Pigeon Pass to I-680 will be the final segment in a series of improvements to widen SR 84 to expressway standards from I-580 in Livermore to I-680 in Sunol.	The entire length of SR 84 from the I-580/Isabel Avenue interchange to the western extent of Pigeon Pass. Includes widening through Lakes A and B.	Caltrans	Environmental review completed in 2018. Design process and right-of-way acquisition in process. Construction estimated to begin March/April 2021.

Source: Jensen, pers. comm. 2020, City of Livermore 2020, City of Pleasanton 2020, Alameda County Transportation Commission 2020.
Notes: I-580 = Interstate 580; SR = state route;



SOURCES: ESRI World Shaded Relief accessed Oct. 2020, ESRI Aerial Image (Maxar),flown 8-19-2017; ESRI World Streetmap, 2009; adapted by Benchmark Resources in 2020

NOTES: This figure was prepared for land use planning and informational purposes only. The information shown and its accuracy are reflective of the date the data was accessed or produced.

Site Boundary
Cumulative Projects Site Boundary
Cumulative Projects Linear Boundary
County Boundary
City Boundary
Major Highway

BENCHMARK RESOURCES

N

0 1.5 3 6 Miles

Approximate Location of Cumulative Projects
ELIOT QUARRY SMP-23 SEIR
Figure 5-1

Conceptual Project Description_2015-10-07_V:\DATA2\CURRENT PROJECTS\356 - Alameda Eliot Quarry\356 - Figures\356 - MISC\20-10-11 RECL Cumulative Map\356 RECL Cumulative Map_v4.mxd

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5.3.2 Air Quality

Project impacts pertaining to air quality, as described in Section 4.2, are as follows:

- Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (Significant and Unavoidable).
- Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_X (Significant and Unavoidable).
- Impact 4.2-2b: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$ (less than significant).
- Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations (less than significant).
- Impact 4.2-4: Result in Other Emissions Adversely Affecting a Substantial Number of People (less than significant).

Air quality analysis is inherently cumulative because it relies on local and regional data. The Bay Area Air Quality Management District's (BAAQMD's) CEQA Guidelines indicate that their thresholds of significance represent both project-level and cumulative thresholds, such that if a project exceeds a BAAQMD threshold, it is deemed both a project-level impact and a cumulatively considerable significant impact. Because the amended reclamation plan activities would not exceed the BAAQMD thresholds with Mitigation Measures 4.1-1, "Hourly Limitation of Construction Activities," and 4.2-1, "Off-road Equipment Plan," the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant, except for NOx.

The project is in the vicinity of other surface mines that operate heavy equipment for mining and reclamation purposes. The project's reclamation activities would add to the air quality impacts of these other mining projects in the vicinity. Air quality emissions in the area may also increase considerably with construction and buildout of other nearby projects (see Table 5-2 above). Project implementation would contribute to the generation of ozone precursors and particulate matter, increasing the cumulative emissions of air quality pollutants into the atmosphere.

Mitigation measures have been included in an attempt to lessen these impacts. For example, the project applicant would utilize cleaner emitting heavy equipment at the project site to help reduce the project impacts, particularly for ozone precursors such as NOx. This should reduce the cumulative impacts, but would not eliminate them entirely. Even with mitigation, NOx emissions were found to be significant and unavoidable. Furthermore, project emissions would hinder the BAAQMD's goals for reducing significant air pollutants in the air basin in the short-term. Therefore, the cumulative impacts associated with NOx emissions and consistency with the Clean Air Plan are considered cumulatively significant and unavoidable.

In addition to criteria pollutants, BAAQMD has thresholds of significance for local community and risk hazard impacts associated with exposure to toxic air contaminants (TACs), including diesel particulates. Current cumulative conditions at the site include on-going mining operations, an approved reclamation plan (SMP-23), and associated TAC and $PM_{2.5}$ emissions. Mining activities, and emissions associated with mining, would generally cease in each area when the majority of reclamation activities begin. As a result, the cumulative TAC and $PM_{2.5}$ emissions in the project area would be significantly reduced when mining

ends and reclamation begins in each area. In addition, State and local law mandate the reclamation of surface mining operations, so reclamation must occur under the approved reclamation plan if the reclamation plan amendments are not approved. Therefore, reclamation emissions from the proposed Project are not considered new. The proposed project would not have a cumulatively considerable contribution to TAC and $PM_{2.5}$ emissions, as the Project involves amendments to an existing reclamation plan, and these proposed amendments do not implicate an increase in TACs or $PM_{2.5}$ above baseline conditions. Thus, the cumulative impacts related to TAC and $PM_{2.5}$ emissions are less-than-significant.

Finally, the BAAQMD CEQA Guidelines provide screening distance criteria for a variety of land uses that have the potential to generate odors, such as landfills, composting facilities, rendering plants, and asphalt batch plants. The project reclamation activity and the cumulative projects listed in Table 5-2 do not involve installation or operation of any of the land use categories that might be expected to generate odors. The cumulative potential odor impacts are less-than-significant based on the nature of reclamation and urban construction activities, BAAQMD's odor screening criteria, and BAAQMD's record of complaints for the existing asphalt concrete plant on the project site.

5.3.3 Biological Resources

Project impacts pertaining to biological resources, as described in Section 4.3, are as follows:

- Impact 4.3-1: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species (less than significant with mitigation);
- Impact 4.3-2: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community (less than significant with mitigation);
- Impact 4.3-3: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands (less than significant with mitigation);
- Impact 4.3-4: The Project Could Interfere Substantially with The Movement of Any Native Resident or Migratory Fish or Wildlife Species or With Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites (less than significant with mitigation); and
- Impact 4.3-5: The Project Could Conflict with Local Policies or Ordinances Protecting Biological Resources

The potential for cumulative biological resources impacts of the proposed project exists as a result of the project-specific biological resources impacts listed above when considered in conjunction with biological resources impacts from other past, present (ongoing), and reasonably foreseeable future development and other activities. Historic and ongoing land uses such as residential and commercial development, grazing and other agricultural activities, and other land disturbing activities, including mining, have reduced the quantity and quality of wildlife habitats and movement corridors provided by undeveloped grassland and overall riparian and wetland habitats in the project area.

The project-specific impacts identified in Section 4.3 and listed above have each been considered in terms of their potential to contribute to cumulative biological resources impacts. Realignment of the Arroyo del Valle (ADV) and construction of the diversion structure at Lake A would result in species displacement, vegetation removal, grading, impacts to habitat, and impacts to wetlands. These habitat impacts could contribute to the regional cumulative impacts to wildlife habitat, including foraging and nesting habitat for the identified special status species. The displacement of species along the ADV realignment footprint and impacts to habitat is considered potentially significant both on a project level and cumulative basis.

As discussed in Section 4.3, the project would result in potentially significant impacts associated biological resources. For these impacts, the following mitigation measures are proposed:

1. Mitigation Measure 4.3-1a: Obtain Regulatory Entitlements and Authorizations
2. Mitigation Measure 4.3-1b: Special Status Amphibian and Reptile Species
3. Mitigation Measure 4.3-1c: Nesting Raptors
4. Mitigation Measure 4.3-1d: Nesting Birds
5. Mitigation Measure 4.3-1e: Loggerhead Shrike
6. Mitigation Measure 4.3-1f: Tricolored Blackbird
7. Mitigation Measure 4.3-1g: Burrowing Owl
8. Mitigation Measure 4.3-1h: Special Status Bats
9. Mitigation Measure 4.3-2a: Special Status Plants
10. Mitigation Measure 4.3-2b: Riparian Habitat
11. Mitigation Measure 4.3-3: 1:1 Wetland Compensation Ratio

Mitigation measures identified for the project provide for the replacement of wetlands and habitats pursuant to regulatory agency requirements and provide species-specific protection measures. Biological resources mitigation measures would serve to minimize the project's impacts as well as its contribution to cumulative impacts. In addition, the reclamation plan amendments associated with the project will result in more natural conditions with improved biological conditions compared to the existing approved reclamation plan. Furthermore, due to state and federal regulatory requirements and Alameda County policies geared toward biological resources protection, it is also reasonable to anticipate that similar mitigation would be required of other projects to minimize their impacts to biological resources. As a result of biological resources impact avoidance and mitigation measures associated with the project, re-establishment of a more natural ADV and native vegetation, and regulatory requirements and policies applied to other projects in the area, the project would not cause a cumulatively considerable contribution to significant biological resource effects following mitigation.

5.3.4 Geology and Soils

Project impacts pertaining to geology and soils, as described in Section 4.5, are as follows:

- Impact 4.4-1: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Rupture of a Known Fault (less than significant);
- Impact 4.4-2: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Strong Seismic Ground Shaking (less than significant);
- Impact 4.4-3: Exposure of People or Structures to Seismic-Related Ground Failure, Including Liquefaction, or Landslides (less than significant)
- Impact 4.4-4: Result in Substantial Soil Erosion or the Loss of Topsoil (less than significant with mitigation);
- Impact 4.4-5: Be Located on a Geologic Unit or Soil That Is Unstable, or That Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse (less than significant);

- Impact 4.4-6: Be Located on Expansive Soil, as Defined in Table 18-1-B of the Uniform Building Code (1994), Creating Substantial Risks to Life or Property (less than significant); and
- Impact 4.4-7: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geological Feature (less than significant).

Potential effects to geologic and soil conditions are typically considered site specific. Therefore, the cumulative impact setting for geology and soils consists of the project area and immediately adjacent properties. The scope of potential cumulative impacts is limited to the area that is physically affected by the project. Because of the limited extent of the cumulative setting for this resource topic, none of the projects listed in Table 5-2 would be relevant to this analysis, as none of the listed projects are on or immediately adjacent to the proposed project site. Thus, the project would not result in a cumulatively considerable contribution to a significant geology and soils effect.

5.3.5 Greenhouse Gases

Project impacts pertaining to greenhouse gases (GHG), as described in Section 4.5, are as follows:

- Impact 4.5-1: Gas emissions generated by reclamation activities could have a significant impact on global climate change (less than significant with mitigation).
- Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations (less than significant).

Greenhouse gas analysis is inherently cumulative because it relies on regional, state-wide, and national data. As discussed in Impact 4.5-1, the project would result in a potentially significant impact associated with GHG emissions. For this impact, the following mitigation measures are proposed:

1. Mitigation Measure 4.5-1a: Idling Times.
2. Mitigation Measure 4.5-1b: Idling Times for Diesel-powered Equipment.
3. Mitigation Measure 4.5-1c: Equipment Maintenance.
4. Mitigation Measure 4.5-1d: Alternative Fuel Plan.
5. Mitigation Measure 4.5-1e: Local Building Materials.
6. Mitigation Measure 4.5-1f: Recycle or Reuse Construction and Demolition Materials.
7. Mitigation Measure 4.5-1g: On-site material hauling.
8. Mitigation Measure 4.5-1h: Generator Alternative Fuel.

Effective implementation of Mitigation Measures 4.5-1a through -1h would reduce the proposed project's GHG emissions and impact on global climate change to less than significant. Furthermore, GHG emissions associated with the project would cease when reclamation activities are complete. Because the proposed project would not result in a significant impact on global climate change with Mitigation Measures 4.5-1a through-1h, and because the reclamation activities are temporary in nature, the proposed project would not result in a cumulatively considerable impact on global climate change.

5.3.6 Hydrology and Water Quality

Project impacts pertaining to hydrology and water quality, as described in Section 4.6, are as follows:

- Impact 4.6-1a: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality at Lake A and Northern Reclamation Area (less than significant)
- Impact 4.6-1b: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding the ADV Realignment (less than significant)
- Impact 4.6-2: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge (less than significant);
- Impact 4.6-3a: Drainage Pattern Alternations Causing Erosion or Siltation (less than significant with mitigation);
- Impact 4.6-3b: Drainage Pattern Alternations Causing Flooding (less than significant);
- Impact 4.6-3c: Drainage Pattern Alterations Causing Exceeded Capacity of Stormwater Drainage Systems or Substantial Additional Sources of Polluted Runoff (less than significant);
- Impact 4.6-3d: Drainage Pattern Alterations That Would Impede or Redirect Flood Flows (less than significant);
- Impact 4.6-4: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation (less than significant); and
- Impact 4.6-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan (less than significant).

Cumulative water resources impacts are assessed both at a local level and a broader watershed/aquifer level. The local-scale cumulative setting is important for assessing some impacts, but because of the nature of water resources, most environmental impacts extend beyond a local level and have the potential to affect a more extensive area. The potentially affected area can include the portion of a drainage area that is downslope from the project site; for example, a project may generate additional runoff that may contribute to downstream flooding when considered in combination with other projects within the same watershed. Drainage pattern alterations also have upstream effects (e.g., potential to increase flooding and erosion). All projects listed in Table 5-2 are relevant to this impact.

