CLAYTON QUARRY
RECLAMATION PLAN AMENDMENT

DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME I: EXECUTIVE SUMMARY AND CHAPTERS 1—10

State Clearinghouse No. 2020020323

FEBRUARY | 2022

Lead Agency
Contra Costa County, Department of Conservation and Development

BENCHMARK RESOURCES

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Lead Agency
Contra Costa County, Department of Conservation and Development
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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

CEMEX Construction Materials Pacific, LLC (CEMEX) has applied to Contra Costa County (County) for an amendment to their approved reclamation plan ("approved reclamation plan"), which is the proposed project under the California Environmental Quality Act (CEQA). The proposed project is a modification of the approved reclamation plan and current land use, drainage, and encroachment entitlements (County File Number: CDLP15-2030/31) to allow for current state reclamation standards to be achieved during reclamation and updated grading and drainage plans. The project site location is identified on Figure ES-1, "Regional Location." Except as specifically described below, CEMEX proposes no change to other elements of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, hours of operation). The vested mining operations are not the subject of this application, rather only the mine reclamation activities are the subject of this application.

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 Draft Environmental Impact Report (EIR).

PUBLIC REVIEW

This Draft EIR 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 EIR, which accompanies this document.

This Draft EIR and all supporting technical documents and reference documents are available for public review at:

Contra Costa County, Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, California 94553

And at the link below:

https://www.contracosta.ca.gov/7605/Major-Planning-Applications-Under-Consid

During the 45-day public comment period, written comments on the Draft EIR may be submitted to the County Department of Conservation and Development at the following address:

Attn.: Mr. Francisco Avila, Principal Planner
Contra Costa County Department of Conservation and Development
30 Muir Road
Martinez, CA 94553
Email: Francisco.Avila@dcd.cccounty.us

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

OVERVIEW OF THE PROPOSED PROJECT

Site Location

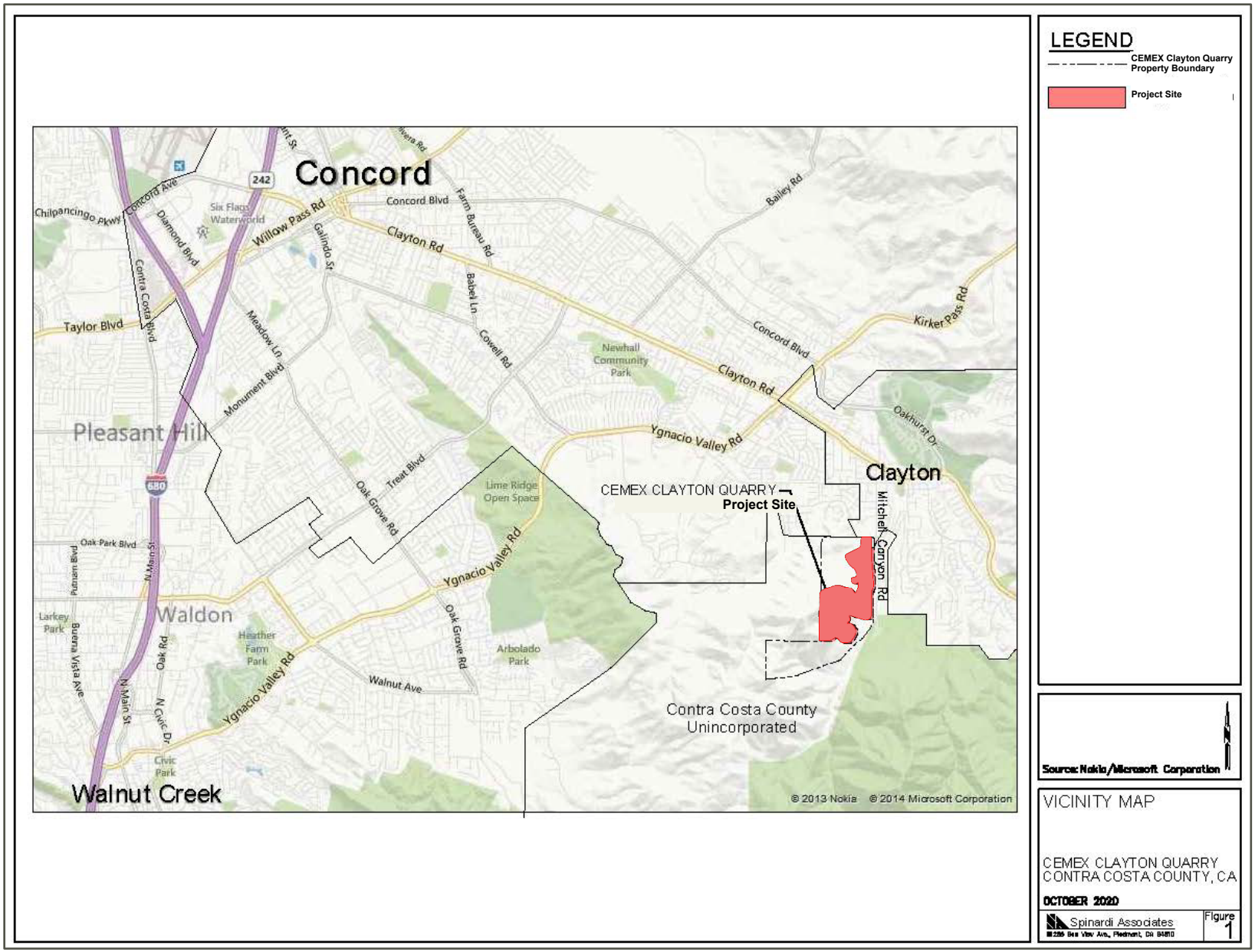
The project reclamation plan boundary comprises approximately 190 acres of a 335-acre property situated at 515 Mitchell Canyon Road, on the east side of Mount Zion, approximately one-half mile south of the City of Clayton in an unincorporated portion of the County, as shown on Figure ES-1.

Project Objectives

The project purpose is to revise the approved reclamation plan to respond to changed circumstances that have resulted in the approved reclamation plan's infeasibility and to provide an environmentally superior alternative for reclamation. Carrying out reclamation under the currently approved reclamation plan would require the handling of large quantities of overburden and would result in significant uncontrolled post-reclamation drainage releases into Mitchell Creek and the residential neighborhoods below the quarry.

In response to a Notice to Comply issued by the County on November 17, 2014, CEMEX filed an application for a Clayton Quarry Reclamation Plan Amendment on July 20, 2015, which the County assigned Application No. CDLP15-02031 (2015 Application). In its Notice to Comply, which required submittal of final grading and drainage plans for the quarry, the County provided an option for CEMEX to file an application to modify the conditions of approval of its current permits for an alternative drainage design for quarry reclamation. The 2015 Application presented CEMEX's initial application to modify current permits for an alternative final grading and drainage plan that would provide for a future quarry lake with a controlled stormwater outflow. In August 2015, the County deemed the 2015 Application incomplete and requested additional information and technical study in the areas of biology, slope stability, and hydrology. In response, CEMEX filed a new application in June 2017, which supersedes the 2015 Application in its entirety. Specifically, CEMEX proposes an amendment to the approved reclamation plan through adoption of a revised reclamation plan for the Clayton Quarry, dated October 2020 ("project" and/or "revised reclamation plan"). The project requires amendments to CEMEX's current land use entitlements, LUP #363-67 and LUP #2054-81. The amendment to the LUP #363-67 operating permit is only for purposes of conforming any reclamation-related conditions of approval to the revised reclamation plan.

[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).



SOURCE: Compass Land Group 2020; modified by Benchmark Resources in 2021

NOTE: Figure not to scale

Regional Location

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure ES-1

BENCHMARK RESOURCES

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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) Complete reclamation over an anticipated period of 47 years (including monitoring) to a post-mining land use of open space;
2) Facilitate reduction of the surface mining footprint that leaves the east rim of the quarry intact, providing a visual buffer between the quarry and view sheds to the east;
3) Create permanent overburden fill areas to be revegetated;
4) Establish final grading contours reflecting a maximum depth of excavation at elevation 110 feet above mean sea level (msl) with finish slope angles that achieve adequate factors of safety;
5) Establish a final drainage plan that provides for the formation of a lake and control of stormwater discharge from the project site in a manner that would not result in downstream flooding;
6) Facilitate revegetation of the quarry east rim, overburden fill areas and processing plant site to a combination of chaparral and grassland habitats that feature California native seed mixes;
7) Clarify pre-Surface Mining and Reclamation Act (SMARA) (1976) disturbance areas, including any areas disturbed outside the boundaries of the 1983 approved reclamation plan;
8) Achieve current State reclamation standards during reclamation;
9) Maximize the extraction of the remaining available on-site hardrock resources through the anticipated reclamation end date of 2068, including a change in the final bottom elevation of excavation the quarry pit to 110 feet msl;
10) Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate and thereby reduce regional vehicle miles travelled (VMT); and
11) Establish a reclamation plan that limits the emission of air quality criteria pollutants, toxic air contaminants, and dust.

Project Features

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

The 1983 approved reclamation plan envisions reclamation of an open-pit, multi-bench quarry over an anticipated period of 120 years. The approved plan also includes construction of an interim mining drainage slot that would provide a generally uncontrolled hydrologic connection to natural drainage courses north of the project site, removal of processing plants and equipment, revegetation of certain quarry benches with pine trees, revegetation of the backfilled quarry floor with natural grasses and wildflowers, and removal of the east rim of the quarry pit with backfill to elevation 650 feet msl providing for the reclaimed quarry to drain via sheet flow toward Mitchell Canyon Road and the reclaimed plant site to drain to the City of Concord.

The applicant seeks to amend the approved reclamation plan to include changes that are more sensitive to the environment and surrounding community, while achieving current surface mining reclamation standards. The planned postmining end use is open space. The proposed project would include:

- Reclamation over an anticipated period of 47 years to a post-mining land use of open space;
- Reduction of the surface mining disturbance footprint relative to the existing reclamation plan that leaves the east rim of the quarry intact, providing a visual buffer between the quarry and view sheds to the east;
- Permanent overburden fill areas;
- Final grading contours reflecting a maximum depth of excavation at elevation 110 feet msl with finish slope angles that achieve adequate factors of safety;
- A final drainage plan that provides for the quarry pit to slowly fill with stormwater following reclamation to form a quarry lake with a controlled outflow that conveys stormwater to natural drainage courses and man-made drainage facilities;
- Removal of facilities, structures and equipment associated with mining;
- Revegetation of the quarry east rim, overburden fill areas, and processing plant site to a combination of chaparral and grassland habitats that feature California native seed mixes;
- Elimination of requirements to backfill, grade, and compact the quarry floor and benches, given that the planned open space end use would provide for a future quarry lake;
- Clarification of pre-SMARA (1976) disturbance areas, including any areas disturbed outside the boundaries of the approved reclamation plan;
- A tree permit request to remove 79 out of 123 existing trees, to be replaced with 400 foothill pine trees that would form a tree screen along the quarry east rim;
- Compliance with current State reclamation standards to be achieved during reclamation;
- A new screening berm to create a visual barrier between the existing processing plant site and residential communities to the north; and
- An exception request to Division 914 of the Contra Costa Code of Ordinances (Offsite Collect and Convey requirement).

Consistent with the approved reclamation plan, the project would continue to remove facilities, structures, and equipment associated with mining, including the plant site. Post-reclamation, the applicant would continue to own the property, which would be used for open space. Table ES-1, "Comparison of Proposed Project to Approved Reclamation Plan," offers a comparison between major features of the approved reclamation plan and the proposed project.

TABLE ES-1
COMPARISON OF PROPOSED PROJECT TO APPROVED RECLAMATION PLAN

Reclamation Feature	1983 Approved Reclamation Plan	Proposed Project
Elevations	Mining floor elevation: 500 feet msl Reclamation floor elevation: 650 feet msl	Mining floor elevation: 110 feet msl Reclamation floor elevation: 110 feet msl
End uses	Not specified.	Open space, which would provide for the quarry pit to slowly fill with stormwater to form a quarry lake with a controlled outflow.
Total area disturbed by mining and reclamation	Approximately 184 acres	Approximately 190 acres
Quarry pit area	Approximately 154 acres	Approximately 85 acres

Reclamation Feature	1983 Approved Reclamation Plan	Proposed Project
Quantity and type of mineral to be mined (from time of application):	Diabase: quantity noted as confidential Knoxville: quantity noted as confidential	Diabase: 23.8 million tons Knoxville: 4.6 million tons Total: 28.4 million tons
Termination date:	Anticipated 120 years from 1981, or year 2101	Anticipated 47 years from 2021, or year 2068
Quarry pit backfill:	Required to minimum floor elevation 650 feet msl, with minimum pit floor slope gradient of 2%.	Not required, although CEMEX may place overburden in the pit floor as part of reclamation.
East Rim:	Mined and eliminated to facilitate backfill	Left intact with tree screen.