As described in Section 4.6.3, "Regulatory Setting," of 4.6, "Hydrology and Water Quality," projects in the area, depending on their specific activities, must comply with the Federal Water Pollution Control Act, Federal Safe Drinking Water Act of 1974, Porter-Cologne Water Quality Control Act, San Francisco Bay Regional Water Quality Control Board, California Surface Mining and Reclamation Act, *East County Area Plan*, Zone 7, *Alameda County Specific Plan for the Livermore-Amador Valley Quarry Area Reclamation* (LAVQAR), and Alameda County Surface Mining Ordinance, which help to reduce the potential for impacts related to hydrology and water quality impacts.

The State Route 84 Expressway Widening Project may result in scour along the piers and abutments of the Isabel Avenue bridge during a 100-year flood (WRECO 2009, as cited in EMKO 2020a); however, neither the proposed project's realignment of the stream channel farther downstream nor the spillway not being installed in Lake A and Lake B, as approved under existing conditions, would result in a considerable contribution to scour (Brown and Caldwell 2020).

LAVQAR is intended to provide reclamation for past, present, and future mining. According to LAVQAR, without reclamation, mining in the area has the potential to block the flow of groundwater from southeast to northwest, to interfere with storage and recharge of groundwater, and to create

unusable and/or unsafe pits and land areas. LAVQAR was intended to address these problems (Alameda County 1981). The LAVQAR EIR (Alameda County 1980) addresses the potential for water quality and hydrology impacts related to implementing LAVQAR and provides mitigation to reduce those impacts.

Extensive new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the *Livermore-Amador Valley Quarry Area Reclamation Environmental Impact Report* (LAVQAR EIR) was adopted. In addition to existing publicly-available data and reports, aerial photos, and field observations discussed above, there are several applicant-prepared studies that have been peer reviewed and incorporated into this SEIR (see Sections 4.4, "Geology and Soils," and 4.6, "Hydrology and Water Quality" for summaries and analysis) as the following appendices:

- *Hydraulic Design Study* (Brown and Caldwell 2020) (Appendix F-1, "Hydraulic Design Study," of this SEIR),
- *Groundwater Hydrology and Water Quality Analysis Report for the Eliot Quarry SMP-23 Reclamation Plan Amendment Project, Alameda County, California* (EMKO 2020a) (Appendix F-2," Groundwater Hydrology and Water Quality Report," of this SEIR),
- *Focused Water Quality Assessment Lake B Component Eliot Quarry Reclamation Plan Amendment Project Alameda, California.* (Kleinfelder 2020) (Appendix F-3, "Focused Water Quality Assessment for Lake B," of this SEIR),
- *3D Clay Bed Geologic Model and Lack of Evidence for the Presence of Aquitards* (Jeff Light Geological Consulting 2019) (Appendix F-4, "3D Clay Bed Geologic Model and Lack of Evidence for the Presence of Aquitards," of this EIR),
- *2013 Becker Hammer and 2018 Sonic Drill Logs* (Brown and Caldwell 2019) (Appendix F-5, "2013 Becker Hammer and 2018 Sonic Drill Logs," of this SEIR),
- *Adaptive Management Program for Water Quality Regarding Iron* (EMKO 2020b) (Appendix F-6, "Adaptive Management Program for Water Quality Regarding Iron," of this SEIR), and
- *Water Supply Assessment* (EMKO 2019) (Appendix F-7, "Water Supply Assessment").

As stated in Section 4.6, the proposed project would not result in significant on-site impacts to hydrology and water quality with mitigation incorporated. The proposed project is an element of the Alameda County-approved Chain of Lakes, and therefore must also comply with Zone 7's Alternative Plan through the adherence to plans, permits, and regulations governing water quality. The Zone 7 Alternative Plan in turn must comply with the Sustainable Groundwater Management Plan. With mitigation measures 4.6-1, "Development of SWPPP," 4.6-2, "Implementation of Adaptive Management Program for Iron," and 4.4-1, "Erosion Control Plan," the proposed project would be consistent with both of these plans. Therefore, the proposed project's contribution to cumulative impacts related to hydrology and water quality impacts would not be cumulatively considerable.

5.3.7 Land Use and Planning

Project impacts pertaining to land use and planning, as described in Section 4.7, are as follows:

- Impact 4.7-1: Physical Division of an Established Community (less than significant); and
- Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations (less than significant).

These two impacts consider the specific attributes of the proposed project in relation to the County General Plan and zoning. The analysis of Impact 4.7-1 determined that the proposed project would not

result in the physical division of an established community. The project site is already an established operating quarry. Reclamation of this quarry would not contribute to a cumulative division of this community, but instead would help to soften the division.

The analysis of Impact 4.7-2 determined that the proposed project would not conflict with any goals or policies of the *East Area County Plan*. To ensure that cumulative quarry operations throughout the County do not divide communities or result in cumulatively adverse land use conflicts, *East County Area Plan* Policy 155 provides that, except to the extent required by State law, no new quarry or other open-pit mine may be approved by the County outside the Urban Growth Boundary, unless approved by the voters of Alameda County. Excavation not adjacent to an existing quarry site and on the same or an adjoining parcel shall be regarded as a new quarry.

The proposed changes to the existing SMP-23 reclamation plan are located within the boundaries of the existing permitted quarry, and the long-term plant site is also located within the boundaries of the existing permitted quarry. Reclamation of the quarry operation sites is consistent with County policy regarding cumulative quarry expansions. *East County Area Plan* Policy 155 would similarly apply to all other quarry operations in the County, thus limiting the potential for the expansion of quarries to result in cumulatively adverse land use conflicts. In addition, the proposed project applies modern performance standards for reclamation, which would be an improvement to the reclamation practices considered acceptable at the time of the LAVQAR EIR.

These impacts are specific to the proposed project and would not contribute to cumulative land use plan conflicts or land use planning impacts. Thus, the project would not result in a cumulatively considerable contribution to a significant land use and planning effect.

5.3.8 Noise

Project impacts pertaining to noise, as described in Section 4.8, "Noise," are as follows:

- Impact 4.8-1: Construction Noise Impacts Relative to Locally Adopted Noise Standards (less than significant);
- Impact 4.8-2: Construction Noise Impacts Relative to Existing Ambient Conditions (less than significant with mitigation); and
- Impact 4.8-3: Construction Vibration Impacts Relative to Existing Ambient Conditions (less than significant).

Impacts 4.8-1, 4.8-2, and 4.8-3 consider the potential for the proposed project's noise to conflict with locally adopted noise standards or to affect adjacent noise sensitive receptors adjacent to the project site. The criteria and thresholds used for determining the significance of these impacts consider existing ambient noise levels and, in the case of construction noise, consider noise levels under future conditions. The noise impact analysis presented in Section 4.8 and the impact significance determinations are considered applicable to both project-specific and cumulative conditions.

As noted in Section 4.8, the proposed reclamation activities related to water diversion, improvements in Lake A, and the realignment of the ADV are considered construction-related activities as they are not related to the long-term excavation or processing operations at the project site. Construction-related activities are exempt from the local noise standards in the City of Livermore and Alameda County provided the construction activities occur during certain hours and days of the week which are considered to be less noise-sensitive. Impact 4.8-1 would result in a potentially significant impact and

would be mitigated to less than significant with the implementation of Mitigation Measure 4.1-1, "Hourly Limitation of Construction Activities" (see Section 4.1, Aesthetics and Visual Resources). Impact 4.8-2 would also result in a potentially significant impact and would be mitigated to less than significant with the implementation of Mitigation Measures 4.1-1, "Hourly Limitation of Construction Activities" (see Section 4.1, "Aesthetics and Visual Resources"), 4.8-1a, "Notice of Activities," and 4.8-1b, "Mufflers" (see Section 4.8, "Noise"). Due to the temporary nature of construction activities associated with reclamation, application of Mitigation Measures 4.1-1, 4.8-1a, and 4.8-1b would also reduce the proposed project's cumulative noise to a less than cumulatively considerable contribution to noise levels.

The SR 84 Widening Project (Number 16 on Table 5-2), which is located adjacent to proposed reclamation activity, has contributed to noise impacts in the area. However, the Isabel Avenue portion of this project, the only section adjacent to the proposed project, has already been completed. Because the proposed project's noise generating activity has yet to occur, resulting in no simultaneous noise generation with the Isabel Avenue project, cumulative impacts to noise and vibration in relation to the Isabel Avenue Widening Project would not occur.

As noted in Section 4.8, the threshold for annoyance resulting from vibration associated with project construction is 0.1 inches/second and the threshold for damage to structures is 0.3 inches/second (for older residences). The analysis of Impact 4.8-3 determined that the proposed project vibration levels are expected to be below 0.03 inches/second at distances of 100 feet or more, resulting in a less than significant impact at the project level. Because the closest projects are either already complete (Caltrans Isabel Widening Project) or more than 4,500 feet away (Lund Ranch II or Number 15 on Table 5-2) from earthmoving equipment under the proposed project, other projects would not result in a cumulative impact to vibration. In addition, construction activities associated with reclamation are temporary in nature and would cease when reclamation is complete. Thus, the project would not result in a cumulatively considerable impact relating to construction vibration.

5.3.9 Summary of Significant and Unavoidable Cumulative Impacts

As discussed in the preceding sections, the project would result in the following significant and unavoidable cumulative impacts:

- Cumulative Impact 5-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan; and
- Cumulative Impact 5-2: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_x.

6—ALTERNATIVES

6.1 INTRODUCTION

This chapter describes a range of project alternatives and compares the associated potential environmental impacts to those of the project. Section 6.2, "CEQA Requirements for Alternatives Analysis," discusses the California Environmental Quality Act (CEQA) requirements for considering alternatives to the project. Section 6.3, "Summary of Project Objectives and Impacts," provides a summary of the project and its significant and unavoidable impacts. Section 6.4, "Alternatives Formulation Process and Description of Project Alternatives," discusses the alternatives formulation process and describes the alternatives evaluated. Finally, Section 6.5, "Alternatives Impact Analysis and Summary," provides an analysis of the alternatives as compared to the project, and Section 6.6 identifies the *environmentally superior alternative*, as required by CEQA. Table 6-1, "Alternatives Impact Comparison Summary," in Section 6.5, "Alternative Impact Analysis and Summary," summarizes the conclusions of the alternatives analysis.

6.2 CEQA REQUIREMENTS FOR ALTERNATIVES ANALYSIS

The CEQA Guidelines specify that an Environmental Impact Report (EIR) must describe a reasonable range of alternatives to the project, or to the location of the project, which could feasibly attain most of the basic project objectives (Guidelines §15126.6(a)). The alternatives analysis must focus on alternatives that are capable of eliminating or substantially reducing the significant adverse impacts caused by the project (Guidelines §15126.6(c)), and alternatives to the "*whole of the project*" rather than the project's component parts.[1] An EIR must include an alternatives analysis even if the EIR concludes that the project will not cause any significant adverse impacts.

The "no project" alternative, which considers impacts that would occur if existing conditions continue, must be considered (Guidelines §15126.6(e)), and the EIR must also identify the environmentally superior alternative. If the "no project" alternative is the environmentally superior alternative, the EIR must identify an environmentally superior alternative from among the other alternatives (Guidelines §15126.6(e)(2)). The EIR should not consider alternatives "whose effect cannot be reasonably ascertained and whose *implementation is remote and speculative*" (Guidelines §15126.6(f)(3), emphasis added). An EIR need not evaluate an alternative that is considered speculative, theoretical, or unreasonable. Not every potentially feasible alternative need be considered; rather, the relevant test is whether a "*reasonable range*" of feasible alternatives is considered for that particular project (Guidelines §15126.6(a)).

6.3 SUMMARY OF PROJECT OBJECTIVES AND IMPACTS

6.3.1 Project Objectives

The CEQA Guidelines provide that "the range of potential alternatives...shall include those that could feasibly accomplish most of the basic objectives of the project..." (§15126.6(c)). The overall goal of the project is to revise the approved 1987 reclamation plan for the Eliot Quarry and modify Surface Mining Permit 23 (SMP-23) to accommodate changed circumstances and to reflect regulatory changes. As

[1] *Big Rock Mesas Property Association v. Board of Supervisors of the County of Los Angeles* (2d Dist. 1977) 73 Cal. App. 3d 218).

defined in Section 2.3, "Project Objectives," of Chapter 2, "Project Description," specific project objectives as revised since the March 4, 2019 application submittal include:

1) Address the requirements of Condition 7 of County Resolution No. 12-20.
2) Realign and restore an approximately 5,800-foot reach of the Arroyo del Valle (ADV) resulting in an enhanced riparian corridor that flows south of, rather than through (as currently anticipated in SMP-23), Lake B.
3) Maximize the extraction of the remaining available on-site sand and gravel resources through the anticipated reclamation end date of 2056, including a change in the final bottom elevation of excavation in Lake B to 150 feet msl.
4) Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate.
5) Reduce Vehicle Miles Traveled (VMT) and the related air emissions by retaining a local source of aggregate.
6) Carry out the objectives of the LAVQAR and Zone 7 Agreement for implementation of the Chain of Lakes on the portions of land controlled by CEMEX.
7) Implement a public use pedestrian and bike trail on the southern perimeter of the CEMEX property.
8) Implement the proposed reclamation plan amendment to establish end uses of water management, open space, and nonprime agriculture in accordance with the California Surface Mining and Reclamation Act (SMARA) (Public Resources Code 2710, et seq.).

6.3.2 Significant and Unavoidable Impacts of the Proposed Project

After applying CEQA standards of significance to the entire range of adverse impacts that would result from implementation of the project, four significant and unavoidable impacts relating to daily NOx emissions, including obstructing the applicable air quality plan and cumulatively considerable net increase of a criteria pollutant for which the project region is non-attainment (NOx), have been identified through the analysis presented in Sections 4.1 through 4.8. NOx would contribute to two significant cumulative impacts as discussed in Section 5.3, "Cumulative Impacts Evaluation," of Chapter 5, "Cumulative Impacts."

As stated above, other than daily NOx emissions and their potential to obstruct the applicable air quality plan, the project would result in significant impacts that could be reduced to less than significant levels through implementation of mitigation measures identified in Chapter 4. The alternatives evaluation summary table (Table 6-1) in Section 6.5 includes a list of each of the project impacts identified in Chapter 4 of this SEIR and identifies their significance both with and without mitigation measures identified in Chapter 4 as compared to the impacts under each alternative. Significant impacts that could be mitigated to a level of less than significant were also considered in the alternatives formulation process, particularly those that address project aesthetic/visual impacts and project impacts on biological resources, air quality, greenhouse gas, geology and soils, hydrology and water quality, and noise as listed below:

- Impact 4.1-2: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area (less than significant with mitigation);
- Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (significant and unavoidable);

- Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_X (significant and unavoidable);
- Impact 4.3-1a: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Lake A Reclamation and Diversion Structure Construction (less than significant with mitigation);
- Impact 4.3-1b: The Project Could Result in Loss of Habitat for Special-Status Wildlife Species: ADV Realignment (less than significant with mitigation);
- Impact 4.3-1c: The Project Could Result in Loss of Habitat for Special-Status Wildlife Species: Berms and Outflow Between ADV and Lake B (less than significant with mitigation);
- Impact 4.3-2a: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Lake A Reclamation and Diversion Structure Construction (less than significant with mitigation);
- Impact 4.3-2b: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: ADV Realignment (less than significant with mitigation);
- Impact 4.3-2c: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Berms and Outflow Between ADV and Lake B (less than significant with mitigation);
- Impact 4.3-3a: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Lake A Reclamation and Diversion Structure Construction (less than significant with mitigation);
- Impact 4.3-4: The Project Could Interfere Substantially with The Movement of Any Native Resident or Migratory Fish or Wildlife Species or With Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites (less than significant with mitigation);
- Impact 4.4-4: Result in Substantial Soil Erosion or the Loss of Topsoil (less than significant with mitigation);
- Impact 4.5-1: Greenhouse Gas Emissions Generated by Reclamation Activities Could Have a Significant impact on Global Climate Change (less than significant with mitigation);
- Impact 4.6-1a: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Lake A Reclamation and Diversion Structure Construction (less than significant with mitigation);
- Impact 4.6-1b: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding the ADV Realignment (less than significant with mitigation);
- Impact 4.6-1d: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Reclamation of Lake B (less than significant with mitigation);
- Impact 4.6-3b: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding ADV Realignment (less than significant with mitigation);
- Impact 4.6-3c: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted

Runoff, or Impede or Redirect Flood Flows Regarding the Northern Reclamation Area (less than significant with mitigation);

- Impact 4.6-3d: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff That Would Result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding Reclamation of Lake B (less than significant with mitigation);
- Impact 4.6-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan (less than significant with mitigation);
- Impact 4.8-1: Construction Noise Impacts Relative to Locally Adopted Noise Standards (less than significant with mitigation);
- Impact 4.8-2: Construction Noise Impacts Relative to Existing Ambient Conditions (less than significant with mitigation);
- Impact 7-1: Substantially Degrade the Quality of the Environment, Reduce Habitat of a Fish or Wildlife Species, cause a Fish or Wildlife Population to Drop Below Self-Sustaining Levels, Threaten to Eliminate a Plant or Animal Community, Substantially Reduce the Number or Restrict the Range of a Rare or Endangered Plant or Animal or Eliminate Important Examples of the Major Periods of California History or Prehistory (less than significant with mitigation);
- Impact 7-2a: Impacts that are Individually Limited but Cumulatively Considerable: Conflict with Air Quality Plan (significant and unavoidable);
- Impact 7-2b: Impacts That are Individually Limited but Cumulatively Considerable: Criteria Pollutant NOx (significant and unavoidable); and
- Impact 7-3: Environmental Effects Which Will Cause Substantial Adverse Effects on Human Beings (less than significant with mitigation).

6.4 ALTERNATIVES FORMULATION PROCESS AND DESCRIPTION OF PROJECT ALTERNATIVES

This section discusses the County's process for formulating alternatives to the project for analysis in this SEIR. First, a discussion of considerations associated with developing alternatives for quarry reclamation projects is discussed. Next, alternatives considered but eliminated from further consideration and the reasons for their elimination are discussed. The section then provides a description of the project alternatives that are evaluated in Section 6.5.

6.4.1 Considerations for Mine and Reclamation Project Alternatives

CEQA requires that a range of reasonable and feasible alternatives to a proposed project be evaluated in an EIR. The County's consideration of alternatives to the proposed project emphasizes an effort to identify alternatives that would address other significant but mitigable impacts.

The formulation of alternatives has been undertaken by the County in accordance with CEQA requirements, and a reasonable range of alternatives is presented herein. However, due to the complexities in reclaiming an existing mineral resource operation, the County cannot ascertain at this time whether actual implementation of one or more of the alternatives would be economically feasible from the perspective of the private entity (the Applicant). Many factors are considered in the reclamation of an aggregate production site, including potential end uses, construction methodology, slope stability, contractual requirements, statutory and regulatory requirements, and other factors.

CEQA Guidelines §15126.6(f)(2)(b) recognize mining reclamation projects as an example of why evaluation of an alternative location may not be feasible, due to the fact that location of reclaiming a mine is fixed to the specific site that has already been mined. For this reason, the County explored a broad range of potential alternatives, but not including considerations associated with alternative site locations.

It should be noted that in the County's process of formulating alternatives, limited consideration was given to the economies of scale (i.e., efficiencies related to the size of the operation) or whether the alternatives would be economically feasible and able to support the planned components, and level of mitigation that would be undertaken for the project. Such data is considered beyond the scope of a reasonable CEQA analysis and is considered unnecessary for purposes of a meaningful evaluation that compares environmental effects of potential alternatives with those of the proposed project.

6.4.2 Alternatives Considered but Rejected from Further Analysis

The following alternatives have been considered by the County but rejected from further analysis for the reasons discussed below.

6.4.2.1 No Project—Implementation of the Approved Reclamation Plan Alternative

Evaluation of a No Project Alternative is required under CEQA Guidelines §15126.6(e). The No Project Alternative must include consideration for what could be expected to occur in the reasonably foreseeable future, given the existing zoning and General Plan land use designations for the site. This SEIR considers two No Project alternatives: the No Project—Reclamation of Existing Conditions Alternative discussed in detail in section 6.4.3 below, and the No Project—Implementation of the Approved Reclamation Plan, which is discussed here. Under the No Project—Implementation of the Approved Reclamation Plan Alternative, the County would not approve a Reclamation Plan Amendment. The existing site use would continue as an aggregate mining operation and mine pits that will eventually be converted into water management facilities and only be allowed to carry out reclamation under the approved 1987 reclamation plan. Other uses allowed under the General Plan and zoning could also occur, but such changes are too speculative to define for the purposes of this SEIR.

After the 1987 reclamation plan was approved, CEMEX's predecessor prepared plans for water conveyance facilities. Those plans, which the County subsequently approved, have not been implemented. Those water conveyance facilities included:

- a 40-foot concrete spillway collecting flows from the ADV (under Vallecitos Road) before those flows descend 50 feet, at a slope of 2H:1V, into Lake A;
- an earth- and rock-lined structure to collect overflows within Lake A before conveying them under Isabel Avenue/SR 84 in a 40-foot concrete spillway to Lake B;
- an underground concrete pipe between Lake A and Lake C, which terminates at a spillway dropping water up to 70 feet down a 2H:1V slope;
- an underground 30-inch concrete pipe between Lake C and Lake B; and
- a concrete and riprap apron along the western boundary of Lake B allowing overflow to continue down the ADV channel.

Because the No Project—Implementation of the Approved Reclamation Plan Alternative would not result in a reclamation plan amendment, any future action would need to occur in compliance with the approved reclamation plan. However, changes in circumstances at the site and in applicable regulatory requirements that have necessitated the preparation of an amended reclamation plan in the first place

would still exist (e.g., infeasibility of certain components of the approved project). Furthermore, the reclamation objectives outlined in the approved reclamation plan can no longer be feasibly accomplished or permitted by regulatory agencies under current regulatory conditions, which have changed considerably since 1987. The key objectives for the proposed project are listed above in Section 6.3.1.

In addition, physical conditions near the project site, such as residential development in neighboring areas, the widening of Isabel Avenue/State Route 84 [SR 84]), and sale of portions of the property, would make carrying out the approved reclamation plan infeasible as written. Further, this alternative would eliminate the ADV realignment as a feature separate from Lake B, which would result in greater biological impacts compared to the proposed project and preclude the on-site restoration and enhancement of a native riparian corridor that would promote future fish passage for listed species. Lastly, the Applicant has noted that the two previously approved, but not yet built, concrete spillways are environmentally insensitive; therefore, carrying out their construction would result in additional environmental impacts compared to the proposed project. As such, the County has eliminated the No Project—Implementation of the Approved Plan Alternative from further consideration as an alternative in this SEIR.

6.4.2.2 Avoidance of Waters of the U.S. Alternative

Under the Avoidance of Waters of the U.S. Alternative, the proposed approximately 5,800-foot reach of the ADV would not be realigned. Thus, all of the benefits of a restored and enhanced stream with native habitats that support future fish passage would not be achieved. Total materials extracted over the life of the project would be approximately 45 percent less than the proposed project under this alternative because Lake B could not progress further south, consistent with the applicant's vested mining rights. Furthermore, eliminating the realignment of the ADV would result in a shorter operational life as compared to the proposed project.

The reduction in surface disturbance would reduce potential impacts to biological resources by eliminating loss of habitat and protected wetlands and to hydrology by eliminating increased risk of erosion. The elimination of the realignment of the ADV would also reduce potential impacts to air quality, greenhouse gases, and construction-related noise.

An Avoidance of Waters of the U.S. Alternative would eliminate the project's ability to meet the objectives to maximize the extraction of the remaining available on-site sand and gravel resources; supply the regional demands for PCC grade aggregate; realign and restore an approximately 5,800-foot reach of the ADV resulting in an enhanced riparian corridor; and reduce VMT by providing a local source of aggregate because of the ADV realignment. Furthermore, because expansion of Lake B for mining would not occur, benefits of increased water storage from an expanded reclaimed Lake B to a water management facility would be reduced. In addition, the proposed project proposes enhancement to the habitat value of the ADV by reconfiguring, realigning, and revegetating the ADV with native species that have superior biological function and values than the existing conditions at the ADV. Last, this alternative would make implementation of both the approved SMP-23 and the chain of lakes project altogether infeasible because the Applicant cannot divert water from the ADV into the chain of lakes if work in waters of the U.S. is prohibited. As such, the County has eliminated the Avoidance of Waters of the U.S. Alternative from further consideration as an alternative in this SEIR.

6.4.2.3 Reduced Final Reclamation Floor Elevation Alternative

The Reduced Final Reclamation Floor Elevation Alternative would reduce the proposed final bottom elevation of excavation in Lake B from 150 feet msl to 200 feet msl. The principal rationale for the

Reduced Final Reclamation Floor Elevation Alternative is that by raising the final reclaimed elevation (post-mining) of the quarry floor, potential adverse impacts associated with the lower aquifer would be reduced. In addition, impacts to water supply wells that are screened between 200 and 150 msl may be reduced. Reducing the final reclamation floor elevation in Lake B would result in a reduction in the total material excavated over the remaining 56-year life of the project. This alternative would provide fewer years of product to the local area, which would also result in a reduction in mining activity. Furthermore, as this alternative would not fully develop available mineral reserves, many of the proposed project's objectives would not be met. This alternative was considered based on consultation with Zone 7 during the scoping and the SEIR preparation. After peer review of the technical reports and incorporation of the pertinent information into the SEIR, no potentially significant impacts to water quality or supply were identified. Therefore, because this alternative would not meet most of the Applicant's objectives and no non-mitigable significant impacts to water quality or supply associated with reclaiming to greater depths have been identified, the County has eliminated the Reduced Final Reclamation Floor Elevation Alternative from further consideration as an alternative in the SEIR.