Source: Compass Land Group 2020.
Notes: msl = above mean sea level

Required Approvals

As the local land use authority, Contra Costa 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 both CEQA and SMARA. 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 (Section 404 permit)
- U.S. Fish and Wildlife Service (Section 7 Consultation; Incidental Take Statement)

State Agencies

- California Department of Conservation, Division of Mine Reclamation (Reclamation Plan Advisory Review, 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/or Waters of the State permit)
- Contra Costa County Flood Control and Water Conservation District
- Contra Costa County, Department of Public Works

DRAFT EIR 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 (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 CEQA Appendix G criteria. The evaluation regarding the significance of those issues that are not discussed in detail in the Draft EIR is provided in the Initial Study (included as Appendix A-4, "Initial Study," of the Draft EIR) and discussed further in Chapter 1, "Introduction," of the Draft EIR.

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

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 Draft EIR:

- 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 EIR 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 D15126.6). The "no project" alternative, which considers what impacts would occur if conditions continue, must be considered (Guidelines Section 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 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 Draft EIR:

Alternative 1: No Project—Implementation of the Approved Reclamation Plan Alternative

Under the No Project—Implementation of the Approved Reclamation Plan Alternative, the County would not approve a Reclamation Plan Amendment. Instead, the project site would be reclaimed up to the final phase (Phase 1C) of the approved reclamation plan, consistent with existing permits.

Under this alternative, mining of the quarry pit beyond the bottom elevation of 500 feet above msl specified in the approved reclamation plan would not occur. Unlike the proposed project, Alternative 1 would not result in the creation of a quarry lake and would not leave the east rim intact. Instead, the east rim of the quarry would be excavated and overburden fill materials would be pushed into the quarry excavation such that a relatively flat reclaimed area with a slight slope toward the east would

exist. The final elevation of the backfilled quarry pit area would be about 650 feet msl. Rather than a diversion control structure as included in the proposed project, drainage from the site would flow overland across the site. Drainage from the quarry area would flow generally uncontrolled into Mitchell Creek. No tree screen or berms would impede the views of the exposed quarry pit and benches under this alternative. The end use would remain open space.

Alternative 2: Prohibited Nighttime Reclamation Alternative

Under Alternative 2: Prohibited Nighttime Reclamation Alternative, would be the same as the proposed project except all project-related reclamation, including construction of the control outlet structure, overburden fill areas, screening berm, and grading for final reclamation would only be permitted to take place during operating hours of 7:00 a.m. to 7:00 p.m. Monday through Friday and 8 a.m. to 5 p.m. Saturday and Sunday. Some nighttime lighting of project facilities would still be required for security and safety purposes under this alternative; however, reclamation construction lighting and reclamation-related traffic traveling to and from the project site would be prohibited between the hours of 7 p.m. and 7 a.m. Monday through Friday and 5 p.m. and 8 a.m. Saturday and all-day Sunday. The current operational (i.e. non-reclamation) mining activities would not be subject to this restriction. Alternative 2 would meet all of the proposed project objectives.

Alternative 3: In-kind Replacement for Protected Oaks Alternative

Alternative 3, In-kind Replacement for Protected Oaks Alternative, would be the same as the proposed project except the 77 blue oak and valley oak trees that would be removed would be replaced with in-kind species at a 3:1 ratio instead of the proposed 400 foothill pines. Alternative 3 would meet all of the proposed project objectives.

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 Draft EIR, presents mitigation measures identified in the Draft EIR, and lists the impact significance both without and with mitigation applied. As shown in Table ES-2, several impacts are found to be less than significant and do not require mitigation. 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. No impacts were found to be significant and unavoidable. The mitigation measures (e.g., Mitigation Measure 4.1-4, "Daily Limitation of Construction Hours") do not apply to the existing, vested mine and processing plant operations which are not part of this project.

In addition to evaluating project-specific impacts, an EIR 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 determined that the project would not result in significant and unavoidable cumulative impacts (see Chapter 5, "Cumulative Impacts").

TABLE ES-2
SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
INITIAL STUDY			
CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES *No further analysis was performed for the purposes of this Draft EIR. Please see analysis provided in Appendix A-4, "Initial Study."*			
Impact 5b: Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5 **Impact 5c: Disturb any human remains, including those interred outside of formal cemeteries** **Impact 18a: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)** **Impact 18b: A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1**	PS	**Mitigation Measure CUL-1:** The following Mitigation Measures shall be implemented during project demolition/construction activities. 1. A program of on-site education to instruct all demolition/construction personnel in the identification of prehistoric and historic deposits shall be conducted prior to the start of any grading or construction activities. 2. If archaeological materials are uncovered during grading, trenching, or other onsite excavation, all work within 30 yards of these materials shall be stopped until a professional archaeologist who is certified by the Society for California Archaeology (SCA), and/or Society of Professional Archaeology (SOPA), and the Wilton Rancheria Tribe, have had an opportunity to evaluate the significance of the find and suggest appropriate mitigation(s) if deemed necessary. **Mitigation Measure CUL-2:** Should human remains be uncovered during grading, trenching, or other on-site excavation(s), earthwork within 30 yards of these materials shall be stopped until the County coroner has had an opportunity to evaluate the significance of the human remains and determine the proper treatment and disposition of the remains. Pursuant to California Health and Safety Code Section 7050.5, if the coroner determines the remains may be those of a Native American, the coroner is responsible for contacting the Native American Heritage Commission (NAHC) by telephone within 24 hours. Pursuant to California Public Resources Code Section 5097.98, the NAHC will then determine a Most Likely Descendant (MLD) tribe and contact them. The MLD tribe has 48 hours from the time they are given access to the site to make recommendations to the land owner for treatment and disposition of the ancestor's remains. The land owner shall follow the requirements of Public Resources Code Section 5097.98 for the remains.	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
DRAFT ENVIRONMENTAL IMPACT REPORT			
AESTHETICS/VISUAL RESOURCES			
Impact 4.1-1: Substantial Adverse Effect on a Scenic Vista	NI	None required.	NI
Impact 4.1-2: Substantially Damage Scenic Resources Within View of a Scenic Highway	NI	None required.	NI
Impact 4.1-3: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings	LTS	None required.	LTS
Impact 4.1-4: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area	PS	**Mitigation Measure 4.1-4: Daily Limitation of Reclamation-Related Construction Activities** All reclamation-related construction activities shall be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday.	LTS
AIR QUALITY			
Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	LTS	None required.	LTS
Impact 4.2-2: 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	LTS	None required.	LTS
Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LTS	None required.	LTS
Impact 4.2-4: Result in Other Emissions Adversely Affecting a Substantial Number of People	LTS	None required.	LTS
BIOLOGICAL RESOURCES			
Impact 4.3-1: Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species due to Ground Surface Disturbance and Vegetation Removal	PS	**Mitigation Measure 4.3-1a: Conduct Botanical Surveys** To avoid and minimize potential impacts to special status plants, the following shall apply: 1. Prior to the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) in previously undisturbed 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 species. The survey shall occur within 30 days prior to commencement of ground-	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		disturbing activity. If a special-status species is detected, the applicant shall avoid activity in the area if doing so is feasible in conjunction with meeting project objectives. 2. If rare plant species are found and avoidance is not feasible, and the plant is listed under CESA, then the applicant shall mitigate on a 1:1 ratio and obtain and comply with necessary permits from CDFW. **Mitigation Measure 4.3-1b: Conduct Special-status Vertebrates Surveys, Personnel Training, and Avoidance** To avoid and minimize impacts to special status vertebrates, 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 overburden fill areas, tree screen, diversion outlet structure, or other areas, a qualified biologist shall conduct a pre-construction survey of suitable habitat in the project reclamation area. 2. The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor, and survey results) to the Department of Conservation and Development 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 vertebrate species and their habitat. 4. If a special-status species is detected, all work will be halted until the animal has left the work area or, if necessary, has been relocated by a qualified biologist with applicable authorizations. **Mitigation Measure 4.3-1c: Conduct Bat Surveys, Avoidance, and Employ Approved Eviction When Necessary** To avoid and minimize potential impacts to special status bats, the following shall apply:	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		1. If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of suitable bat habitat, including structures and trees with large cavities, during the winter hibernaculum season (e.g., November 1 through March 31), then a qualified biologist shall conduct a pre-construction survey within 50 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 Department of Conservation and Development 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 50-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 50-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 within 50 feet until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to CDFW. **Mitigation Measure 4.3-1d: Wildlife Exclusion Fence** A temporary wildlife exclusion fence shall be installed around the perimeter of any previously undisturbed area prior to the initiation of new ground-disturbing activities to discourage small wildlife from entering the site. The	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		fence shall have escape funnels pointing outwards to allow small wildlife to exit the work area. **Mitigation Measure 4.3-1e: Biologist Presence** A qualified biologist shall be present for all initial reclamation-related ground-disturbing activities in areas that have not been previously disturbed. **Mitigation Measure 4.3-1f: No Monofilament Plastics** To prevent the entrapment of Alameda striped racers and other wildlife, monofilament plastics shall not be used for erosion control. **Mitigation Measure 4.3-1g: Conduct Nesting Bird Surveys and Avoidance** To avoid and minimize impacts to nesting birds, the following shall apply: 1. If reclamation-related ground disturbing activity 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 5 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 Department of Conservation and Development 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 centered on the nest and of a size determined by a qualified biologist shall be established and maintained around the nest to prevent nest failure. Active nests shall be monitored weekly to ensure that the exclusion zones are intact and that the young are developing. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged and are foraging independently as determined by a qualified	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		biologist, unless otherwise approved by the Conservation and Development Department and CDFW. **Mitigation Measure 4.3-1h: Burrowing Owl Protection** To avoid and minimize potential impacts to western burrowing owl, the following shall apply: 1. If reclamation-related ground disturbing activity is to commence in previously undisturbed areas 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 proposed 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 Conservation and Development 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	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		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 Division 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 Division 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 Division 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 Streambed Alteration Agreement (Agreement), if any, 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 4.3-1i: Bumblebee Protection** To minimize the take of Crotch's and western bumblebee species, a qualified entomologist shall conduct a take avoidance survey for active bumblebee colony nesting sites in any previously undisturbed area prior to each phase of reclamation-related construction, if the work will occur during the flying season. Survey results, including negative findings, shall be submitted to CDFW prior to implementing reclamation-related ground-disturbing activities. Surveys shall take place during flying season when the species is most likely to be detected above ground, between March 1 and September 1. The surveys shall occur when temperatures are above 60 degrees Fahrenheit	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		(°F), on sunny days with wind speeds below 8 miles per hour, and at least 2 hours after sunrise and 3 hours before sunset. Surveyors shall conduct transect surveys focusing on detection of foraging bumble bees and underground nests using visual aids such as binoculars. At minimum, a survey report should provide the following: If no Crotch's or western bumble bees or potential Crotch's or western bumble bees are detected, no further mitigation is required. If potential Crotch's or western bumble bees are seen but cannot be identified, the applicant shall obtain authorization from CDFW to use nonlethal netting methods to capture bumble bees to identify them to species. If protected bumble bee nests are found, a plan to protect bumble bee nests and individuals to ensure no take of Crotch's and western bumblebee species shall be developed by a qualified entomologist in consultation with the Conservation and Development Department. The Conservation and Development Department shall approve the plan prior to implementation. **Mitigation Measure 4.3-1j: Take Coverage for Federally Listed Species** If required by the USFWS for certain previously undisturbed areas to support reclamation-related construction activity, the applicant shall obtain take coverage for federally listed species (Alameda striped racer and California red-legged frog). This may be from a Section 7 Consultation resulting in a Biological Opinion (BO) or a Section 10 consultation resulting in a Habitat Conservation Plan (HCP). All avoidance, minimization, and mitigation measures in the BO or HCP shall be implemented as a condition for operating in that area. **Mitigation Measure 4.3-1k: Trapping Federally Listed Species** If necessary, a qualified biologist approved under an active BO or HCP will be contracted to trap and move federally listed species (Alameda striped racer and California red-legged frog) to nearby suitable habitat. **Mitigation Measure 4.3-1l: Take Permit for State Listed Species** If required by CDFW, the applicant shall obtain a California Endangered Species Act Section 2081 Incidental Take Permit (ITP) for the Alameda striped racer associated with new reclamation-related disturbances in previously undisturbed areas. If further future information warrants their inclusion, the permit shall cover Crotch's and/or western bumble bee as well. All avoidance,	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		minimization, and mitigation measures in the ITP shall be implemented as a condition for operating in that area.	
Impact 4.3-2: Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species due to Exposure to Quarry Pit Lake Water	LTS	None required.	LTS
Impact 4.3-3: Have an Adverse Effect on Riparian Habitat or Other Sensitive Natural Communities	S	**Mitigation Measures:** Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1j, 4.3-1k, and 4.3-1l (see Impact 4.3-1) and Mitigation Measures 4.3-6a through 4.3-6i (see Impact 4.3-6). **Mitigation Measure 4.3-3: Acquire Necessary Permits for Jurisdictional Features** The applicant shall mitigate these impacts at an approved ratio and shall obtain required permits to impact the jurisdictional ephemeral stream from the relevant regulatory agencies, including the USACOE, CDFW, and RWQCB, as applicable. These permits will include conditions and Best Management Practices (BMPs) that the quarry shall implement during construction. These permits may also specify mitigation, which the quarry shall provide as specified by the agencies. All terms of the permits shall be implemented as a condition of the project. If permits require mitigation at a higher ratio than 1:1, that requirement will be met.	LTS
Impact 4.3-4: Have an Adverse Effect on Protected Wetlands	PS	**Mitigation Measures:** Implement Mitigation Measure 4.3-3 (see Impact 4.3-3)	LTS
Impact 4.3-5: Interfere with Native Resident or Migratory Fish or Wildlife Species Movement, Corridors, or Nursery Sites	PS	**Mitigation Measures:** Implement Mitigation Measures 4.3-1b, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-1j, 4.3-1k, and 4.3-1l (see Impact 4.3-1).	LTS
Impact 4.3-6: Conflict with Local Policies or Ordinances Protecting Biological Resources	S	**Mitigation Measure 4.3-6a: Tree Avoidance** The project reclamation plan shall avoid as many protected trees as feasible. The project plan shall incorporate placement of tree protection fencing outside of the avoided trees' drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12. Preserved trees on the project site shall be avoided during construction by following best management practices as outlined in the following measures.	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		Mitigation Measure 4.3-6b: Tree Maintenance During Construction, Root Zones Tree roots often extend far beyond the canopy drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12. Excavation work within the drip line of avoided trees shall not be allowed. **Mitigation Measure 4.3-6c: Tree Protection Fencing** Prior to the start of fill disposal, Tree Protection Fencing (TPF) shall be installed. The TPF shall be maintained during the entire fill disposal process to prevent direct damage to trees and their growing environment. The TPF shall consist of blaze orange barrier fencing supported by metal "Trail" fence posts, unless wildlife exclusion fencing is in place. The TPF shall be placed at a distance that is at or outside of the drip lines, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12, of avoided trees. The TPF shall be installed as part of the site preparation before fill disposal or tree removal/trimming begins and shall be installed under the supervision of a qualified arborist. The TPF shall not be altered in any way that would increase the encroachment on the avoided trees during fill activities. **Mitigation Measure 4.3-6d: Use of Heavy Equipment** Heavy machinery shall not be allowed to operate (excavation, grading, drainage and leveling) or park within the drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12, of avoided trees unless approved by a qualified arborist. **Mitigation Measure 4.3-6e: Storage of Construction Materials and Debris** Fill materials shall not be placed against the trunks of avoided trees. Disposal or depositing of oil, gasoline, chemicals or other harmful materials within the drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12, is prohibited. **Mitigation Measure 4.3-6f: Incidental Damage to Protected Trees** The attachment of wires, signs, and ropes to any protected tree is strictly prohibited. Workers may be allowed to rest under trees, but they must not injure trees by any means. The County shall be notified if any damage occurs	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		to a retained tree during fill disposal so that proper treatment may be administered. **Mitigation Measure 4.3-6g: Trimming** All pruning of protected trees shall be performed by a licensed contractor familiar with International Society of Arboriculture pruning guidelines and shall comply with the guidelines established by the International Society of Arboriculture, Best Management Practices, Tree Pruning, and any special conditions as determined by a certified arborist or the County's Director. A certified arborist shall coordinate all activities involving protected trees near the construction zone that are not permitted for removal. **Mitigation Measure 4.3-6h: Tree Planting Monitoring and Establishment** Tree planting shall be monitored according to the methods outlined in Section 2.9.6 of the Reclamation Plan for successful establishment of installed trees. Establishment will be considered successful if 50 percent of the number of plantings required by the County have become established with no significant intervention for at least two years. **Mitigation Measure 4.3-6i: Oak Tree Plan** The operator of the Clayton Quarry shall consult with an arborist to develop a plan that identifies where oak trees can be planted within the project site upon the completion of mining without substantially exacerbating wildfire risk on the site. The oak tree plan shall be provided to the Contra Costa County Fire Protection District and to the Planning Division for review and comment, to confirm that the additional oaks would not substantially exacerbate wildfire risk by connecting the two very high fire hazard severity zones on the project site. Oak trees shall be planted on the site during final reclamation activities as indicated in the final oak tree plan. Tree planting shall be monitored according to the methods outlined in Section 2.9.6 of the Reclamation Plan for the successful establishment of installed trees. The monitoring shall verify that the following performance standard is met: the planted trees must be healthy and must survive three years without intervention to be considered established. If the survival rate is less than 80 percent after three years, the trees that did not survive shall be replaced. The verification monitoring shall continue until the 80 percent survival rate of the	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
		trees planted under the oak tree plan has been achieved for three consecutive years.	
Impact 4.3-7: Conflict with Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other Local or Regional Plan Protecting Biological Resources	LTS	None required.	LTS
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	LTS	None required.	LTS
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	LTS	None required.	LTS
Impact 4.4-3: Exposure of People or Structures to Potential Substantial Adverse Effects, as Result of Seismically-Induced Liquefaction, Lateral Spreading, and Settlement	LTS	None required.	LTS
Impact 4.4-4: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Rockfalls and Landslides within the Quarry	PS	**Mitigation Measure 4.4-4: Slope Stability Monitoring** The operator of the Clayton Quarry (Operator) shall retain a County-approved qualified engineering geologist or geotechnical engineer experienced in evaluating the stability of slopes within the Knoxville formation at the diabase/Knoxville contact. These slopes shall be inspected every 5 years, or at an alternative frequency, if recommended by the engineering geologist or geotechnical engineer and approved by the County. The results of the inspection and any recommendations by the engineering geologist or geotechnical engineer shall be documented and submitted to the County within 30 days following the inspection. The report shall be accompanied with the Board of Supervisor's approved fee for review by the County Geologist. Inspections shall summarize the rock types observed, provide detailed rock mass descriptions and measured discontinuity orientations, observed seepage conditions, and compare the observed conditions relative to those identified in the project geotechnical evaluation completed for the revised reclamation plan by Golder Associates Inc. [Golder] in 2017 ("Geotechnical Evaluations for Revised Reclamation Plan,	LTS