6.4.2.4 Reduced Daily Reclamation Activity Alternative

The Reduced Daily Reclamation Activity Alternative is aimed at reducing daily NOx emissions, because those emissions are a significant and unavoidable impact. This alternative would create a limit on daily construction activities, number of haul truck trips associated with reclamation-related materials delivery, and/or employ another mechanism that would reduce the reclamation progress achieved daily. The Reduced Daily Reclamation Activity Alternative would have reduced hours of operation for reclamation compared to the proposed project. This would increase the permitted reclamation period of the project from 56 years to a longer period, and/or increase the duration of any given phase of reclamation. However, it is assumed that this alternative would not change the permitted activities and end uses would be the same as that of the proposed project. Limiting daily reclamation activities could reduce daily noise and air quality impacts by reducing construction activities and vehicle trips on peak operational days. However, construction noise and air quality impacts would be extended over a longer duration (number of days). In addition, because mobilization and demobilization of construction equipment would need to take place over a longer period of time, noise and air quality impacts would be more than would occur under the proposed project due to the need to start-up, mobilize, and then shut-down equipment for a greater number of days.

Furthermore, greenhouse gas (GHG) emissions are calculated on an annual basis, not daily. If daily construction hours are reduced, the duration of construction is extended. Thus, at best, this alternative would result in the same amount of GHG emissions spread over a longer period of time. However, when considering construction inefficiencies (e.g., increased mobilization and demobilization over more days), GHG emissions would be greater under this alternative than under the proposed project.

Ground disturbance associated with realignment of the ADV, berm construction, and grading related to reclamation would not be expected to change under this alternative. Visual impacts of the proposed project are primarily associated with temporary construction. Reduction of daily reclamation activities and the extended duration of the project under this alternative, visual impacts would be prolonged, and therefore increased, compared to the proposed project.

A Reduced Daily Reclamation Activity Alternative would result in the delay of all objectives of the proposed project, especially implementation of the Chain of Lakes that would support Zone 7's water management activities, including water storage, water conveyance, and improving the reliability of local water supply. Therefore, because long-term impacts associated with aesthetics, noise, air quality, and

GHG would be greater than the proposed project, the County has eliminated the Reduced Daily Reclamation Activity Alternative from further consideration as an alternative in the SEIR.

6.4.3 Alternatives Evaluated in Detail

Because mining reclamation projects are dependent upon site-specific geologic conditions, the range of alternatives to a proposed mineral development project is typically limited, as compared to urban development projects (e.g., commercial or residential projects). The alternatives defined for this SEIR incorporate changes to the project as proposed that would address certain impact issues associated with the project.

It should be noted that the Applicant has not provided information to the County regarding the economic, technological, and physical feasibility of these alternatives, and it is unknown whether these alternatives could be developed by the Applicant if approved in lieu of the proposed project.

The following alternatives are described below and evaluated in Section 6.5 of this SEIR:

- Alternative 1: No Project—Reclamation of Existing Conditions Alternative;
- Alternative 2: Prohibited Nighttime Reclamation Alternative;
- Alternative 3: Revised ADV Construction Phasing Alternative; and
- Alternative 4: Reduced Capacity of Lake A Diversion Structure Alternative.

6.4.3.1 Alternative 1: No Project—Reclamation of Existing Conditions Alternative

As discussed above, the No Project—Implementation of the Approved Reclamation Plan Alternative cannot feasibly be implemented. Furthermore, under the Surface Mining and Reclamation Act of 1975 (SMARA), a site must be reclaimed following the completion of mining. Therefore, this SEIR considers another No Project alternative, No Project—Reclamation of Existing Conditions Alternative (Alternative 1) involving reclamation of the project site under existing conditions consistent with the minimum requirements of SMARA and the Alameda County Surface Mining Ordinance.

Under Alternative 1, the County would have to approve an alternative Reclamation Plan Amendment that would allow for the reclamation and closure of the Eliot site consistent with the requirements of SMARA and the Alameda County Surface Mining Ordinance (SMO). Under this alternative, mining would not proceed until another reclamation plan amendment is adopted, and the site's water bodies and slope would be reclaimed to meet the minimum requirements of SMARA and the SMO (e.g., ensuring stable slopes, no adverse impacts associated with the reclaimed water bodies at the site, and appropriate post-reclamation vegetation). The end use would remain water management and agriculture consistent with the underlying LAVQAR requirements. However, Alternative 1 would not meet the following project objectives:

- Realign and restore an approximately 5,800-foot reach of the ADV resulting in an enhanced riparian corridor that flows south of, rather than through (as currently anticipated in SMP-23), Lake B.
- Maximize the extraction of the remaining available on-site sand and gravel resources through the anticipated reclamation end date of 2056, including a change in the final bottom elevation of excavation in Lake B to 150 feet msl.
- Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate.

- Carry out the objectives of the LAVQAR and Zone 7 Agreement for implementation of the Chain of Lakes on the portions of land controlled by CEMEX.

6.4.3.2 Alternative 2: Prohibited Nighttime Reclamation Alternative

Under Alternative 2, Prohibited Nighttime Reclamation Alternative, all project-related reclamation including ADV realignment, construction of the Lake A diversion structure, berm construction, and grading for final reclamation to end use would only be permitted to take place during operating hours of 7:00 a.m. to 7:00 p.m. All reclamation activities would be prohibited between 7:00 p.m. and 7:00 a.m., except for the low-flow diversion pump, which must operate at all hours during the two-year construction period for the ADV realignment. Some nighttime lighting of project facilities would still be required for security and safety purposes under this alternative; however, operational and reclamation construction lighting for the project between 7 p.m. and 7 a.m. would be avoided. Project-related traffic departing and arriving at the site between 7 p.m. and 7 a.m. would also be avoided. The current operational mining activities would not be subject to this restriction. The effects of atmospheric inversion (also known as heat rising from the earth and interacting with cooler air above) would also be pertinent to this alternative. In general, air pollutants disperse better during the day due to higher wind speeds, convective turbulence, and higher mixing heights of pollutants in the atmosphere. This alternative could benefit sensitive biological species because wildlife migrating through construction zones are harder to spot at night. Thus, Alternative 2 could reduce injury or mortality to wildlife species by limiting operations to the daytime hours. This alternative would have the same impacts as the proposed project with mitigation incorporated (see Mitigation Measure 4.1-1, "Hourly Limitation of Construction Activities," in Section 4.1, "Aesthetics and Visual Resources") and would reclaim the site and realign the ADV similarly to the proposed project.

6.4.3.3 Alternative 3: Revised ADV Construction Phasing Alternative

Alternative 3, Revised ADV Construction Phasing Alternative, is aimed at reducing daily NOx emissions. This alternative would alter the reclamation schedule of the realignment and restoration of an approximately 5,800-linear-foot reach of the ADV to flow around, rather than through, Lake B. The altered schedule would extend ADV realignment activities into 2024 or 2025, rather than 2022 or 2023 as currently anticipated under the proposed project. This would slightly delay the implementation of ADV realignment and restoration components of the project. However, delaying the implementation of the realignment until after reclamation activities in Lake A are complete would avoid concurrent reclamation activities of Lake A reclamation and ADV realignment and restoration activities. Therefore, daily NOx emissions, the cause of all significant and unavoidable impacts of this project, would be reduced. However, even under this alternative, the daily NOx exceedance would remain, so the NOx impacts would remain significant and unavoidable. Limiting daily reclamation activities to either Lake A reclamation (from 2022 to 2023) or ADV realignment and restoration (2024 to 2025) could also reduce noise intensity in the short term by reducing amount of reclamation activities and vehicle trips by avoiding concurrent reclamation in the various areas of the site. However, construction noise would increase in duration, though at a lesser intensity, compared to the proposed project, resulting in a greater long-term impact to noise. Other impacts associated with the project would be expected to remain unchanged under this alternative.

Ground disturbance associated with realignment of the ADV, berm construction, and grading related to reclamation would not be expected to change. Visual impacts of the proposed project are primarily associated with temporary construction, and therefore would be reduced compared to the proposed project in the short term as there would be less construction equipment performing reclamation activities

at a given time under Alternative 3 compared to the proposed project. However, the duration of construction would increase, thereby prolonging the duration of visual impacts. Therefore, Alternative 3 would have an overall greater impact to visual resources. A two-year delay in the implementation of the ADV realignment and restoration would not significantly interfere with meeting the objectives of the proposed *project*.

6.4.3.4 Alternative 4: Reduced Capacity of Lake A Diversion Structure Alternative

Alternative 4, Reduced Capacity of Lake A Diversion Structure Alternative, is designed to reduce potential impacts to biological resources by reducing the amount of water being diverted from the ADV into Lake A. Under Alternative 4, the diversion structure capacity would be reduced from 500 cfs to 200 cfs to allow diversion of only the first 200 cfs of water from the ADV into Lake A. This would allow for significantly more water to be retained in the ADV, which would be beneficial to biological resources in the restored ADV. While the proposed project has a low flow channel to ensure that at least 9 cfs are retained, Alternative 4 would allow for an additional 300 cfs of water (during higher water flows) to be retained in the ADV than envisioned in the proposed project. While the current version of the LAVQAR Specific Plan, the approved reclamation plan, and contract between the Applicant and Zone 7 call for a diversion structure of 500 cfs, these obligations could potentially be modified to facilitate additional water to be retained in the ADV. As the diversion structure would be smaller than the proposed project, Alternative 4 would result in less noise and air quality impacts than the proposed project as a smaller diversion structure could be constructed in less time with less construction activity. In addition, while impacts to biological resources have been reduced to less than significant after implementation of mitigation measures, Alternative 4 would have fewer impacts to biological resources by ensuring that additional water is available to biological resources within the ADV and those that will utilize the water in the ADV for feeding or migration. In addition, Alternative 4 would result in less impacts to waters of the U.S. than the proposed project because the design for the diversion structure infiltration bed would be smaller (disturb less square footage). This alternative would not meet all of the objectives of the proposed project, particularly Objective 6, which provides: "Carry out the objectives of the LAVQAR and Zone 7 Agreement for implementation of the Chain of Lakes on the portions of land controlled by CEMEX." As a result, consistency of Alternative 4 with this objective would require negotiations between Zone 7, the Applicant and the Community Development Agency of Alameda County. Therefore, it is unclear whether Alternative 4 would be able to achieve Objective 6.

6.5 ALTERNATIVES IMPACT ANALYSIS AND SUMMARY

The focus of the alternatives analysis in this SEIR is to explore options to mitigate or avoid the project's significant impacts. The analysis of each alternative considers whether the alternative would reduce impacts as compared to the project as proposed. In most cases, the alternatives would create the potential for reducing the magnitude, duration, or frequency of certain project impacts, but would not eliminate the impacts entirely.

As presented in Chapter 4, project impacts prior to the application of mitigation measures are identified as significant, potentially significant, or less than significant. Mitigation measures are identified, when available, for significant and potentially significant impacts, and the resulting impacts are found to be either less than significant (when mitigation would reduce a significant or potentially significant impact to below the threshold of significance) or significant and unavoidable (when either no feasible mitigation is available or when available mitigation would not reduce the impact to below the threshold of significance).

Table 6-1 provides a summary comparison of the impacts of each alternative with impacts of the project. The table lists each project impact and the significance of the project impact both without mitigation and with mitigation identified in this SEIR (if the impact without mitigation is deemed less than significant, no mitigation is needed, and the table simply lists less than significant (LS)).

Table 6-1 also identifies the anticipated comparative impact of each alternative as either having no impact (NI) or an impact greater than (+), similar to (=), or less than (-) the corresponding impact of the project. In most cases, the alternatives would result in similar or lessened impacts as compared to the project, but the reduction in impact would not be of sufficient magnitude such that a significant project impact would be reduced to less than significant. For example, reclamation activities of the proposed project exceed daily NOx thresholds under the BAAQMD threshold by more than 400%. Thus, activities would have to be limited to fewer than 2 hours per day to render the NOx impact less than significant, which would not be feasible. Mitigation measures applicable to project impacts would also be available to reduce commensurate impacts of the alternatives. Thus, in instances where a significant project impact would be reduced to less than significant with mitigation, the same mitigation would also reduce the impact of the alternative to less than significant unless otherwise noted.

Each of the project alternatives considered in this analysis is described in Section 6.4, above. The following sections discuss the impacts of each alternative as compared to project impacts identified in Sections 4.1 through 4.8 of this SEIR. Table 6-1 below provides a summary of the comparison and the discussion in the following sections emphasizes those impact areas for which the project would result in one or more significant impacts and the alternative(s) would have the potential to lessen one or more significant impacts of the project.

TABLE 6-1
ALTERNATIVES IMPACT COMPARISON SUMMARY

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]			
		1 (No Project)	*2 (No Nighttime)*	*3 (Phasing)*	*4 (Reduced Diversion)*
Impact 4.1-1: Substantial Degradation of the Approved Visual Character or Quality of the Site and Its Surroundings	LS	+	=	+	-
Impact 4.1-2: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area	PS/LS	=	-	+	-
Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	S/SU	-	=	-	-
Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_x	S/SU	-	=	-	-
Impact 4.2-2b: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or	LS	-	=	-	-

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]			
		1 (No Project)	*2 (No Nighttime)*	*3 (Phasing)*	*4 (Reduced Diversion)*
State Ambient Air Quality Standard: ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$					
Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LS	-	=/-[4]	-	-
Impact 4.2-4: Result in Other Emissions Adversely Affecting a Substantial Number of People	LS	-	=	-	-
Impact 4.3-1a: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Lake A Reclamation and Diversion Structure Construction	PS/LS	-/+[4]	-	=	-
Impact 4.3-1b: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: ADV Realignment	PS/LS	-/+[4]	=	=	-
Impact 4.3-1c: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Berms and Outflow Between ADV and Lake B	PS/LS	-/+[4]	=	=	-
Impact 4.3-1d: The Project Could Result in Direct Effects or Loss of Habitat for Special-Status Wildlife Species: Northern Reclamation Area	LS	-/+[4]	=	=	-
Impact 4.3-2a: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Lake A Reclamation and Diversion Structure Construction	PS/LS	-/+[4]	=	=	-
Impact 4.3-2b: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: ADV Realignment	PS/LS	-/+[4]	=	=	-
Impact 4.3-2c: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Berms and Outflow Between ADV and Lake B	PS/LS	-/+[4]	=	=	-
Impact 4.3-2d: The Project Could Result in Loss of Riparian Habitat or Sensitive Natural Community: Northern Reclamation Area	LS	-/+[4]	=	=	-
Impact 4.3-3a: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Lake A Reclamation and Diversion Structure Construction	PS/LS	-/+[4]	=	=	-
Impact 4.3-3b: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: ADV Realignment and the Construction of Berms and Overflow Outlet Between ADV and Lake B	LS	-/+[4]	=	=	-

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]			
		1 (No Project)	*2 (No Nighttime)*	*3 (Phasing)*	*4 (Reduced Diversion)*
Impact 4.3-3c: The Project Could Have a Substantial Adverse Effect on State or Federally Protected Wetlands: Northern Reclamation Ares	LS	-/+[4]	=	=	-
Impact 4.3-4: The Project Could Interfere Substantially with the Movement of Any Native Resident or Migratory Fish or Wildlife Species or with Established Native Resident or Migratory Wildlife Corridors, or Impede the Use of Native Wildlife Nursery Sites	PS/LS	+	=/-[4]	=	-
Impact 4.3-5: The Project Could Conflict with Local Policies or Ordinances Protecting Biological Resources	LS	-/+[4]	=	=	-
Impact 4.4-1: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Rupture of a Known Fault	LS	-	=	=	=
Impact 4.4-2: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death as a Result of Strong Seismic Ground Shaking	LS	-	=	=	=
Impact 4.4-3: Exposure of People or Structures to Seismic-Related Ground Failure, Including Liquefaction, or Landslides	LS	-	=	=	=
Impact 4.4-4: Result in Substantial Soil Erosion or the Loss of Topsoil	PS/LS	-	=	=	=/-[4]
Impact 4.4-5: Be Located on a Geologic Unit or Soil That is Unstable, or That Would Become Unstable as a Result of the Project, and Potentially Result in On- or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse	LS	-	=	=	=
Impact 4.4-6: Be Located on Expansive Soil, as Defined in Table 18-1-B of the Uniform Building Code (1994), Creating Substantial Risks to Life or Property	LS	-	=	=	=
Impact 4.4-7: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geological Feature	LS	-	=/-[4]	=	=
Impact 4.5-1: Gas Emissions Generated by Reclamation Activities Could Have a Significant Impact on Global Climate Change.	PS/LS	+/=[4]	=	=	=
Impact 4.5-2: Consistency with Applicable GHG Plans, Policies, Or Regulations.	LS	+/=[4]	=	=	=

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]			
		1 (No Project)	*2 (No Nighttime)*	*3 (Phasing)*	*4 (Reduced Diversion)*
Impact 4.6-1a: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Lake A Reclamation and Diversion Structure Construction	PS/LS	+/=[4]	=	=	=
Impact 4.6-1b: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding the ADV Realignment	PS/LS	-	=	=	-
Impact 4.6-1c: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality at the Northern Reclamation Area	LS	=	=	=	=
Impact 4.6-1d: Violation of Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality Regarding Reclamation of Lake B	PS/LS	=	=	=	=
Impact 4.6-2a: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding Lake A Reclamation and Diversion Structure Construction	LS	+	=	=	=
Impact 4.6-2b: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding the ADV Realignment	LS	+	=	=	=
Impact 4.6-2c: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge at the Northern Reclamation Area	LS	+	=	=	=
Impact 4.6-2d: Substantial Depletion of Groundwater Supplies or Interference with Groundwater Recharge Regarding Reclamation of Lake B	LS	+	=	=	=
Impact 4.6-3a: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding Lake A Reclamation and Diversion Structure Construction, Construction of the Infiltration Gallery, and Construction of Conduit from Lake A to Lake C with a Turnout to Lake B	LS	+/=[4]	=	=	=

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]			
		1 (No Project)	*2 (No Nighttime)*	*3 (Phasing)*	*4 (Reduced Diversion)*
Impact 4.6-3b: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff that would result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding ADV Realignment	PS/LS	+/=[4]	=	=	-
Impact 4.6-3c: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff That Would Result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding the Northern Reclamation Area	PS/LS	+/=[4]	=	=	=
Impact 4.6-3d: Substantially Alter Drainage Patterns Causing Erosion or Siltation, Increase Surface Runoff That Would Result in Flooding, Provide Substantial Additional Sources of Polluted Runoff, or Impede or Redirect Flood Flows Regarding Reclamation of Lake B	PS/LS	+	=	=	=
Impact 4.6-4a: Release of Pollutants In Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding Lake A Reclamation and Diversion Structure Construction, Construction of the Infiltration Gallery, and Construction of Conduit from Lake A to Lake C with a Turnout to Lake B	LS	+	=	=	=
Impact 4.6-4b: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding the ADV Realignment	LS	-	=	=	=
Impact 4.6-4c: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation at the Northern Reclamation Area	LS	=	=	=	=
Impact 4.6-4d: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation Regarding Reclamation of Lake B	LS	=	=	=	=
Impact 4.6-5: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	PS/LS	+	=	=	=
Impact 4.7-1: Physically Divide an Established Community	LS	=	=	=	=
Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations	LS	+	=/-	=	=/+[4]

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]			
		1 (No Project)	*2 (No Nighttime)*	*3 (Phasing)*	*4 (Reduced Diversion)*
Impact 4.8-1: Construction Noise Impacts Relative to Locally Adopted Noise Standards	PS/LS	-	=/-[4]	-/+	-
Impact 4.8-2: Construction Noise Impacts Relative to Existing Ambient Conditions	PS/LS	-	=/-[4]	-/+	-
Impact 4.8-3: Construction Vibration Impacts Relative to Existing Ambient Conditions	LS	-	=	-/+	-
Impact 7-1: Substantially Degrade the Quality of the Environment, Reduce Habitat of a Fish or Wildlife Species, cause a Fish or Wildlife Population to Drop Below Self-Sustaining Levels, Threaten to Eliminate a Plant or Animal Community, Substantially Reduce the Number or Restrict the Range of a Rare or Endangered Plant or Animal or Eliminate Important Examples of the Major Periods of California History or Prehistory	PS/LS	+	=	=	=
Impact 7-2a: Impacts that are Individually Limited but Cumulatively Considerable: Conflict with Air Quality Plan	S/SU	+/=[4]	=	-	-
Impact 7-2b: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutants ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$	LS	+/=[4]	=	-	-
Impact 7-2b: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutant NOx	S/SU	+/=[4]	=	-	-
Impact 7-3: Environmental Effects which will Cause Substantial Adverse Effects on Human Beings	PS/LS	+	=	-	-

Notes:

1. Project Impact Significance Without/With Mitigation: S = Significant; PS = Potentially Significant; LS = Less than Significant; SU = Significant and Unavoidable.
2. Alternative 1 = No Project—Reclamation of Existing Conditions Alternative; Alternative 2 = Prohibited Nighttime Reclamation Alternative; Alternative 3 = Revised ADV Construction Phasing Alternative; Alternative 4 = Reduced Capacity of Lake A Diversion Structure Alternative.
3. Comparative Impacts of Alternatives: "-"(Impact is less than the project); "+" (Impact is greater than the project); "=" (Impact is similar to the project); "NI" = No Impact.
4. Comparative notations with differing impacts in the short and long term or with and without mitigation implementation are designated with "/" between notations. E.g., "=/-" means the alternative would have similar impacts as the mitigated project, and fewer impacts if mitigation was not properly implemented or monitored. Also, "-/+" would mean the alternative would have fewer impacts in the short-term, but greater impacts in the long term. Details are provided in Section 6.5.1 through 6.5.4, below.

6.5.1 Alternative 1: No Project—Reclamation of Existing Conditions Alternative

The discussion of the No Project—Reclamation of Existing Conditions Alternative below considers Alternative 1 as compared to the proposed project. Under this Alternative, the site would need to be reclaimed under an alternative reclamation plan amendment that complies with SMARA and the Alameda County Surface Mining Ordinance. The degree of impacts that could ultimately occur as a result

of Alternative 1 would be similar to those outlined below and discussed in the LAVQAR EIR, with some reduced impacts to air quality, geology and soils, biological resources, and noise resulting from changes to meet minimum regulatory requirements (Alameda County 1980).

Aesthetics

Alternative 1 would have increased aesthetic impacts compared to the proposed project. At Lake A, the proposed landscape plan featuring California native species around the perimeter of the lake would not be implemented, and the berm across the lake would not be fully developed into an island. The existing pedestrian and bike trail along the south side of Lake A would not be extended further along Vineyard Avenue and the ADV along the south side of Lake B. Under Alternative 1, the ADV would not be realigned, reconfigured, or revegetated. Instead, the existing ADV, which has succumbed to nonnative vegetation, would remain in place without the more aesthetically pleasing native vegetation. The concrete spillways proposed under the approved reclamation plan would not be constructed as they could not be permitted under the existing regulatory environment. In addition, Lake B would not be fully developed under Alternative 1 as would occur under the proposed project. Therefore, in the Alternative 1 scenario, Lake B would be less visible and less aesthetically pleasing as it would be under the proposed project.

Air Quality

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the site meets minimum SMARA and SMO requirements as compared to the proposed project. In addition, air quality impacts associated with the realignment of the ADV would be avoided. Thus, Alternative 1 would have less of an impact to air quality than the proposed project.

Biological Resources

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the site meets minimum SMARA and SMO requirements as compared to the proposed project; thus, there would be less short-term impacts to biological resources. In addition, biological resources impacts associated with the realignment of the ADV would be avoided. However, the better-quality habitat that would be established under the proposed project would not come to fruition. Barriers to steelhead fish passage, such as the breached quarry ponds with warmer temperatures that harbor predatory species like bullfrogs and bass, would continue to exist. In the short term, Alternative 1 would have less of an impact on biological resources than the proposed project. However, in the long term, after the restoration of the ADV and full reclamation of Lakes A and B, Alternative 1 would have more biological resource impacts than the proposed project.

Geology and Soils

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the site meets minimum SMARA and SMO requirements as compared to the proposed project. Thus, Alternative 1 would have less of an impact on geology and soils than would occur under the proposed project.

Greenhouse Gas

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the site meets minimum SMARA and SMO requirements as compared to the proposed project. Greenhouse gas impacts associated with the realignment of the ADV would be avoided. However, if the proposed project is not fully implemented, which would allow for additional

aggregate material to be supplied to the local market, then the material would have to be supplied from locations located farther from the local market (e.g., from Vernalis area). Thus, it is likely that Alternative 1 would have increased greenhouse gas emissions compared to the proposed project due to the emissions associated with transporting these materials from greater distances. Further, it is generally accepted that developing new mining facilities would have more impact, at least on surface resources, than maximizing the extraction of resources from an existing surface mine.

Hydrology and Water Quality

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the site meets minimum SMARA and SMO requirements as compared to the proposed project. However, the relocation and revegetation of the ADV is anticipated to enhance the ability of the ADV to handle water and flood conveyance compared to the existing ADV. These benefits would not be realized under Alternative 1. Regarding Lake B, while public comments and comments from Zone 7 on the NOP indicated that there could be potentially significant impacts associated with mining deeper in Lake B, the peer reviewed analysis contained in the SEIR concludes that impacts to hydrology and water quality will be less than significant. Therefore, Alternative 1 would have more of an impact on hydrology and water quality than the proposed project.

Land Use

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the project site meets minimum SMARA and SMO requirements as compared to the proposed project. Thus, land use compatibility issues such as noise, dust, and traffic related to reclamation activities would be less under Alternative 1 compared to the proposed project. However, County General Plan policies that would be met through implementation of the project (e.g., reducing GHG emissions and maximizing mineral resources) would not be met under Alternative 1. Therefore, Alternative 1 would have less of an impact on land use but more of an impact on other resource topics compared to the proposed project. However, Alternative 1 could be less consistent with LAVQAR than the proposed project as it might not carry out all of the objectives by implementation of chain of lakes, e.g., by further reducing the size of Lake B.