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		Clayton Quarry, Clayton, California"). The geotechnical evaluation shall be appended to the Mitigation Monitoring and Reporting Program and shall be incorporated into the conditions of approval for the project. If the conditions vary from the geotechnical evaluation document characterization, the engineering geologist or geotechnical engineer shall evaluate whether the changes have an adverse impact on slope stability, and, if so, provide feasible recommendations to mitigate the slope stability concerns to achieve a minimum static factor of safety of 1.3 and a pseudo-static factor of safety greater than 1.0. Recommendations shall be implemented within 6 months by the Operator, if feasible, otherwise as soon as practicable thereafter, upon approval by the County.	
Impact 4.4-5: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Overburden Fill Areas	LTS	None required.	LTS
Impact 4.4-6: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Plant Site Area	LTS	None required.	LTS
Impact 4.4-7: Result in Substantial Soil Erosion or the Loss of Topsoil	PS	**Mitigation Measures:** Implement Mitigation Measure 4.6-4a and 4.6-4b (see Impact 4.6-4).	LTS
Impact 4.4-8: 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	PS	**Mitigation Measures:** Implement Mitigation Measure 4.4-4 (see Impact 4.4-4).	LTS
Impact 4.4-9: 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	LTS	None required.	LTS
Impact 4.4-10: Directly or indirectly Destroy a Unique Geological Feature	NI	None required.	NI
Impact 4.4-11: Directly or indirectly Destroy a Unique Paleontological Resource	PS	**Mitigation Measure 4.4-11: Paleontological Resources** The operator of the Clayton Quarry (Operator) shall inform its employees and contractors involved in ground disturbing activities associated with reclamation of the sensitivity of the project area for paleontological resources	LTS

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		and shall include the following directive in employee and contractor training materials: "The subsurface of the quarry may be sensitive for paleontological resources in the Knoxville formation (the east side of the quarry pit) and in the alluvium (east side of the Clayton Quarry property). If paleontological resources are encountered during subsurface disturbance, all ground disturbing activities within 100 feet of the find shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Employees and contractors shall not collect or move any paleontological materials. Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as animal tracks. Employee/contractor acknowledges and understands that excavation or removal of paleontological material is prohibited by law and constitutes a misdemeanor under California Public Resources Code, Section 5097.5." A copy of the training materials and documentation of completed training shall be provided to the County for review upon request. If a paleontological resource is encountered during implementation of the revised reclamation plan, the Operator shall notify the County and all activity within 100 feet of the find shall halt until it can be evaluated by a qualified paleontologist. The paleontologist shall evaluate the resource and determine its significance. If significant, the paleontologist shall notify the County and the Operator, in consultation with the County and the paleontologist, shall prepare a treatment plan such that the fossil would be recovered and scientific information preserved. The paleontologist shall implement the treatment plan in consultation with the County and Operator prior to allowing work in the 100-foot radius to resume.	
GREENHOUSE GAS EMISSIONS			
Impact 4.5-1: 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 CCR Title 13, Section 2485). Clear	LTS

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		signage shall be provided for construction workers at all access points. [Measure applies to idling times for all equipment other than diesel-powered 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: 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.	LTS	None required.	LTS
HYDROLOGY AND WATER QUALITY			
Impact 4.6-1: Violate Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality	PS	**Mitigation Measure 4.6-1a: Compliance with General Permit Requirements** Compliance with requirements set forth in applicable NPDES and SWPPP. The operator of the Clayton Quarry (Operator) shall comply with the	LTS

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		requirements set forth in any applicable NPDES program or SWPPP requirements, including, but not limited to, submitting a Notice of Intent prior to the start of activities under the Construction General Permit, updating the existing SWPPP as required by the Industrial General Permit based on changes to site conditions, and implementing typical BMPs for the protection of water quality. **Mitigation Measure 4.6-1b: RWQCB Discharge Approvals** The operator of the Clayton Quarry (Operator) shall submit a Report of Waste Discharge to the San Francisco Regional Water Quality Control Board (RWQCB) prior to discharging any pit lake water. The report shall include information on the estimated characteristics of the quarry pit lake water quality as described in the "Quarry Lake Water Quality and Aquatic Life Criteria" Technical Memorandum, prepared by EMKO Environmental, Inc., July 2, 2021. The Operator shall implement any WDRs issued by the RWQCB in response to the Report of Waste Discharge. The Operator shall inform the County that a Report of Waste Discharge has been submitted, and shall provide the County with evidence of NPDES coverage and WDR compliance prior to any off-site discharge and at any time thereafter upon County request. **Mitigation Measure 4.6-1c:** Funding Mechanism Within 30-days after the effective date of this permit, the Operator shall submit for review and approval by the Director of Conservation and Development, or designee, ("Director") a proposed funding mechanism (e.g., a bond) and cost basis to secure costs related to the required post-reclamation activities. The funding mechanism shall be in a form and an amount reasonably acceptable to the Director and shall be sufficient to cover costs associated with those post-reclamation activities described in Table 1 below, including the activities required by Mitigation Measure 4.6-7. The funding mechanism shall be held by the County, or held and managed by a third party approved by the Operator and County, as determined by the Director. On the fifth anniversary of this permit's effective date, and at five-year intervals thereafter, the Operator shall submit an updated post-reclamation activity funding mechanism and cost basis to the Director for review and approval. The updated cost basis must be calculated to account for inflation and	

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<table>
<tr><th>Impact</th><th>Significance Before Mitigation</th><th>Mitigation Measures</th><th>Significance After Mitigation[1]</th></tr>
<tr><td></td><td></td><td>updated materials, construction, and maintenance costs, sufficient for the Director to determine whether the funded amount sufficiently secures anticipated costs related to the required post-reclamation activities. The Operator shall submit a Condition of Compliance review application (or equivalent) and associated deposit with each 5-year review to cover County time and material costs related to the Director's review of the updated funding mechanism and cost basis.