Noise

Under Alternative 1, there would be a reduction in reclamation activities to ensure that the site meets minimum SMARA and SMO requirements as compared to the proposed project. Thus, noise impacts associated with reclamation activities would be less under Alternative 1 compared to the proposed project. Therefore, Alternative 1 would have less of a noise impact than the proposed project.

6.5.2 Alternative 2: Prohibited Nighttime Reclamation Alternative

The discussion below considers the impacts of Alternative 2 as compared to the project. Under a Prohibited Nighttime Reclamation Alternative, all project-related reclamation operations would only be permitted to take place during operating hours of 7:00 a.m. to 7:00 p.m. All project-related reclamation activities would be prohibited between 7:00 p.m. and 7:00 a.m. This alternative would have the same impacts as the proposed project with mitigation incorporated. However, if mitigation measures were not appropriately implemented, Alternative 2 would have a reduced impact on wildlife species compared to the proposed project.

Aesthetics

If mitigation were determined to be infeasible or not fully implemented, Alternative 2 would have less of an impact relating to nighttime lighting than the proposed project.

Air Quality, Biological Resources, Geology and Soils, Greenhouse Gas, Hydrology and Water Quality

Alternative 2 would have the same impacts as the proposed project, as mitigated, associated with air quality, biological resources, geology and soils, greenhouse gas, and hydrology and water quality impacts. If mitigation were not properly implemented or monitored under the proposed project, Alternative 2 would have fewer biological resources impacts than the proposed project. This is because nighttime lighting and noise could adversely impact biological resources, and Alternative 2 could reduce injury or mortality to wildlife by making wildlife easier to see and avoid during the daytime.

Land Use

If mitigation were determined to be infeasible under the proposed project, Alternative 2 would have fewer land use compatibility impacts than the proposed project (lighting and noise).

Noise

Alternative 2 would have the same noise impacts as the proposed project, as mitigated. However, if mitigation were determined to be infeasible under the proposed project, Alternative 2 would have less of an impact on noise than the proposed project.

6.5.3 Alternative 3: Revised ADV Construction Phasing Alternative

The discussion below considers the impacts of Alternative 3, Revised ADV Construction Phasing Alternative, as compared to the project. Alternative 3 would alter the reclamation schedule of the realignment and restoration of an approximately 5,800-linear-foot reach of the ADV to flow around, rather than through, Lake B until 2024-2025 rather than 2022-2023 as currently anticipated under the proposed project.

Biological Resources, Greenhouse Gas, Geology and Soils, Hydrology and Water Quality, Land Use, and Noise

Alternative 3 would have the same impacts as the proposed project associated with biological resources, greenhouse gas, geology and soils, hydrology and water quality, and land use impacts.

Aesthetics

Delaying the implementation of the ADV realignment until after reclamation activities in Lake A are complete would extend the duration of visible, temporary construction activities. Therefore, aesthetic impacts under this alternative would be greater compared to the proposed project.

Air Quality

Delaying the implementation of the ADV realignment until after reclamation activities in Lake A are complete would avoid concurrent reclamation activities of Lake A reclamation and ADV realignment and restoration activities. Therefore, daily NO_x emissions, the cause of the significant and unavoidable impacts of this project, would be reduced. Under this alternative, 125.42 pounds (lbs) of daily NOx emissions would be saved in 2022 and deferred to a future year (such as 2024). Therefore, instead of daily NOx emissions of 230.85 lbs/day for 2022, Alternative 3 would result in 105.44 lbs/day. This represents an approximately 54 percent reduction in daily NOx emissions

compared to the proposed project. Even under this alternative, the daily NOx exceedance beyond the BAAQMD CEQA Significance Threshold of 54 lbs/day will remain but the extent to which the threshold is exceeded will be reduced.

Noise

Limiting daily reclamation activities to either Lake A reclamation (2022-2023) or ADV realignment and restoration 2024-2025) could also reduce noise impacts by reducing noise intensity of reclamation activities and vehicle trips by avoiding concurrent reclamation in the various areas of the site. Thus, under Alternative 3, there would be a reduced amount of reclamation activities occurring at the same time. However, sensitive receptors' noise exposure would increase in duration, even though noise intensity would be less, compared to the proposed project. Therefore, Alternative 3 would have less of a noise impact than the proposed project regarding noise intensity, but a greater impact regarding duration of temporary construction noise.

As Alternative 3's air quality and noise impacts would be less than the proposed project, Alternative 3 would be the environmentally superior alternative.

6.5.4 Alternative 4: Reduced Capacity of Lake A Diversion Structure Alternative

The discussion below considers the impacts of Alternative 4 as compared to the project. Alternative 4 would reduce the capacity of the Lake A Diversion Structure to ensure that more water is retained in the ADV rather than being diverted to Lake A.

Aesthetics

Under Alternative 4, the diversion structure would be smaller than the one envisioned in the proposed project. Therefore, visual impacts are expected to be less under Alternative 4 compared to the proposed project.

Air Quality

Under Alternative 4, the diversion structure would be smaller than the one envisioned in the proposed project. Due to the smaller size of the diversion structure, less equipment and less time would be needed to construct the smaller diversion structure under Alternative 4 compared to the proposed project. Therefore, Alternative 4 would have less impacts regarding daily emissions, and air quality impacts would be less than the proposed project.

Biological Resources

Under Alternative 4, the diversion structure would be smaller than the one envisioned in the proposed project. Due to the smaller size of the diversion structure, additional water would be retained in the ADV. In turn, fewer impacts associated with waters of the U.S., wetlands and biological species in the ADV would occur. Therefore, fewer impacts to biological resources would occur under Alternative 4 compared to the proposed project.

Geology and Soils

Under Alternative 4, less water would be diverted from the ADV than under the proposed project (200 cfs compared to 500 cfs). Water being diverted into Lake A at a slower rate and a lower volume may result in less erosion at the Lake A outfall. Mitigation measures have been incorporated into the project to reduce erosion impacts to less than significant. Therefore, impacts regarding geology and soils are anticipated to be similar between Alternative 4 and the proposed project. However, implementation of Alternative 4 would reduce the need for

mitigation, and potential geology and soils impacts would be less under Alternative 4 when compared to the project if the mitigation measures to reduce erosion were not properly implemented.

Greenhouse Gas

Alternative 4 would have the less impacts associated with greenhouse gas than the proposed project because less time and construction equipment (and associated GHG emissions) would be needed to construct the smaller diversion structure.

Hydrology and Water Quality

Under Alternative 4, there would be less water diverted from the ADV than would occur under the proposed project (200 cfs compared to 500 cfs). This would allow for more water to be retained in the ADV, which would retain a more functional hydrological regime in the ADV. Thus, impacts associated with hydrology and water quality would be less under Alternative 4 compared to the proposed project.

Land Use

Under Alternative 4, the diversion structure would be smaller than the one identified in the proposed project. Thus, Alternative 4 would not meet all of the objectives of the proposed project, particularly Objective 6, which provides: "Carry out the objectives of the LAVQAR and Zone 7 Agreement for implementation of the Chain of Lakes on the portions of land controlled by CEMEX." The Zone 7 Agreement requires construction of a diversion structure capable of diverting the first 500 cfs. As a result, consistency with this objective would require negotiations between Zone 7, the Applicant, and the Community Development Agency of Alameda County. If Zone 7 is unwilling to revise the contract and/or the Community Development Agency determines that reduced diversion is inconsistent with LAVQAR, then Alternative 4 would have more land use consistency impacts than the proposed project.

Noise

The Alternative 4 smaller diversion structure would take less equipment and less time to construct the facility as compared to the proposed project. Therefore, construction related noise impacts would be less under Alternative 4 compared to the proposed project.

6.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA §15126.6(e)(2) requires that an EIR identify the environmentally superior alternative. CEQA also requires that if the environmentally superior alternative is the No Project Alternative, the EIR must also identify an environmentally superior alternative from the remaining alternatives. In consideration of the alternatives evaluation presented above, the Alternative 1: No Project—Reclamation of Existing Conditions Alternative would result in fewer impacts as compared to the project and the other alternatives considered. As such, the County must identify the environmentally superior alternative from the remaining alternatives.

Based on the analysis above and excluding the No Project Alternative Reclamation of Existing Conditions Alternative, the County concludes that Alternative 3, Revised ADV Construction Phasing Alternative, is the environmentally superior alternative due to reduced impacts to daily NOx emissions and daily noise impacts.

The alternatives analysis and conclusions reached regarding the environmentally superior alternative do not determine the ability of Alternative 4 to be an economically viable option for the Applicant.

7—OTHER CEQA TOPICS

7.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires the consideration of a range of additional issues extending beyond analysis of project-specific impacts. This section of the subsequent environmental impact report (SEIR) contains analysis of the following additional CEQA-mandated discussions:

- Mandatory Findings of Significance (Section 15065[a] and Section XXI of the Appendix G of CEQA Guidelines)
- energy consumption and conservation (Section 15126.4[b] and Appendix F of CEQA Guidelines), and
- significant unavoidable adverse impacts (Section 15126. 2[c]),
- irreversible/irretrievable commitment of resources (Section 15126.2[d]),
- growth-inducing impacts (Section 15126.2[e])

7.2 MANDATORY FINDINGS OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on the CEQA mandatory findings of significance if it would:

a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory;

b) Have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.); or

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Under the *Livermore Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report* (LAVQAR EIR) these impacts were determined to be less than significant. However, as stated in the Initial Study (see Appendix A-1, "Initial Study," of this SEIR) new information and changed circumstances at the site, discussed at length in Sections 4.1 through Chapter 5 of this SEIR, could alter this determination.

Impact 7-1: Substantially Degrade the Quality of the Environment, Reduce Habitat of a Fish or Wildlife Species, Cause a Fish or Wildlife Population to Drop Below Self-Sustaining Levels, Threaten to Eliminate a Plant or Animal Community, Substantially Reduce the Number or Restrict the Range of a Rare or Endangered Plant or Animal or Eliminate Important Examples of the Major Periods of California History or Prehistory

Section 4.3, "Biological Resources," of this SEIR evaluates biological resources, including impacts from the proposed project on fish and wildlife habitat, biological communities, protected wetlands, and rare or endangered plant species. The SEIR analysis for this CEQA topic determined that the proposed project would have a less than significant impact on biological resources with mitigation incorporated. As a result of this determination, the proposed project would also have a less than significant impact on Impact 7-1 with several Mitigation Measures, listed below, incorporated. Furthermore, the proposed project's potential to eliminate important examples of major periods of California history of prehistory was determined to be less than significant in the Initial Study (see Appendix A-1).

Level of Significance: Potentially significant.

Mitigation Measures: Relevant mitigation measures required to reduce this impact to a less than significant level include the following measures from Section 4.3, "Biological Resources," of this SEIR:

- Mitigation Measure 4.3-1a: Obtain Regulatory Entitlements and Authorizations
- Mitigation Measure 4.3-1b: Special Status Amphibian and Reptile Species
- Mitigation Measure 4.3-1c: Nesting Raptors
- Mitigation Measure 4.3-1d: Nesting Birds
- Mitigation Measure 4.3-1e: Loggerhead Shrike
- Mitigation Measure 4.3-1f: Tricolored Blackbird
- Mitigation Measure 4.3-1g: Burrowing Owl
- Mitigation Measure 4.3-1h: Special Status Bats
- Mitigation Measure 4.3-2a: Special Status Plants
- Mitigation Measure 4.3-2b: Riparian Habitat
- Mitigation Measure 4.3-3: 1:1 Wetland Compensation Ratio

Level of Significance after Mitigation: Less than significant.

Impact 7-2a: Impacts that are Individually Limited but Cumulatively Considerable: Conflict with Air Quality Plan

Section 4.2, "Air Quality," and Chapter 5, "Cumulative Impacts," of this SEIR evaluate the proposed project's potential impacts to air quality, including an evaluation of consistency with applicable air quality plans. As described in Section 4.2 and Chapter 5, the Bay Area Air Quality Management District's (BAAQMD) 2017 Clean Air Plan is the applicable air quality plan for the project and the County. Consistency with the air quality plan is determined by whether the project would hinder implementation of control measures identified in the air quality plan or result in growth of population or employment that is not accounted for in local and regional planning. The Clean Air

Plan requires consistency with Airborne Toxic Control Measures (ATCMs) for idling trucks and on- and off-road diesel using vehicles (BAAQMD 2017). Mitigation Measure 4.2-1 below provides for adherence to these ATCMs.