Table 1
Clayton Quarry Lake Drainage Post-Reclamation Inspection and Maintenance Activities
<table>
<tr><th>Item</th><th>Description</th><th>Implementation Timing</th></tr>
<tr><td colspan="3">Inspection Items</td></tr>
<tr><td>1</td><td>Quarry pit drainage outlet structure, including:
a. Condition of concrete bulkhead (e.g., spalling, exposed reinforcing, cracks, joint openings)
b. Condition of steel plate (e.g., abrasion, rust)
c. Condition of debris screen (e.g., abrasion, rust, connection to steel plate)</td><td>Annual inspection</td></tr>
<tr><td>2</td><td>24-inch HDPE drainage pipe (culvert), including:
a. Condition of pipe at inlet
b. Condition of pipe at manholes (2)
c. Condition of pipe connection at Mitchell Canyon Rd.</td><td>Annual inspection</td></tr>
</table></td><td></td></tr>
</table>

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Impact	Significance Before Mitigation	Mitigation Measures			Significance After Mitigation[1]
		3	Rip-rap mound above drainage outlet (e.g., scour, undermining, washout, or other damage)	Annual inspection	
		4	Quarry lake perimeter fencing	Annual inspection	
		Maintenance Items			
		5	Repairs to quarry pit drainage outlet structure (e.g., concrete facing and reinforcement)	Deficiencies to be addressed prior to next inspection; immediate repair if structural integrity of drainage outlet is in jeopardy	
		6	Clean-out of 24-inch HDPE drainage pipe (culvert)	Deficiencies to be addressed prior to next inspection; clean out sediment and debris prior to onset of rainy season, if needed	
		7	Maintenance of rip-rap mound (e.g., clean-out of sediment and debris and replacement of rip- rap rock)	Deficiencies to be addressed prior to next inspection; clean out sediment and debris and re-establish rip-rap protection prior to onset of rainy season, if needed	
		8	Repair damaged quarry lake perimeter fencing	Deficiencies to be addressed prior to next inspection; repair wire mesh and barbed wire, if needed	
Impact 4.6-2: Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge such that the Project May Impede Sustainable Groundwater Management of the Basin	LTS	None required.			LTS
Impact 4.6-3: Substantially Alter Drainage Patterns in a Manner Which Would Result in Erosion or Siltation Within Areas That Drain to the Northern Watershed	LTS	None required.			LTS

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Impact 4.6-4: Substantially Alter Drainage Patterns in a manner which would result in Erosion or Siltation within the Quarry, Mitchell Creek, and Transitional Watershed Areas	PS	**Mitigation Measure 4.6-4a: Incorporate Haul Road Erosion Control Measures** Incorporate erosion control measures into the revised reclamation plan consistent with recommendations of the "Runoff from East Rim Access and Upper Quarry Haul Roads" Memorandum, prepared by EMKO Environmental, Inc., April 18, 2017. The memorandum shall be appended to the Mitigation Monitoring and Reporting Program and shall be incorporated into the conditions of approval for the project. Erosion control measures include, but are not limited to the installation of drainage controls such as cross slopes and rock-lined ditches along the portion of east rim haul road located in the Knoxville formation. **Mitigation Measure 4.6-4b: Incorporate Quarry Pit and Overburden Fill Area Erosion Control Measures** Incorporate erosion control measures into the revised reclamation plan consistent with recommendations of the "Geotechnical Evaluations for Revised Reclamation Plan, Clayton Quarry, Clayton, California" Report, prepared by Golder Associates, May 2017. The geotechnical evaluation shall be appended to the Mitigation Monitoring and Reporting Program and shall be incorporated into the conditions of approval for the project. These erosion control measures include, but are not limited to, the placement of rip-rap and vegetation along the quarry pit lake shore, as well as the following measures to be implemented within the overburden fill areas: • 2.5H:1V or flatter slopes with wheel and track rolling compactive effort; • Slope heights under 50 feet vertical, unless interim benches are used for drainage control; • Use of "J-ditches" or functional equivalent where beneficial to direct drainage horizontally across fill areas to designated drainage channels; • Fill slopes revegetated with appropriate erosion control seed mix; and	LTS

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		• Erosion control fabric, wattles and other BMPs implemented as needed to reduce erosion and improve stability of the surficial layer of soil.	
Impact 4.6-5: Substantially Alter Drainage Patterns in a manner which would result in On-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System	LTS	None required.	LTS
Impact 4.6-6: Substantially Alter Drainage Patterns in a manner which would result in Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System	LTS	None required.	LTS
Impact 4.6-7: Substantially Alter Drainage Patterns in a manner which would result Uncontrolled Discharges from the Quarry Pit Lake and Thereby result in On- Or Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System	PS	**Mitigation Measures:** Implement Mitigation Measures 4.6-1c (see Impact 4.6-1). **Mitigation Measure 4.6-7: Quarry Pit Lake Outlet Structure and Pipeline Maintenance** Following the construction of the quarry pit lake outlet structure and drainage pipeline, the operator of the Clayton Quarry shall retain a qualified professional engineer approved by the County to conduct inspection and as-needed repair of the drainage pipeline annually, in the late summer/early fall, and after any earthquake in Contra Costa County that generates strong (modified Mercalli Intensity VI) or greater ground shaking. Reports documenting inspection findings and any repair completed shall be submitted to the County after each inspection.	LTS
Impact 4.6-8: Substantially Alter Drainage Patterns in a Manner Which Would Impede or Redirect Flood Flows	NI	None required.	NI
Impact 4.6-9: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation	LTS	None required.	LTS
Impact 4.6-10: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	PS	**Mitigation Measures:** Implement Mitigation Measures 4.6-1a and 4.6-1b (see Impact 4.6-1).	LTS
LAND USE AND PLANNING			
Impact 4.7-1: Physically Divide an Established Community	NI	None required.	NI
Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations	LTS	None required.	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation[1]
NOISE			
Impact 4.8-1: Generation of a Substantial Temporary or Permanent Increase in Ambient Noise Levels in the Vicinity of The Project Site in Excess of Standards Established in the Local General Plan or Noise Ordinance, or Applicable Standards of Other Agencies	PS	**Mitigation Measures:** Implement Mitigation Measure 4.1-4 (see Impact 4.1-4). **Mitigation Measure 4.8-1: Noise Reduction During Removal of Processing Plant and Support Structures** To reduce potential construction-equipment reclamation-related noise impacts associated with the removal of processing plant and support structures on the project site, the following multi-part mitigation measure shall be implemented during the removal of the processing plant and support structures: • The operator of the Clayton Quarry (Operator), employees, and the demolition contractor shall ensure that all internal combustion engine-driven equipment are equipped with mufflers that are in good condition and appropriate for the equipment. • The demolition contractor shall locate stationary noise-generating equipment as far as feasible from sensitive receptors. In addition, the construction contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site. • The demolition contractor shall locate, to the maximum extent practical, on-site equipment in staging areas to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site. • The demolition contractor shall prohibit unnecessary idling of internal combustion engines. • An on-site complaint and enforcement manager (manager) shall be available to respond to and track noise complaints. The telephone number of the manager shall be posted at the entrance to the quarry site. The manager shall be trained to use a sound level meter and should be available during all construction hours to respond to noise complaints. The manager shall be responsible for responding to any noise complaints regarding construction noise and for coordinating with the adjacent land uses. The manager will determine the cause of any complaints and coordinate with the demolition team to	LTS

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		implement effective measures (considered technically and economically feasible, such as noise curtains, temporary sound walls, berms, etc.) to correct the problem. The complaints and noise reduction measures shall be documented and provided to the County upon request. • At least one week prior to commencement of the removal of the processing plant and supporting structures, the Operator shall prepare a notice that the demolition work will commence. The notice shall be posted at the site and mailed to all the owners and occupants of property within 300 feet of the exterior boundary of the project site as shown on the latest equalized assessment roll. The notice shall include the telephone number of the complaint and enforcement manager. A copy of the notice shall be mailed to Contra Costa County Department of Conservation and Development. • This mitigation measure 4.8-1 only applies to reclamation activities, not to operational activities.	
Impact 4.8-2: Generate Excessive Groundborne Vibration or Groundborne Noise from Reclamation Activities	LTS	None required.	LTS
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	**Mitigation Measures:** Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-1i, 4.3-1j, 4.3-1k, 4.3-1l, 4.3-3, 4.3-6a, 4.3-6b, 4.3-6c, 4.3-6d, 4.3-6e, 4.3-6f, 4.3-6g, 4.3-6h, and 4.3-6i (see Section 4.3), CUL-1, and CUL-2 (see Appendix A-4).	LTS
Impact 7-2: Impacts that are Individually Limited but Cumulatively Considerable	PS	**Mitigation Measures:** Implement Mitigation Measures 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, 4.5-1e, 4.5-1f, and 4.5-1g	LTS
Impact 7-3: Environmental Effects which will Cause Substantial Adverse Effects on Human Beings	PS	**Mitigation Measures:** Implement Mitigation Measures 4.1-4, 4.4-4, 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, 4.5-1e, 4.5-1f, 4.5-1g, 4.6-1a, 4.6-1b, 4.6-1c, 4.6-4a, 4.6-4b, 4.6-7, 4.8-1.	LTS

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1—INTRODUCTION

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This Draft Environmental Impact Report (Draft EIR) has been prepared by Contra Costa 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]), to evaluate the potentially significant environmental effects associated with an amendment to CEMEX Construction Materials Pacific, LLC's (CEMEX's) approved 1983 reclamation plan for the Clayton Quarry (the "approved reclamation plan"), 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 Draft EIR will be used in the planning and decision-making process by the lead agency (the County) and any responsible or 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 Draft EIR. A detailed description of the proposed project that is the subject of this Draft EIR can be found in Chapter 2, "Project Description."

1.1 PURPOSE OF AN 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. An EIR is not intended to recommend either approval or denial of a project. Rather, an EIR is a document whose primary purpose is to disclose all potential environmental impacts associated with an action or "project."

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

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

The purpose of a draft EIR is to provide an opportunity for agency representatives and the public to review and comment on the adequacy of the draft EIR before it is prepared as a final EIR document and certified. This Draft EIR 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 Draft EIR in accordance with PRC Section 21082.1(c)(1).

1.2 SUMMARY OF THE PROPOSED PROJECT

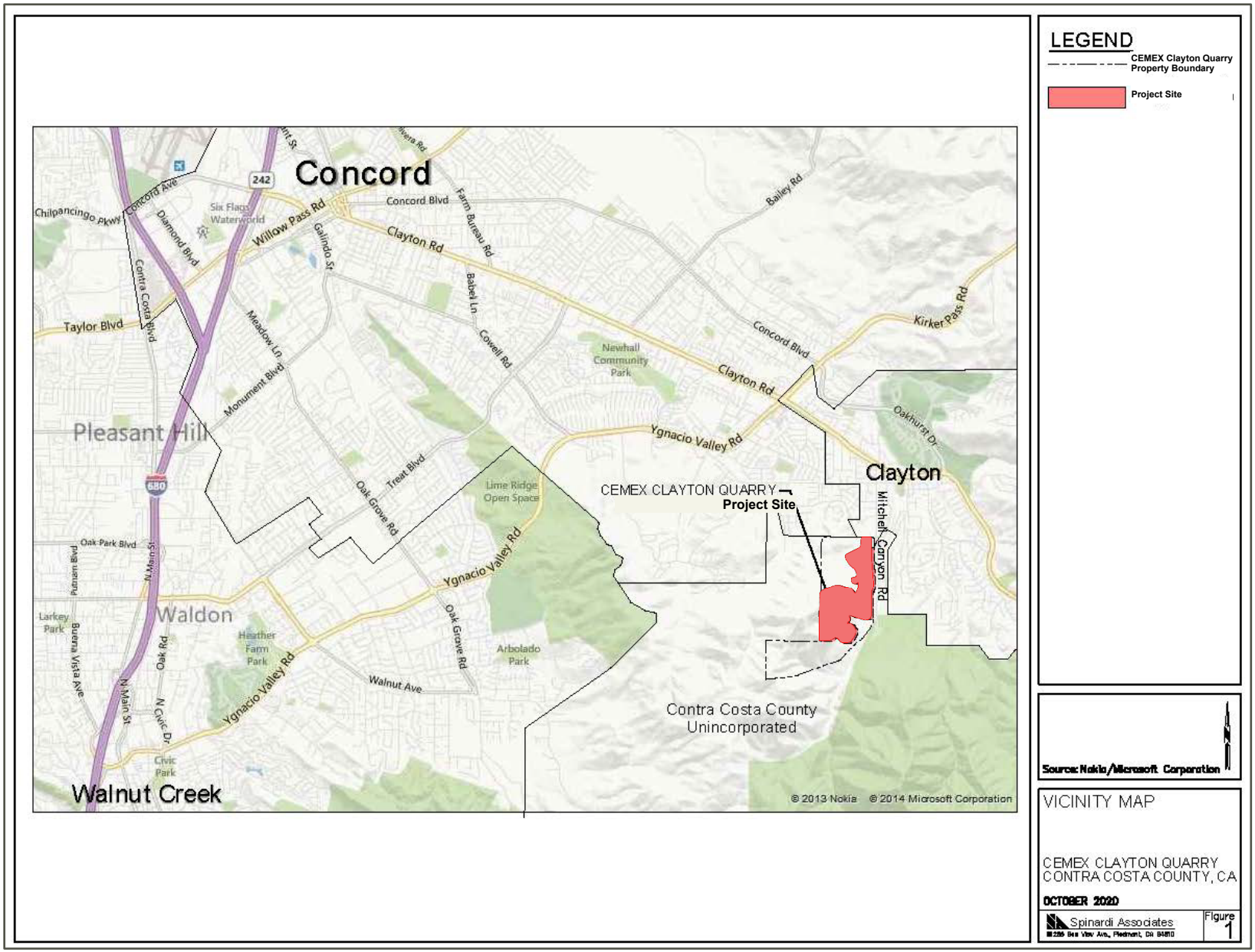
CEMEX operates Clayton Quarry, an approximately 335-acre hard rock mining operation within the unincorporated area of Contra Costa County, on the east side of Mount Zion, approximately one-half mile south of the City of Clayton (see Figure 1-1, "Regional Location" and Figure 1-2, "Site Location"). CEMEX's mining operation at the Clayton site is vested as documented in the current land use entitlements, LUP #363-67 and LUP #2054-81.

In response to a Notice to Comply issued by the County on November 17, 2014, CEMEX filed an application for a Clayton Quarry Reclamation Plan Amendment on July 20, 2015, which the County assigned Application No. CDLP15-02031 ("2015 Application"). In its Notice to Comply, which required submittal of final grading and drainage plans for the quarry, the County provided an option for CEMEX to file an application to modify the conditions of approval of its current permits for an alternative drainage design for quarry reclamation. The 2015 application presented CEMEX's initial application to modify current permits for an alternative final grading and drainage plan that would provide for a future quarry lake with a controlled stormwater outflow. In August 2015, the County deemed the 2015 application incomplete and requested additional information and technical studies in the areas of biology, slope stability, and hydrology. In response, CEMEX submitted the current application in June 2017, which supersedes the 2015 application in its entirety. Specifically, CEMEX proposes an amendment to its approved reclamation plan through adoption of a revised reclamation plan for the Clayton Quarry, dated October 2020 ("project" and/or "revised reclamation plan"). The project requires amendments to CEMEX's current land use permits (LUP), LUP #363-67 and LUP #2054-81. In considering the application and the discretionary action of approving the project, the County is required to conduct environmental review pursuant to CEQA.

CEMEX, and its predecessors-in-interest, have been continuously mining for Diabase and Knoxville aggregates at the Clayton Quarry since at least 1948. In addition to mining and reclamation, existing permitted and accessory uses at the Clayton Quarry include aggregate processing, blasting, as well as ancillary uses such as aggregate stockpiling, load-out, sales, and equipment storage and maintenance. CEMEX has applied to the County for an amendment to their approved 1983 reclamation plan for the Clayton facility (the "approved reclamation plan"). The Clayton Quarry Reclamation Plan Amendment Project is the proposed project under CEQA.

CEMEX seeks to amend the approved reclamation plan to accommodate changed circumstances resulting in the approved reclamation plan's infeasibility. Carrying out reclamation under the 1983 plan would require the handling of large quantities of overburden and would result in significant uncontrolled post-reclamation drainage releases into Mitchell Creek and the residential neighborhoods below the quarry.

Under the proposed reclamation plan amendment, CEMEX would implement a final drainage plan for the quarry, conveying stormwater from the reclaimed quarry to the nearest natural drainage course and adequate man-made drainage facilities, and a final grading plan, maximizing the production and utilization of available aggregate resources and ensuring a reliable source of construction material for the Contra Costa County and Bay Area markets for the next approximately 47 years. Furthermore, reclamation is anticipated to take place over a period of approximately 47 years to a post-mining land use of open space. Finally, the reclamation plan also includes permanent overburden fill areas, revegetation, removal of facilities, structures, and equipment associated with mining, and elimination of the requirements for backfill, grading, and compacting the quarry benches and floor. Instead, the project would provide for a future quarry lake and open space, and installation of a screening berm, all of which are described in detail in Chapter 2. While providing for an increased depth of mining in a smaller overall mining footprint, the final quarry configuration proposed under the Revised Reclamation Plan will have similar surface acreage as allowed under the approved reclamation plan. Overall, the quarrying, processing, transport, and sales activities at the quarry will remain consistent with the current vested mining operations.



SOURCE: Compass Land Group 2020; modified by Benchmark Resources in 2021

NOTE: Figure not to scale

Regional Location

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 1-1

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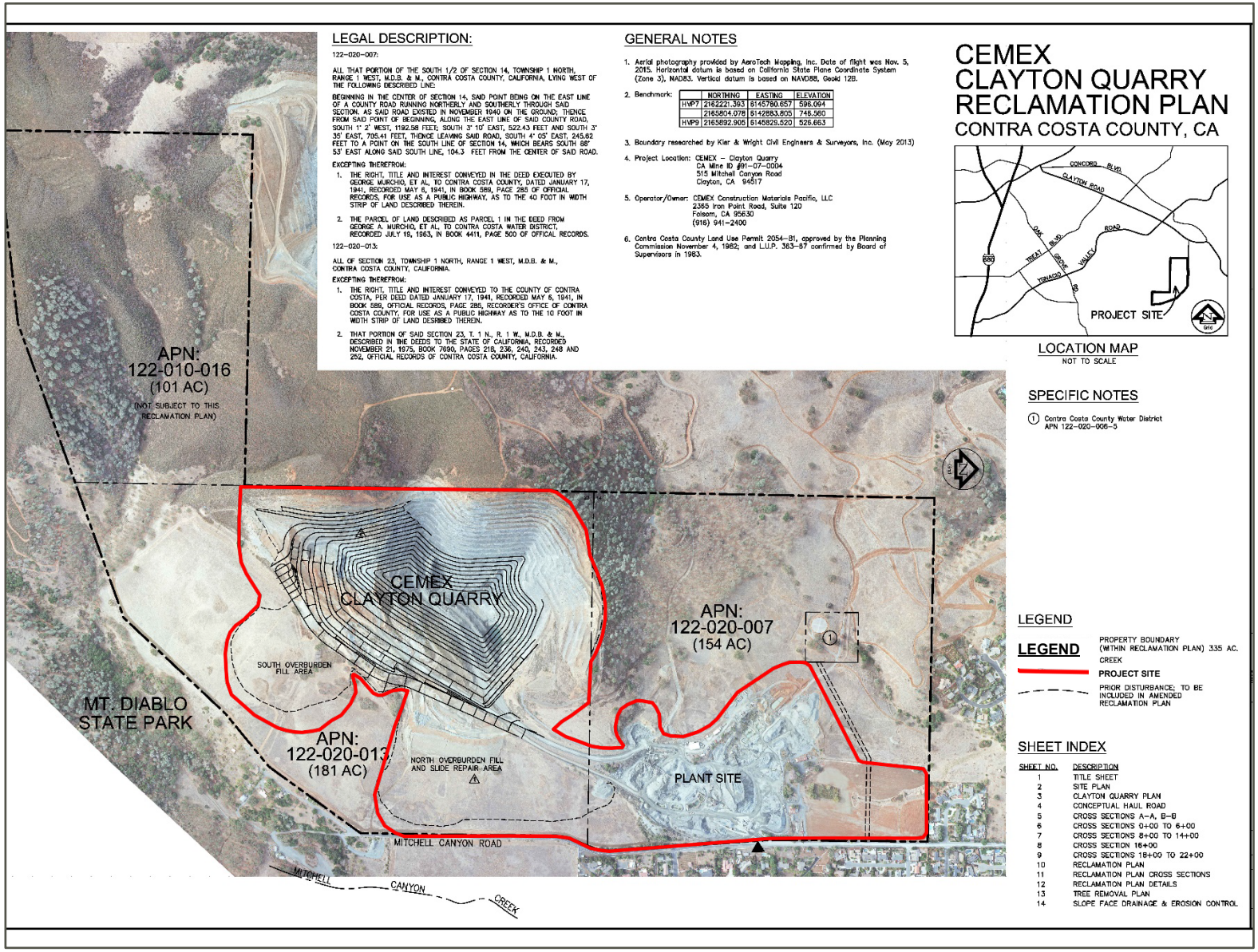

SOURCE: Spinardi Associates 2021; modified by Benchmark Resources in 2021

NOTE: Figure not to scale.

Site Location

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 1-2

BENCHMARK RESOURCES

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1.3 ENVIRONMENTAL REVIEW PROCESS

1.3.1 Initiating the Environmental Review Process

Subsequent to receiving the application for the proposed project, County planning staff determined that the project is subject to CEQA and decided that an EIR would be required for the environmental review.

1.3.2 Scope of This Environmental Impact Report

The County circulated a notice of preparation (NOP) that indicated those topic areas that would require evaluation in the EIR (see Appendix A-1, "Notice of Preparation"). The NOP was published on February 14, 2020, and the public comment period for commenting on the scope of the EIR was scheduled to last through March 16, 2020. However, based on the meeting size limitations resulting from the Coronavirus outbreak, the comment period was extended until April 15, 2020. The NOP was sent to trustee agencies, interested organizations and individuals, and the State Clearinghouse.

A public scoping session was held on March 16, 2020, at the Contra Costa County Community Development Division at 30 Muir Road Martinez, California. 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 this Draft EIR. The written comments received, and a transcript of the verbal scoping session comments received are included in Appendix A-2, "Comments on the Notice of Preparation," and Appendix A-3, "Scoping Meeting Comments," respectively.

The following environmental topics are addressed in this Draft EIR:

- Aesthetics
- Air Quality
- Biological Resources
- Greenhouse Gas Emissions
- Geology and Soils
- Hydrology and Water Quality,
- Land Use and Planning
- Noise

The initial study is attached to this Draft EIR and included in Appendix A-4, "Initial Study." The initial study 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 Draft EIR:

- 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

The notice of completion (NOC) of the NOP is included as Appendix A-5, "NOC of the Notice of Preparation," and the distribution lists for the NOP are included as Appendix A-6, "NOP Distribution Lists."

1.3.3 Public Review

This Draft EIR is available for public review and comment during the 45-day period identified on the notice of availability/notice of completion (NOA/NOC) of a EIR accompanying this document.

This Draft EIR and all supporting technical documents and reference documents are available for public review at:

Contra Costa County, Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, California 94553

And at the link below:

https://www.contracosta.ca.gov/7605/Major-Planning-Applications-Under-Consid

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

Mr. Francisco Avila
Contra Costa County, Department of Conservation and Development
Community Development Division
30 Muir Road
Martinez, California 94553

or via e-mail with the subject line "Clayton Quarry Reclamation Plan Amendment EIR" to Francisco.Avila@dcd.cccounty.us.

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

1.3.4 Use of the EIR

Pursuant to CEQA, this is a public information document for use by governmental agencies and the general public. The information contained in this Draft EIR is subject to review and consideration by the County as lead agency and any other responsible agencies prior to the County's decision to approve, reject, or modify the proposed project.

The Contra Costa County Planning Commission must ultimately certify that it has reviewed and considered the information in the EIR and that the EIR has been completed in conformity with the requirements of CEQA. The County Planning Commission has approval authority for land use permits and reclamation plans, which actions are appealable to the County Board of Supervisors.