The Clean Air Plan contains control measures that identify actions to be taken by the air district, local government agencies, and private enterprises to reduce stationary and mobile sources of criteria pollutants and ozone precursors and Toxic Air Contaminant (TAC) emissions in the San Francisco Bay Area Air Basin (SFBAAB) (BAAQMD 2017). As discussed under Impact 4.2-2 below, the proposed project would result in a cumulatively considerable impact due to daily oxides of nitrogen (NOx) emissions in year 2022. Therefore, project emissions would hinder the air district in its goals for reducing significant air pollutants in the air basin in the short-term. However, the daily NO_X exceedances are related to construction activities required for the reclamation of Lake A and the realignment of the Arroyo del Valle. As such, the emissions are only temporary in nature. Furthermore, the annual NO_X emissions in year 2022 would not exceed the annual thresholds. The remainder of the model years are below the applicable thresholds for all criteria pollutants. Furthermore, as outlined in Impact 4.2-2 below, reducing emissions to a less than significant level would require daily operations to be limited to shorter windows compared to proposed 8 to 12-hour days, which would extend the life of reclamation, thereby also potentially increasing emissions associated with an extended life of the reclamation activities. Therefore, the proposed project's estimated NOx emissions would constitute a significant and unavoidable impact on consistency of this portion of the Clean Air Plan in the short term.

Level of Significance Before Mitigation: Significant.

Mitigation Measure: Implement Mitigation Measure 4.2-1, "Off-road Equipment Plan" (see Section 4.2, "Air Quality," of this SEIR)

Significance After Mitigation: Significant and Unavoidable.

Impact 7-2b: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutants ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$

Section 4.2, "Air Quality," and Chapter 5, "Cumulative Impacts," of this SEIR evaluate the proposed project's potential impacts to air quality, including an evaluation of cumulatively considerable increases of criteria pollutants. As described in Section 4.2 and Chapter 5, proposed project operations associated with reclamation would emit criteria air pollutants, including reactive-organic gases (ROG), NO_X, carbon monoxide (CO), sulfur oxides (SO_X), respirable particulate matter (PM_{10}), and particulate matter ($PM_{2.5}$) from construction equipment and from mobile equipment and motor vehicles associated with excavation, grading/fill, and construction of water management facilities at Lakes A and B.

Section 4.2 presents the daily and annual criteria air pollutants and ozone precursor emissions analyses. The modeling results from *the Air and Greenhouse Gas Emissions Study's* (Appendix C-1) indicate that project criteria pollutant emissions are below applicable BAAQMD thresholds of significance for CEQA except for daily emissions of NOx. Therefore, the proposed project's estimated ROG, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions would constitute a less than significant impact.

Level of Significance: Less than Significant.

Mitigation Measure: None required

Impact 7-2c: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutant NOx

As described in Section 4.2 and Chapter 5, the modeling results from the *Air and Greenhouse Gas Emissions Study* (Appendix C-1, "Air and Greenhouse Gas Emissions Report") indicate that project criteria pollutant emissions are below applicable BAAQMD thresholds of significance for CEQA except for daily emissions of Nitrogen Oxide (NO_x). Daily emissions of NO_x are exceeded only in model year 2022 (see Table 4.2-3 in Section 4.2), when Lake A reclamation activity and the Lake B realignment of the ADV are assumed to occur simultaneously. Even if evaluated separately, the year 2022 Lake A reclamation activities and 2022 Lake B realignment of the Arroyo would exceed the daily NO_x thresholds, but to a lesser degree. However, these daily NO_x exceedances are related to construction activities required for the reclamation of Lake A and the realignment of the Arroyo del Valle. As such, they are only temporary in nature. In 2022, the annual NO_x emissions would not exceed the annual thresholds (see Table 4.2-4 in Section 4.2). The remainder of the model years are below the applicable thresholds for all criteria pollutants.

Based on the results presented in Section 4.2, NOx emissions are estimated to exceed BAAQMD CEQA significance thresholds by approximately 425 percent in model year 2022. Mitigation Measure 4.2-1 would reduce daily NO_x emissions during Lake A reclamation and the Lake B realignment of the ADV by approximately 20 percent; however, NOx emissions would remain well above the threshold during this period of time (BAAQMD 2017). Reducing daily emissions to a less than significant level would require daily operations to be limited to shorter windows compared to the proposed 8 to 12-hour days, which would extend the life of reclamation, thereby also potentially increasing emissions over an extended life of the project. Therefore, this option is not feasible. In addition, because of the necessity to mobilize equipment each day, NOx emissions would be increased over the life of the project should additional daily reductions be implemented. Therefore, the proposed project's estimated NOx emissions would constitute a significant and unavoidable impact.

Level of Significance Before Mitigation: Significant.

Mitigation Measure: Implement Mitigation Measure 4.2-1, "Off-road Equipment Plan" (see Section 4.2, "Air Quality," of this SEIR)

Significance After Mitigation: Significant and Unavoidable.

Impact 7-3: Environmental Effects which will Cause Substantial Adverse Effects on Human Beings

Under CEQA, a change to the physical environment that might otherwise be minor must be treated as significant if people will be significantly affected. This factor relates to adverse changes to the environment of human beings generally, and not to effects on particular individuals. While changes to the environment that could indirectly affect human beings will be represented by all of the designated CEQA issue areas, those that could directly affect human beings include aesthetics, air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities, which are addressed in this SEIR and the Initial Study (see Appendix A-1).

Section 4.2 of this SEIR notes significant and unavoidable impacts relating to NO_x emissions. However, the daily NO_x exceedances are related to construction activities required for the reclamation of Lake A and the realignment of the ADV. As such, they are only temporary in nature. In 2022, the annual NO_x emissions would not exceed the annual thresholds. Because the exceedances would only have a short-term impact, this impact would not cause a substantial adverse effect on human beings. As described in Section 4.2 of this SEIR, human health risks from the proposed project would be less than significant.

The SEIR and Initial Study jointly state that the proposed project's impacts on greenhouse gas emissions, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities would be less than significant or less than significant with mitigation incorporated.

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures: Relevant mitigation measures required to reduce most of this impact to a less than significant level include:

- Mitigation Measure 4.1-1: Hourly Limitation of Construction Activities. See Section 4.1, "Aesthetics and Visual Resources."
- Mitigation Measure 4.2-1: Off-road Equipment Plan. See Section 4.2, "Air Quality."
- Mitigation Measure 4.4-1: Erosion Control Plan. See Section 4.4, "Geology and Soils."
- Mitigation Measure 4.4-2: Berm and Embankment Grading.
- Mitigation Measure 4.4-3: Embankment Fill Slope Geometry
- Mitigation Measure 4.4-4: Cut Slope of Lake B Adjacent to Realigned ADV
- Mitigation Measure 4.5-1a: Idling Times. See Section 4.5, "Greenhouse Gas Emissions."
- Mitigation Measure 4.5-1b: Idling Times for Diesel-powered Equipment.
- Mitigation Measure 4.5-1c: Equipment Maintenance.
- Mitigation Measure 4.5-1d: Alternative Fuel Plan.
- Mitigation Measure 4.5-1e: Local Building Materials.
- Mitigation Measure 4.5-1f: Recycle or Reuse Construction and Demolition Materials.
- Mitigation Measure 4.5-1g: On-site material hauling.
- Mitigation Measure 4.5-1h: Generator Alternative Fuel.
- Mitigation Measure 4.6-1: Development of SWPPP. See Section 4.6, "Hydrology and Water Quality."
- Mitigation Measure 4.6-2: Implementation of Adaptive Management Program for Iron
- Mitigation Measure 4.6-3: Conveyance to Avoid Lake B Silt Storage Area
- Mitigation Measure 4.8-1a: Notice of Activities. See Section 4.8, "Noise."
- Mitigation Measure 4.8-1b: Mufflers.

Level of Significance After Mitigation: Less than Significant.

7.3 ENERGY CONSUMPTION AND CONSERVATION

CEQA requires an environmental impact report to include a discussion of mitigation measures to minimize significant effects on the environment relating to "wasteful, inefficient, and unnecessary consumption of energy" (PRC Section 21100[b][3]). Appendix F of the CEQA Guidelines provides guidance for analyzing energy impacts in an EIR, but neither Appendix F itself, nor any authority, requires that an EIR discuss every possible energy impact or conservation measure listed in Appendix F. Energy impacts need only be discussed "to the extent relevant and applicable to the project" (CEQA Guidelines Appendix F, Section II).

Appendix F states that "the goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on fossil fuels such as coal, natural gas and oil, and (3) increasing reliance on renewable energy sources" (CEQA Guidelines Appendix F, Section I). In addition, factors suggested in Appendix F for determining and mitigating potentially significant energy impacts may be relevant to this project's fuel usage and energy consumption. These factors are discussed herein, where relevant, for mobile equipment and electric utility service used by the project.

7.3.1 Transportation Energy Use, Energy Requirements, and Efficiencies

Appendix F of the CEQA Guidelines suggests consideration of "the project's transportation energy use requirements and its overall use of efficient transportation alternatives" (CEQA Guidelines Appendix F Section II.C.6). It also suggests consideration of "the project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance, and/or removal" (CEQA Guidelines Appendix F Section II.C.1).

The project involves revisions to approved reclamation activities and does not involve permitted mining activities. The proposed project activities involving transportation that would consume energy include operation of heavy off-road equipment, trucks, worker traffic, vendor, and haul trips to conduct reclamation activities at the site. The emissions for these activities are included in Appendix C-1. These activities would be similar to the use under the approved reclamation plan.

The project is designed to use materials available on-site whenever possible, which would reduce the haul trips necessary, which in turn would reduce the amount of fuel the project requires. Materials stored on-site are also located to minimize the distance they must be moved to be placed in their final location, which conserves fuel use. Additionally, increasingly stringent federal and state regulations on engine efficiency combined with federal, state, and local regulations limiting engine idling times would further reduce the amount of transportation fuel demand. Considering these reductions in transportation fuel use and electricity use, the proposed project would not result in the wasteful and inefficient use of energy resources.

7.3.2 Energy Supply Capacity and Peak Period Demand

Appendix F of the CEQA Guidelines also suggests consideration of both "the effects of the project on local and regional energy supplies and on requirements for additional capacity" (CEQA Guidelines Appendix F Section II.C.2), and "the effects of the project on peak and base period demands for electricity and other forms of energy" (CEQA Guidelines Appendix F Section II.C.3).

Energy use related to the proposed project would be similar to the use under the approved reclamation plan. In addition, reclamation activities would use less energy than the mining and processing activities currently occurring on-site. Thus, no impact would occur related to this issue.

7.3.3 Energy-Efficient Project Features and Mitigation Measures

Appendix F of the CEQA Guidelines suggests consideration of "potential measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or removal" (CEQA Guidelines Appendix F Section II.D.1). Additionally, Appendix F suggests consideration of "energy conservation which could result from recycling efforts." (CEQA Guidelines Appendix F Section II.D.5.)

The project involves revisions to approved reclamation activities and does not involve permitted mining activities. The proposed project activities would consume energy through the operation of a temporary pump for a dry-season low-flow water diversion to support the realignment of the ADV, as well as the operation of heavy off-road equipment, trucks, worker traffic, and haul trips to conduct reclamation activities at the site.

As described in Section 4.5, "Greenhouse Gas Emissions," (GHG), the proposed project would implement the following mitigation measures that would reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or removal, as well as promote energy conservation resulting from recycling efforts.

> ***Mitigation Measure 4.5-1a:*** *Idling Times*
>
> *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. [Measure applies to idling times for all equipment].*
>
> ***Mitigation Measure 4.5-1b:*** *Idling Times for Diesel-powered Equipment*
>
> *Minimize the idling time of diesel-powered construction equipment to two minutes. [Measure applies to idling times for diesel-powered equipment only].*
>
> ***Mitigation Measure 4.5-1c:*** *Equipment Maintenance*
>
> *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.*
>
> ***Mitigation Measure 4.5-1e:*** *Local Building Materials*
>
> *Use at least 10 percent local building materials in construction (e.g., construction aggregates, concrete pipe).*
>
> ***Mitigation Measure 4.5-1f:*** *Recycle or Reuse Construction and Demolition Materials*
>
> *Recycle or reuse at least 50 percent of construction waste or demolition materials (e.g., during decommissioning and removal of processing plant facilities).*
>
> ***Mitigation Measure 4.5-1g:*** *On-site Material Hauling*
>
> *Perform on-site material hauling with trucks equipped with on-road engines (if less emissive of GHG emissions than off-road engines), if available.*

Furthermore, many of the state and local plans regarding energy efficiency (e.g., the Community Climate Action Plan (CCAP), an Element of the Alameda County General Plan [Alameda County 2014]) are focused on increasing building efficiency and renewable energy generation and reducing water consumption and vehicle miles traveled (VMT). The project would not include construction of a building or result in a land use that would increase energy use; thus, no policy specifically applies to the project. As described above, the proposed project activities would not result in wasteful or inefficient use of energy. Therefore, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Finally, the mitigated proposed project considers energy conservation from recycling efforts by implementing Mitigation Measure 4.5-1a through 4.5-1g.

7.3.4 Renewable Energy Sources

Appendix F of the CEQA Guidelines also suggests that the potential for use of "alternate fuels (particularly renewable ones) or energy systems" be discussed in an EIR (CEQA Guidelines Appendix F Section II.D.4).

As stated in Section 7.3.2 above, energy use related to the proposed project would be similar to the use under the approved reclamation plan. In addition, reclamation activities would use less energy than the mining and processing activities currently occurring on-site.

Electricity at the site is supplied by PG&E. The California Renewables Portfolio Standard (CRPS) requires that electrical service providers, such as PG&E, achieve the following percentages of energy provided from renewable sources: 33 percent by December 31, 2020 and 60 percent by 2030. By 2045, all retail sellers must procure 100 percent of their retail sales from CRPS-eligible resources (CPUC 2020). According to California Public Utility Commission (CPUC), in 2019 PG&E provided 39 percent of its energy from renewable sources (CPUC 2019). Because the project will obtain some electricity from PG&E or another supplier which much comply with the CRPS, a substantial portion of the energy used by the project would be generated from renewable sources. However, the project will primarily rely on mobile sources of energy, or fuel, for carrying out reclamation activities.

As described in Section 4.5, "Greenhouse Gas Emissions," the proposed project would implement Mitigation Measures 4.5-1b, "Alternative Fuel Plan," and 4.5-1h, "Generator Alternative Fuel," which would require a plan demonstrating that alternative fueled (e.g., biodiesel, electric) construction vehicles/equipment will represent at least 15 percent of the construction fleet and require alternative fuels for generators at construction sites such as propane or solar, or use electrical power, as feasible for each construction site.

7.4 SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

CEQA Guidelines Section 15126.2(c) requires that the EIR discuss significant environmental effect that cannot be avoided if the project is implemented, even with mitigation incorporated. According to Guidelines Section 15126(c):

> Describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described.

This EIR identifies significant environmental effects that cannot be avoided if the project is implemented. As discussed in greater length in Section 2.1 of Chapter 2, "Project Description," changes in circumstances at the project site and in applicable regulatory requirements necessitate the preparation of an amended reclamation plan that addresses these changes and provides reclamation objectives that can be feasibly accomplished and permitted by regulatory agencies. If the County decides to approve this project, the County will adopt a Statement of Overriding Considerations that explains the County's rationale as to why they approved the project notwithstanding the identified significant environmental effects that cannot be avoided, which are summarized below.

Table ES-2, "Summary of Project Impacts and Mitigation Measures," provides a summary of the project impacts identified and evaluated in the SEIR, presents mitigation measures identified in the SEIR, and lists the impact significance both without and with mitigation applied. The following impacts were found to be significant and unavoidable, as feasible mitigation is either unavailable or would not effectively reduce the severity of the impact to less than significant:

- Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (significant and unavoidable); and
- Impact 4.2-2a: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard: NO_x (significant and unavoidable).

The analysis also determined that the project significant and unavoidable impacts would result in the following significant cumulative impacts. (see Chapter 5, "Cumulative Impacts").

- Impact 7-2a: Impacts that are Individually Limited but Cumulatively Considerable: Conflict with Air Quality Plan (significant and unavoidable); and
- Impact 7-2b: Impacts that are Individually Limited but Cumulatively Considerable: Criteria Pollutant NOx (significant and unavoidable).

7.5 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES THAT WOULD BE CAUSED BY THE PROJECT SHOULD IT BE IMPLEMENTED

Public Resources Code Section 21100(b)(2)(B) and CEQA Guidelines Section 15126.2(d) require that the EIR discuss significant irreversible environmental changes that would be caused by the project should it be implemented. According to Guidelines Section 15126(d):

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The primary irreversible environmental changes caused by the project would be a commitment of nonrenewable resources needed to conduct revised reclamation activities, such as Arroyo del Valle (ADV) realignment, grading, excavating, and building the diversion and water conveyance structures. Nonrenewable and limited resources consumed during project construction and operation would include oil, diesel fuel, metal, plastic, aggregate materials, cement, and propane. However, the site is currently

subject to an approved reclamation plan, which would use these nonrenewable resources in similar fashion to the proposed project. The project site would be reclaimed to allow for water management. Areas not intended for water management are designated for agriculture or open space uses. The portion of the site intended for water management would not be available to future generations for uses other than water management.

The project includes design considerations and mitigation measures to reduce the likelihood of irreversible damage from environmental impacts that could be associated with the project. Environmental impacts that would occur as a result of the project are presented in Sections 4.1 through 4.8 of this SEIR and summarized in Table ES-2, "Summary of Project Impacts and Mitigation Measures."

7.6 GROWTH INDUCING ANALYSIS OVERVIEW

Public Resources Code (PRC) Section 21100(b)(5) specifies that an EIR must address a project's growth inducing impacts. CEQA Guidelines Section 15126.2(d) requires that the scope of the analysis "discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Direct growth inducing impacts occur when a project imposes new burdens on a community by directly inducing population growth, or by leading to the construction of additional developments in the same area. Indirect growth could be associated with project activities that remove physical obstacles to population growth, such as installation of transportation or utility infrastructure with excess capacity available to serve additional growth.

The proposed project is not expected to induce growth or result in secondary growth-inducing impacts. The project would not result in new employment opportunities, and therefore would not induce a demand for new housing and services. The nature of the project, revisions to an approved reclamation plan, is such that there would be no new direct customers and no incentive for other residences or businesses to locate nearby. Production of electricity from the project facilities is ongoing and would not create additional availability of energy resources beyond those already permitted for the facilities.

8—LIST OF PREPARERS

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8.1 LEAD AGENCY STAFF

Alameda County
Community Development Agency
Neighborhood Preservation and Sustainability Department
224 West Winton Avenue, Suite 111
Hayward, CA 94544-1215

- Bruce Jensen, Senior Planner, Alameda County Community Development Agency, Planning Department

8.2 CONSULTANTS AND OTHER INDIVIDUALS INVOLVED IN THE PREPARATION OF THE EIR

8.2.1 EIR Consultant

Benchmark Resources
2515 East Bidwell Street
Folsom, CA 95630

- Bruce Steubing, Principal and Project Director
- Andrew Heinemann, State Licensed Geologist
- Shelby Kendrick, Analyst
- Mark Hernandez, Graphics Production
- Katharina McKillip, Document Production Manager

8.2.2 EIR Subconsultants

Questa Engineering Corp.
Box 70356
1220 Brickyard Cove Road, Suite 206
Pt. Richmond, CA 94807

- Willard N. Hopkins, C.E.G.

Saxelby Acoustics LLC
915 Highland Pointe Drive, Suite 250
Roseville, CA 95678

- Luke Saxelby, Principal

Yorke Engineering, LLC
31726 Rancho Viejo Road, Suite 218
San Juan Capistrano, CA 92675

- Sara J. Head, Principal Scientist
- Anne McQueen

Stillwater Sciences
2855 Telegraph Ave, Suite 400
Berkeley, CA 94705

- Christian Braudrick, Senior Geomorphologist
- Nathanial Bulter, Environmental Engineer
- Meghan Keever, Senior Botanist

9—REFERENCE AND RESOURCES

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10—ACRONYMS

µg/L	micrograms per liter
µm	micrometers
A	Agriculture land use designation
AADT	annual average daily trips
AB	assembly bill
ABAG	Association of Bay Area Governments
AC	alternating current
ACSMO	Alameda County Surface Mining Ordinance
ACTC	Alameda County Transportation Commission
ADV	Arroyo del Valle
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AFY	acre-feet per year
AF	acre-feet
AMP	Adaptive Management Plan
ANSI S1.4	American National Standards Institute for Type 1 sound level meters
APN	Assessor Parcel Number
ARB	air resources board
ATCM	Airborne Toxic Control Measure
AVL	Arroyo del Valle at Livermore
BAAQMD	Bay Area Air Quality Management District
BAC	Bollard Acoustical Consultants
BACT	best available control technology
BART	Bay Area Rapid Transit
BAU	business as usual
BCDC	San Francisco Bay Conservation and Development Commission
bgs	below ground surface

BMPs	best management practices
BO	biological opinion
BRA	Biological Resources Assessment
CAAQS	California ambient air quality standards
CAFE	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAFÉ	corporate average fuel economy
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act of 1988
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDFG	California Department of Fish and Game (former)
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	White House Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CIP	Capital Improvement Program
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level

CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
County	Alameda County
CPUC	California Public Utilities Commission
CRLF	California redlegged frog
CTS	California tiger salamander
CUP	conditional use permit
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DEIR	draft environmental impact report
DNL	day-night noise level
DOC	California Department of Conservation
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DWR	California Department of Water Resources
EA	Environmental Assessment
EACCS	East Alameda County Conservation Strategy
EBRPD	East Bay Regional Park District
ECAP	East County Area Plan
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act of 2007
EMFAC	Emission Factor Model
EPA	U.S. Environmental Protection Agency

EPSP	East Pleasanton Specific Plan
ESA	Federal Endangered Species Act
°F	Fahrenheit
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FICON	Federal Interagency Commission on Noise
FIS	Flood Insurance Study
FS	Factor of Safety
ft/s	feet per second
GHG	greenhouse gases
GIS	geographic information system
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GVWR	Gross vehicle weight rating
GWP	global warming potential
H_2O	water vapor
HCP	Habitat Conservation Plan
HDPE	High-density polyethylene
HEC-RAS	Hydrologic Engineering Centers River Analysis System
HFCs	Hydrofluorocarbons
HI	hazard index
hp	horsepower
HRA	health risk assessment
Hz	hertz
IAQ	Indoor Air Quality
IBC	International Building Code
in/sec	inches per second

INSP	Isabel Neighborhood Specific Plan
IPaC	Information for Planning and Conservation
IS/MND	Initial Study/Mitigated Negative Declaration
IPCC	Intergovernmental Panel on Climate Change
KOP	key observation point
L50	median noise value
LAVQAR Specific Plan	Livermore-Amador Valley Quarry Area Reclamation Specific Plan
LAVQAR EIR	Livermore-Amador Valley Quarry Area Reclamation Specific Plan Environmental Impact Report
Lb/day	Pounds per day
LCFS	Low Carbon Fuel Standard
LDAMDV	light duty auto – medium duty vehicle
Ldn	day-night noise level (also DNL)
Leq	equivalent noise level
LEV	low-emission vehicle
LGOP	Local Government Protocols
Lmax	maximum noise level
Ln	statistical sound level
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Levels
mg/dscm	milligrams per dry standard cubic meter
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mL/hr	milliliters per hour
MMRP	mitigation monitoring and reporting plan
MMT	million metric tons
$MMTCO_2E$	million metric tons of CO2E
mph	miles per hour

MPO	Metropolitan Planning Organizations
MRZs	Mineral Resource Zones
msl	mean sea level
MT	million tons
MTC	Metropolitan Transportation Commission
MW	megawatts
N	Nitrate
NAAQS	national ambient air quality standards
NAS	National Academy of Sciences
NCDC	National Climatic Data Center
ND	negative declaration
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NF_3	nitrogen trifluoride
NHTSA	Department of Transportation's National Highway Traffic Safety Administration
N_2O	nitrous oxide
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOA	notice of availability
NOAA	National Oceanic and Atmospheric Administration
NOC	notice of completion
NO	nitric oxide
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	nephelometric turbidity units
O_3	ozone

OEHHA	Office of Environmental Health Hazard Assessment
OFFROAD	Off-Road Emissions Inventory Program model
OHWM	ordinary high water mark
ONRW	Outstanding National Resource Waters
OPR	Governor's Office of Planning and Research
OSHA	U.S. Department of Labor Occupational Safety and Health Administration
PCC	Portland cement concrete
PDA	Priority Development Areas
PD	planned development land use designation
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PM_{10}	respirable particulate matter
$PM_{2.5}$	particulate matter
ppm	parts per million
PPV	Peak Particle Velocity
PRC	Public Resources Code
PSD	prevention of significant deterioration
PV	photovoltaic
QP-H	Quarry Pond H
RCNM	roadway construction noise model
RCIS	Regional Conservation Investment Strategy
REL	reference exposure level
RFS	Renewable Fuel Standard
rms	root mean square
ROAR	Responsible Official Affirmation of Reporting
ROG	reactive organic gases
RPS	Renewables Portfolio Standard
RTAC	Regional Targets Advisory Committee

RTP	Regional Transit Plan
RWQCB	Regional Water Quality Control Board
SAFE	Safer Affordable Fuel-Efficient
SCEC	Southern California Earthquake Center
SCS	sustainable communities strategy
SEIR	subsequent environmental impact report
SF_6	hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SMARA	Surface Mining and Reclamation Act
SMO	surface mining ordinance
SMP	surface mining permit
SO_2	sulfur dioxide
SO_x	sulfur oxides
SP	service population
SR	State Route
SVP	Society of Vertebrate Paleontologists
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TBD	to be determined
TBP	toxic best practices
TDS	toxic dissolved solids
TP	test pit
tpy	tons per year
U	unclassified land use designation
UBC	Uniform Building Code of 1997

umhos/cm	micromhos per centimeter
USBR	U.S. Bureau of Reclamation
USDA	United States Department of Agriculture
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	velocity decibels
VDECS	Verified Diesel Emission Control Strategies
VMT	vehicle-miles traveled
WCI	Western Regional Climate Action Initiative
WDR	Waste Discharge Requirement
WSA	Water Supply Assessment
yr	year
ZEV	zero emission vehicle
Zone 7	Zone 7 Water Agency

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BENCHMARK RESOURCES

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