Certification of the EIR does not constitute approval of the project.

1.4 REPORT ORGANIZATION

This Draft EIR is organized into the following chapters and sections:

Executive Summary

This chapter provides a summary of the project and a summary of the significant environmental impacts that would result from implementation of the proposed project and describes Conditions of Approval and mitigation measures recommended to avoid or reduce significant impacts.

Chapter 1, "Introduction"

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

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 the key terminology, approach, and assumptions used in the Draft EIR 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 methodologies 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 Draft EIR: aesthetics, air quality, biological resources, geology and soils, greenhouse gas emissions, 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 significant and unavoidable, significant, potentially significant, 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 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 7, "Other CEQA Topics."

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 three alternatives to the proposed project. The three alternatives include:

- the CEQA-mandated No Project alternative, Implementation of the Approved Reclamation Plan Alternative
- the Prohibited Nighttime Reclamation Alternative, and
- the In-kind Replacement for Protected Oaks 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 Draft EIR and the persons and organizations involved in the preparation process.

Chapter 9, "References"

This section identifies the references and resources cited within the text of the Draft EIR.

Chapter 10, "Acronyms and Glossary"

This section provides an alphabetical list of the acronyms and initialisms followed by a glossary of industry and technical terminology used throughout the EIR.

Appendices

The appendices contain the NOP, written comments submitted on the NOP, the revised reclamation plan that is evaluated in this Draft EIR, and technical studies and reports used to prepare this Draft EIR.

1.5 DISCRETIONARY ACTIONS

This Draft EIR was prepared to provide environmental review for all anticipated discretionary approvals and actions necessary for this project. Several 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 land use permits are anticipated to continue throughout the environmental review process period. It is important to note that these quarrying operations are vested, and those actions are not subject to discretionary approval.

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 EIR, adopt findings of fact and overriding considerations (if necessary), and adopt a mitigation monitoring plan. In Contra Costa County, the County Planning Commission is the approval authority for the land use permits and reclamation plan, which action is appealable to the County Board of Supervisors.

1.6 RESPONSIBLE AND TRUSTEE AGENCIES

Projects or actions undertaken by the lead agency (in this case 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 public, private, and political agencies and jurisdictions may have a particular interest in the project. These agencies include those listed below:

Federal Agencies

- U.S. Army Corps of Engineers (Section 404 permit)
- U.S. Fish and Wildlife Service (Section 7 Consultation; Incidental Take Statement)

State Agencies

- California Department of Conservation, Division of Mine Reclamation (Reclamation Plan Advisory Review, 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/or Waters of the State permit)
- Contra Costa County Flood Control and Water Conservation District
- Contra Costa County, Department of Public Works

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2—PROJECT DESCRIPTION

2—PROJECT DESCRIPTION

2.1 INTRODUCTION

CEMEX Construction Materials Pacific, LLC (CEMEX) operates Clayton Quarry, a hard rock mining operation located on an approximately 335-acre property within the unincorporated area of Contra Costa County (County), on the east side of Mount Zion, approximately one-half mile south of the City of Clayton (see Figure 1-1, "Regional Location" and Figure 1-2, "Site Location," in Chapter 1, "Introduction"). CEMEX and its predecessors-in-interest have been continuously mining for aggregates at the Clayton Quarry since at least 1948. In addition to mining and reclamation, existing permitted and accessory uses at the Clayton Quarry include aggregate processing, blasting, as well as ancillary uses such as aggregate stockpiling, load-out, sales, and equipment storage and maintenance.

The surface mining disturbance footprint and reclamation plan boundary for the proposed project (project site) consists of 190 acres within the approximately 335-acre property, with the remainder left undisturbed or reserved for other uses allowed under existing zoning (see Figure 2-1, "Revised Reclamation Plan Overview"). CEMEX's mining operation at Clayton Quarry is vested under pre-1957 mining, as documented in County Land Use Permit (LUP) #363-67 (operating permit) and LUP #2054-81 (approved reclamation plan), as well as subsequent County documents (see Figure 2-2, "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. In 1983, the County approved LUP #2054-81, which, together with its supporting reclamation plan application materials, constitutes the "approved reclamation plan" currently applicable to the site (see Figure 2-3, "Approved 1983 Reclamation Plan"). Surface mine operators in California are required by State law to have an approved reclamation plan if they operate after January 1, 1976.

In response to a Notice to Comply issued by the County on November 17, 2014, CEMEX filed an application for a Clayton Quarry Reclamation Plan Amendment on July 20, 2015, which the County assigned Application No. CDLP15-02031 (2015 Application). In its Notice to Comply, which required submittal of final grading and drainage plans for the quarry, the County provided an option for CEMEX to file an application to modify the conditions of approval of its current permits for an alternative drainage design for quarry reclamation. The 2015 Application presented CEMEX's initial application to modify current permits for an alternative final grading and drainage plan that would provide for a future quarry lake with a controlled stormwater outflow. In August 2015, the County deemed the 2015 Application incomplete and requested additional information and technical study in the areas of biology, slope stability, and hydrology. In response, CEMEX filed a new application in June 2017, which supersedes the 2015 Application in its entirety. Specifically, CEMEX proposes an amendment to the approved reclamation plan through adoption of a revised reclamation plan for the Clayton Quarry, dated October 2020 ("proposed project" and/or "revised reclamation plan") (see Appendices B-1, "Proposed Reclamation Plan Amendment," and B-2, "Revegetation Plan"). The project requires amendments to CEMEX's current land use entitlements, LUP #363-67 and LUP #2054-81. The amendment to the LUP #363-67 operating permit is only for purposes of conforming any reclamation-related conditions of approval to the revised reclamation plan. 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 2-1) would include:

- Reclamation over an anticipated period of 47 years to a post-mining land use of open space;

- Reduction of the surface mining disturbance footprint relative to the approved reclamation plan that leaves the east rim of the quarry intact, providing a visual buffer between the quarry and view sheds to the east;
- Permanent overburden fill areas;
- Final grading contours reflecting a maximum depth of excavation at elevation 110 feet above mean sea level (msl) with finish slope angles that achieve adequate factors of safety;
- A final drainage plan that provides for the quarry pit to slowly fill with stormwater following reclamation to form a quarry lake with a controlled outflow that conveys stormwater to natural drainage courses and man-made drainage facilities;
- Removal of facilities, structures and equipment associated with mining;
- Revegetation of the quarry east rim, overburden fill areas, and processing plant site to a combination of chaparral and grassland habitats that feature California native seed mixes;
- Elimination of requirements to backfill, grade, and compact the quarry floor and benches, given that the planned open space end use would provide for a future quarry lake;
- Clarification of pre-Surface Mining and Reclamation Act (SMARA) (1976) disturbance areas, including any areas disturbed outside the boundaries of the approved reclamation plan;
- A tree permit request to remove 79 out of 123 existing trees, to be replaced with 400 foothill pine trees that would form a tree screen along the quarry east rim;
- Compliance with current State reclamation standards to be achieved during reclamation;
- A new screening berm to create a visual barrier between the existing processing plant site and residential communities to the north (Figure 2-4, "Proposed Site Plan"); and
- An exception request to Division 914 of the Contra Costa Code of Ordinances (Offsite Collect and Convey requirement).

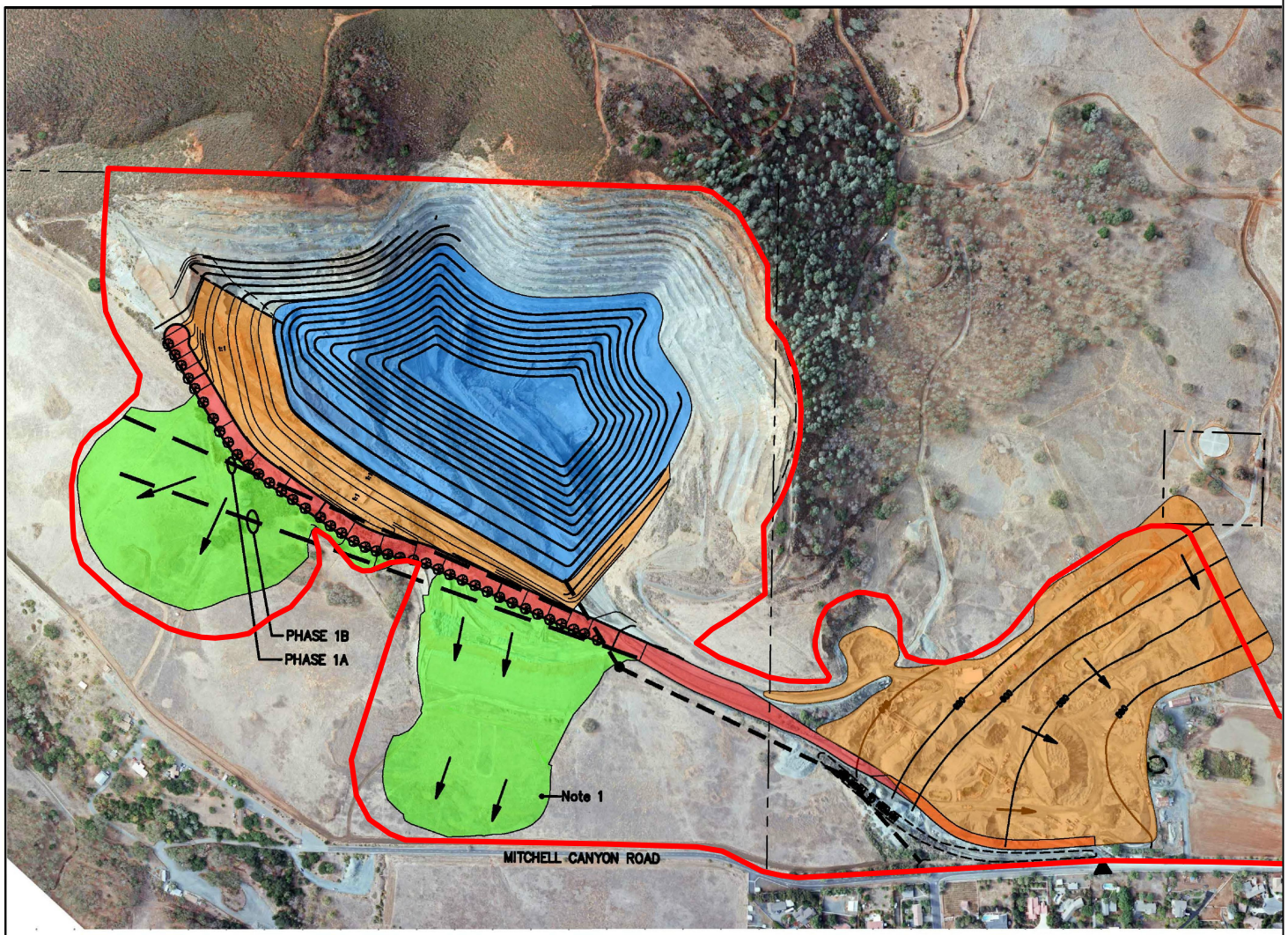
2.2 PROJECT PURPOSE

The project purpose is to revise the approved reclamation plan to respond to changed circumstances which have resulted in the approved reclamation plan's infeasibility and to provide an environmentally superior alternative for reclamation. Carrying out reclamation under the approved reclamation plan would require the handling of large quantities of overburden and would result in potentially uncontrolled post-reclamation drainage releases into Mitchell Creek and the residential neighborhoods below the quarry.

2.3 PROJECT OBJECTIVES

The proposed project includes the following objectives:

1) Complete reclamation over an anticipated period of 47 years (including monitoring) to a post-mining land use of open space;
2) Facilitate reduction of the surface mining footprint that leaves the east rim of the quarry intact, providing visual buffer between the quarry and view sheds to the east;
3) Create permanent overburden fill areas to be revegetated;
4) Establish final grading contours reflecting a maximum depth of excavation at elevation 110 feet msl with finish slope angles that achieve adequate factors of safety;
5) Establish a final drainage plan that provides for the formation of a lake and control of stormwater discharge from the project site in a manner that would not result in downstream flooding;



LEGEND

- Project Site Boundary
- Property Boundary
- Contour Line
- Pipeline & Manhole
- Slope to Drain
- Ingress/Egress and Utilities
- Open Space (Grassland)
- Water Surface
- Open Space (Chaparral Cover)
- Diabase
- Access Road
- Tree Screen
- 1983 Rec Plan Top of Cut Phase Lines

Note 1: Use chaparral if grassland is not feasible.

DISTURBED AREA

QUARRY	= 85 ACRES
FILL	= 53 ACRES
PLANT/ROAD	= 52 ACRES
DISTURBED AREA	= 190 ACRES

0 600'

Photo/Survey by: AeroTech Mapping
Photo Date: Nov. 5, 2015
Horizontal Datum: Cal Coord Zone III, NAD83
Vertical Datum: NAVD88

2020 RECLAMATION PLAN OVERVIEW

CEMEX CLAYTON QUARRY
CONTRA COSTA COUNTY, CA

OCTOBER 2020

Spinardi Associates
2295 Sea View Ave., Piedmont, CA 94610

Figure 5

SOURCE: Compass Land Group 2020; modified by Benchmark Resources in 2021
NOTES: Figure not to scale.

Revised Reclamation Plan Overview
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
DRAFT EIR
Figure 2-1

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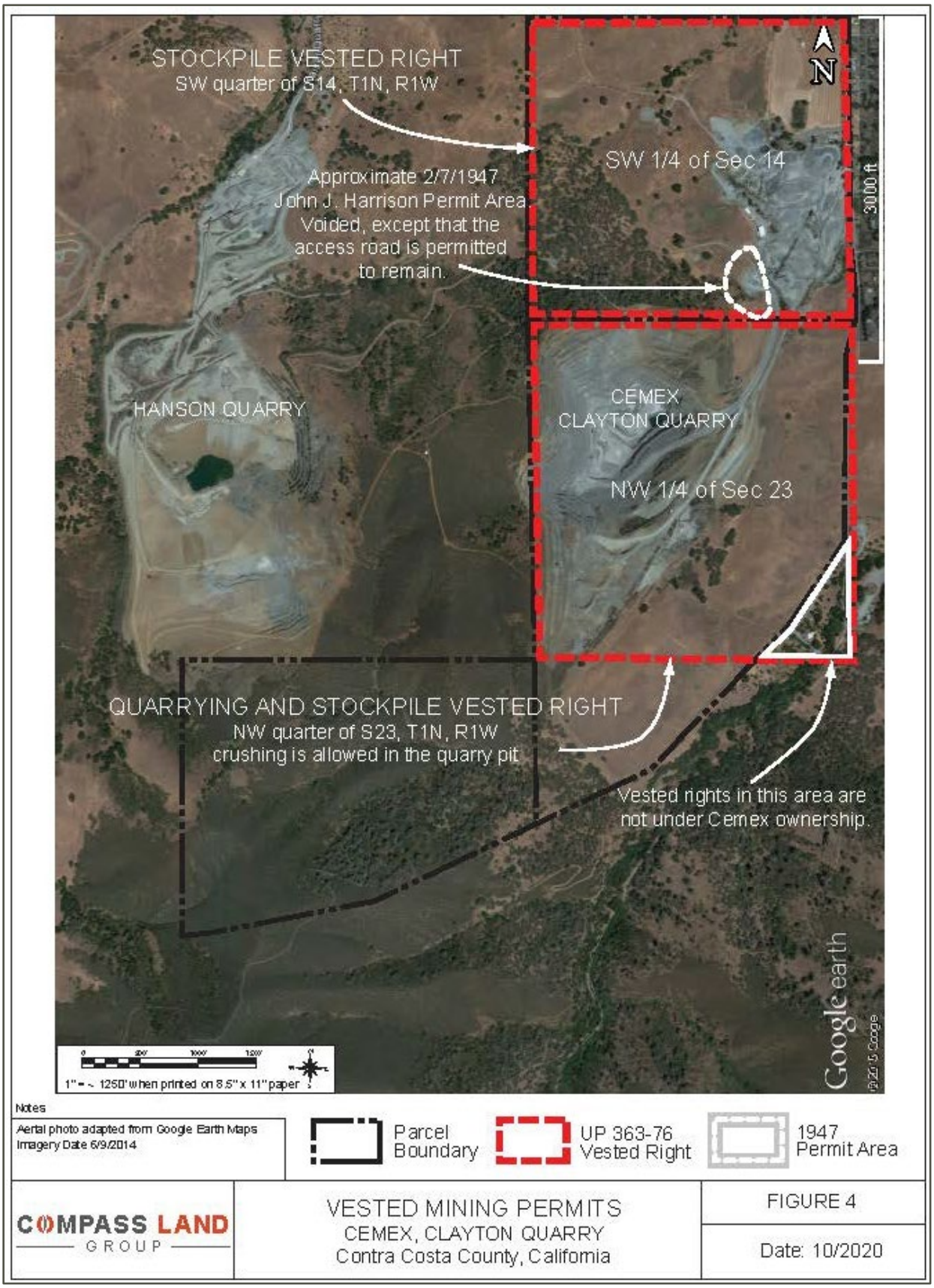

SOURCE: Compass Land Group 2020, Project Description and Application Supplement; modified by Benchmark Resources in 2021

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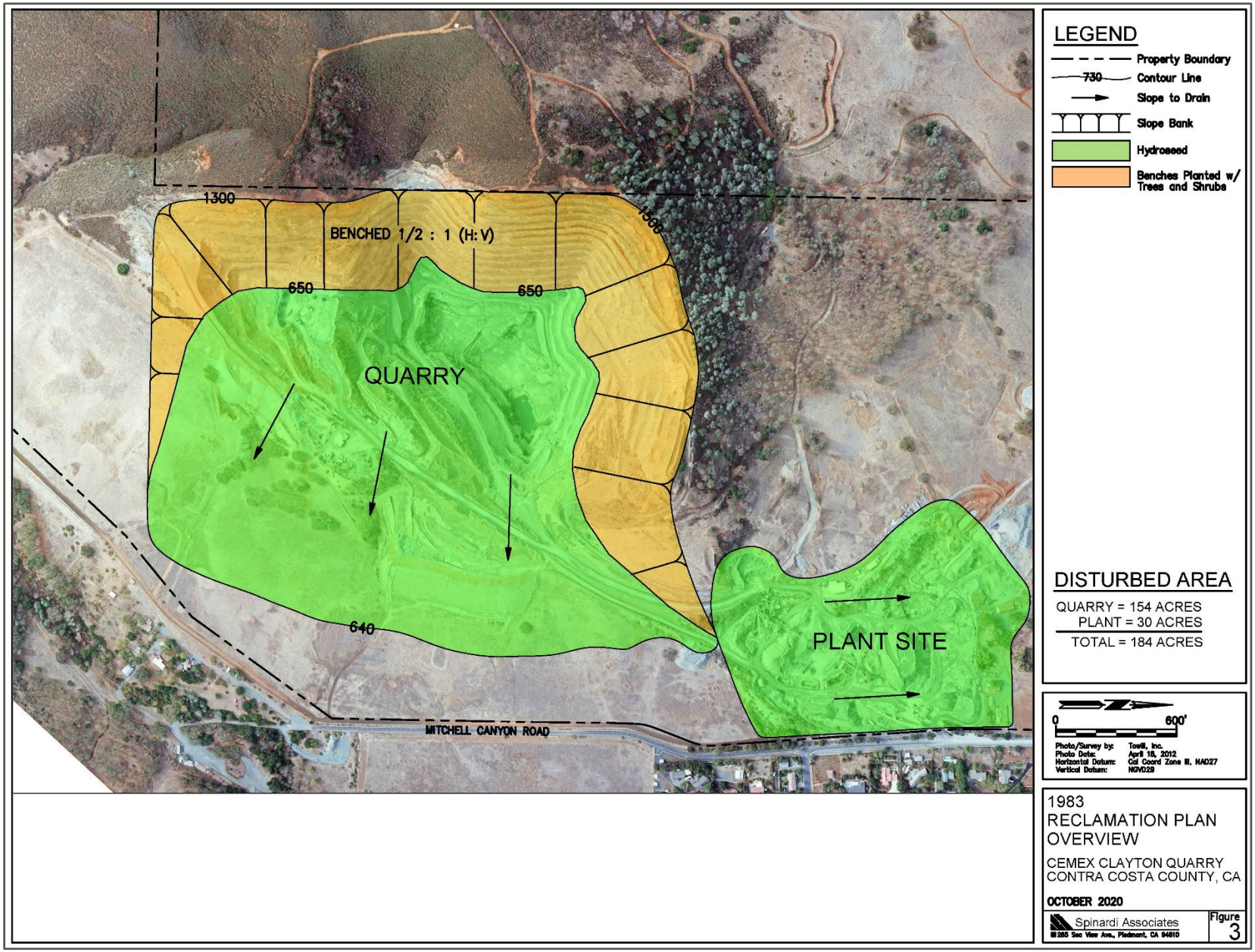

SOURCE: Compass Land Group 2020, Project Description and Application Supplement; modified by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Approved 1983 Reclamation Plan

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 2-3

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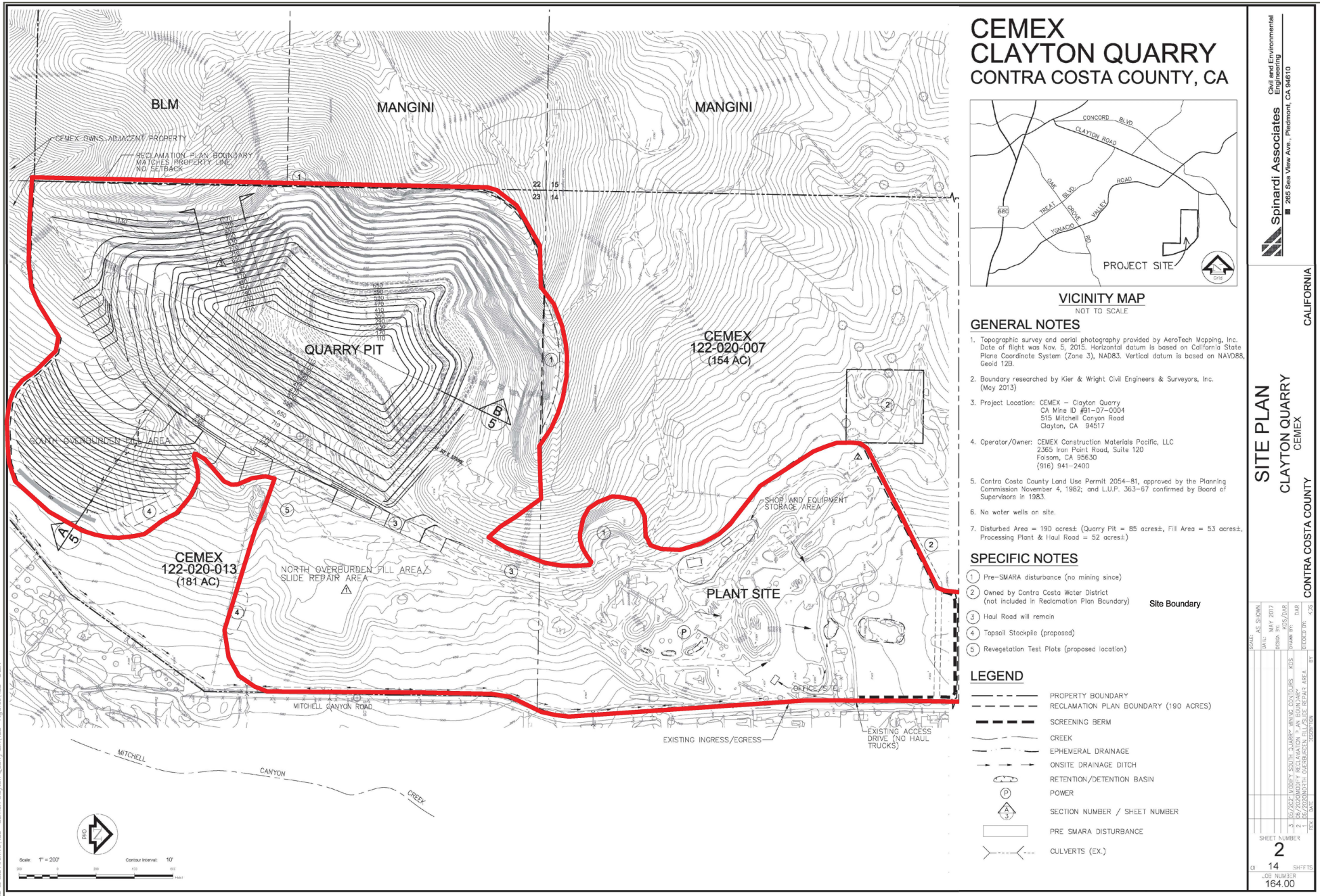

CEMEX
CLAYTON QUARRY
CONTRA COSTA COUNTY, CA

VICINITY MAP
NOT TO SCALE

GENERAL NOTES

1. Topographic survey and aerial photography provided by AeroTech Mapping, Inc. Date of flight was Nov. 5, 2015. Horizontal datum is based on California State Plane Coordinate System (Zone 3), NAD83. Vertical datum is based on NAVD88, Geoid 12B.
2. Boundary researched by Kier & Wright Civil Engineers & Surveyors, Inc. (May 2013)
3. Project Location: CEMEX – Clayton Quarry
   CA Mine ID #91-07-0004
   515 Mitchell Canyon Road
   Clayton, CA 94517
4. Operator/Owner: CEMEX Construction Materials Pacific, LLC
   2365 Iron Point Road, Suite 120
   Folsom, CA 95630
   (916) 941-2400
5. Contra Costa County Land Use Permit 2054-81, approved by the Planning Commission November 4, 1982; and L.U.P. 363-67 confirmed by Board of Supervisors in 1983.
6. No water wells on site.
7. Disturbed Area = 190 acres± (Quarry Pit = 85 acres±, Fill Area = 53 acres±, Processing Plant & Haul Road = 52 acres±)

SPECIFIC NOTES

1. Pre-SMARA disturbance (no mining since)
2. Owned by Contra Costa Water District (not included in Reclamation Plan Boundary)
3. Haul Road will remain
4. Topsoil Stockpile (proposed)
5. Revegetation Test Plots (proposed location)

Site Boundary

LEGEND

- PROPERTY BOUNDARY
- RECLAMATION PLAN BOUNDARY (190 ACRES)
- SCREENING BERM
- CREEK
- EPHEMERAL DRAINAGE
- ONSITE DRAINAGE DITCH
- RETENTION/DETENTION BASIN
- POWER
- SECTION NUMBER / SHEET NUMBER
- PRE SMARA DISTURBANCE
- CULVERTS (EX.)

Spinardi Associates
Civil and Environmental Engineering
265 Sea View Ave., Piedmont, CA 94610

SITE PLAN
CLAYTON QUARRY
CEMEX
CONTRA COSTA COUNTY CALIFORNIA

NO.	DATE	DESCRIPTION	BY
3	05/2021	UPDATE SOUTH QUARRY MINING CONTOURS	KDS
2	05/2020	MODIFY RECLAMATION PLAN BOUNDARY	DLM
1	05/2020	NORTH OVERBURDEN FILL/SLIDE REPAIR AREA	KDS

SCALE: AS SHOWN
DATE: MAY 2017
DESIGN BY: KDS/DLM
DRAWN BY: DLM
CHECKED BY: CDS

SHEET NUMBER 2
OF 14 SHEETS
JOB NUMBER 164.00

Y:_CAD & GIS Archive\422 - CEMEX Clayton Quarry EIR\422 - Figures\422 - DEIR

SOURCE: Spinardi Associates 2021, Project Description and Application Supplement; modified by Benchmark Resources in 2021
NOTES: Figure not to scale.

Proposed Site Plan
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
DRAFT EIR
Figure 2-4

BENCHMARK RESOURCES

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6) Facilitate revegetation of the quarry east rim, overburden fill areas and processing plant site to a combination of chaparral and grassland habitats that feature California native seed mixes;
7) Clarify pre-1976 (pre-SMARA) disturbance areas, including any areas disturbed outside the boundaries of the approved reclamation plan;
8) Achieve current State reclamation standards during reclamation.
9) Maximize the extraction of the remaining available on-site hardrock resources through the anticipated reclamation end date of 2068, including a change in the final bottom elevation of excavation the quarry pit to 110 feet msl;
10) Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate and thereby reduce regional vehicle miles travelled (VMT); and
11) Establish a reclamation plan that limits the emission of air quality criteria pollutants, toxic air contaminants, and dust.

2.4 Context and Existing Setting

2.4.1 Project Location and Access

The project site consists of the approximately 190-acre reclamation area situated within the 335-acre CEMEX Quarry at 515 Mitchell Canyon Road. The project site is located on the east side of Mount Zion, approximately one-half mile south of the City of Clayton in an unincorporated portion of the County (see Figure 1-1). The quarry, processing plant, and office are accessed from an existing driveway entrance on the west side of Mitchell Canyon Road.

The project site slopes to the southeast. The rim of the existing quarry varies from a minimum elevation of 755 feet msl, where the haul road enters the east side of the quarry, to approximately 1,540 feet msl at the top of the high wall on the west side of the quarry. The elevation at the Mitchell Canyon Road entrance to the project site, at the northeast corner of the site, is approximately 560 feet msl.

2.4.2 Assessor Parcel Numbers

The project site is located within the assessor parcels shown on Figure 1-2 and listed in Table 2-1, "Assessor's Parcel Numbers."

TABLE 2-1
ASSESSOR'S PARCEL NUMBERS

Assessor's Parcel Numbers	Acres (Approximate)
122-020-007	154
122-020-013	181
TOTAL PARCEL AREA:	**335**

Source: Parcel Quest 2021.
Note: The assessor's parcel acreages are taken from Contra Costa County Assessor data and are not as precise as the areas calculated on reclamation plan sheets and figures using the Geographic Information System (GIS) and AutoCAD.

2.4.3 Site History

CEMEX owns and operates the Clayton Quarry, originally developed by John J. Harrison following issuance of a quarry permit by the Contra Costa County Board of Supervisors on February 17, 1947 (1947

Harrison permit). In 1953, the County issued a permit to transfer Harrison's mining rights to Pacific Coast Aggregates. In 1968, Pacific Coast Aggregates obtained approval of LUP #363-67 (operating permit), which was thereafter confirmed by the Board of Supervisors in 1983 following a withdrawal of a prior appeal by the City of Clayton, to expand quarrying operations at the site to cover areas in use that were not covered by the original 1947 Harrison permit. SMARA, which became effective in 1976, requires a reclamation plan for all mine sites that continued to operate after January 1, 1976. In May 1981, Pacific Coast Aggregates, under its new name Lone Star Industries, filed an application for the first reclamation plan for Clayton Quarry, which was approved by the County as LUP #2054-81 on May 27, 1983 (approved reclamation plan).

2.4.4 Current Operating Entitlements and Vested Rights

Operations at Clayton Quarry are currently governed by and vested under the operating permit and 1983 approved reclamation plan. The key provisions of the approved reclamation plan include:

- Reclamation of an open-pit, multi-bench quarry over an anticipated period of 120 years (end date of ~2101);
- Construction of an interim mining drainage slot that would provide a generally uncontrolled hydrologic connection to natural drainage courses north of the project site;
- Removal of processing plants and equipment;
- Revegetation of certain quarry benches with pine trees;
- Removal of the east rim of the quarry pit and subsequent backfill to elevation 650 feet msl providing for the reclaimed quarry to drain via sheet flow toward Mitchell Canyon Road and the reclaimed plant site to drain to the City of Concord; and
- Revegetation of the backfilled quarry floor with natural grasses and wildflowers.

SMARA exempts a vested rights holder from the need to acquire any additional permit to mine pursuant to SMARA as long as such vested rights continue and as long as no substantial changes are made in the mining operation (Public Resource Code §2776(a)). Under SMARA, a person is deemed to have a vested right if, "prior to January 1, 1976, the person has, in good faith and in reliance upon a permit or other authorization, if the permit or other authorization was required, diligently commenced surface mining operations and incurred substantial liabilities for work and materials necessary for the surface mining operations." (Id.) These SMARA provisions have also been adopted into the County Code in Chapter 88-11, Article 88-11.4, Vested Rights.

The Clayton Quarry has been continuously mined for construction material aggregates since at least 1948. Additionally, CEMEX's predecessors obtained mine permits in 1947 and 1968 long before the effective date of SMARA on January 1, 1976. CEMEX's vested rights include the following as documented in the 1947 Harrison permit and operating permit and as shown on Figures 2-2 and 2-3:

- Surface mining activities in the N.W. ¼ of Section 23, T1N, R1W, Mt. Diablo Base & Meridian.
- Stockpiling in the S.W. ¼ of Section 14, T1N, R1W, and N.W. ¼ of Section 23, T1N, R1W, Mt. Diablo Base & Meridian.
- Blasting and crushing in the quarry pit.
- Use of Mitchell Canyon Road to Clayton Road as a primary truck haul road.

The focus of the proposed project is to amend the approved reclamation plan in areas subject to CEMEX's vested mining rights to conform the reclamation plan to planned contours, a final drainage plan, and current reclamation standards. No substantial changes to CEMEX's ongoing mining operations are

proposed or required for the proposed project. CEMEX proposes no increase in production levels, no change in truck traffic, no change in the existing methods of mining, and no change in operating hours. In addition, quarry pit excavation would not exceed the physical boundaries of the excavation allowed under the existing approved reclamation plan. However, the final depth of the quarry would increase. The overall surface mining disturbance footprint would increase slightly from approximately 184 acres under the approved reclamation plan to 190 acres under the proposed project to accommodate proposed overburden fill areas, as well as the proposed screening berm and portions of the plant site that were not specifically included in the existing approved reclamation plan.

2.4.5 Project Site Land Uses

The project site is mainly comprised of mining and processing facilities associated with CEMEX's operation (see Figure 2-5, "Existing Facilities"). The northern portion of the site (within assessor's parcel number [APN] 122-020-007) contains the plant site, sites of pre-SMARA mining disturbance (not mined since 1975), a stormwater detention pond, and an open field. CEMEX's current mining operations are being conducted in a quarry pit within APN 122-020-013. This area also contains a haul road to the quarry pit and the north and south overburden fill areas. Additional uses include processing activities, retention/detention basins, stockpiles, administrative offices, truck scales, and other facilities related to mining and processing.

2.4.6 Surrounding Land Uses

Land uses adjacent to the project site include other mining operations (west) (see Figure 2-2), open space areas (south and east), recreational facilities (south and southeast), and residential development (north and northeast) (see Figure 2-5). Open space and a separate mining operation, the Lehigh Hanson Aggregates Kaiser Quarry, currently operated by Hanson Aggregates, abuts the proposed project site's western border. To the south and east, the site is bound by open space and Mount Diablo State Park. Mitchell Canyon Road and Mitchell Creek are also located east of the quarry. Residential uses are also located in the city of Concord and unincorporated Contra Costa County to the north and east of the project site. The nearest residential developments are contiguous to the northern and northeastern boundaries of the project area, with the nearest home approximately 30 feet from the northeast corner of APN 122-020-007, the location of the open field. The nearest home to the site entrance driveway is approximately 65 feet.

2.4.7 General Plan Land Use Designations

The *Contra Costa County General Plan* designates the site as "Agricultural Lands" (see Figure 2-6, "General Plan Designations"). The purpose of the Agricultural Lands designation is to preserve and protect lands capable of and generally used to produce food, fiber, and plant materials. Uses that are allowed in the Agricultural Lands designation include all land dependent and non-land dependent agricultural production and related activities (Contra Costa County 2014).

2.4.8 Zoning Classifications

As the local land use authority, the County authorizes mining activities on unincorporated lands through the issuance of land use permits and approval of reclamation plans pursuant to County Code of Ordinances Title 8, Zoning, Division 88 Special Land Uses, Chapter 88-11, Surface Mining and Reclamation. The provisions of the County's Surface Mining Ordinance apply to all lands within the County. As provided by this ordinance, surface mining operations are permitted within any County zoning designation, including lands designated as Agricultural Lands, upon County approval of a land use permit (or existence of vested rights) and reclamation plan. The site's current zoning classification is A-2 General Agricultural District (see Figure 2-7, "Zoning Designations").

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 2(a). This designation indicates that a high likelihood exists that significant aggregate deposits are present.

The quarry produces both diabase and Knoxville formation aggregate materials. Diabase is an igneous rock formed during the Jurassic Period in the ocean at a submarine spreading center. The Knoxville formation is a sedimentary rock consisting of shale with intermittent lenses of limestone and sandstone beds formed in the Late Jurassic and Early Cretaceous periods. Diabase is located on the western portion of the quarry, and the Knoxville formation is located in the eastern portion of the quarry.

2.4.10 Utilities

Existing utilities include electrical, sewer, and water facilities, located at the northeast corner of the project site, which connect to utility lines located along Mitchell Canyon Road. There are no railroads on or in proximity to the lands to be reclaimed.

2.4.11 1983 Approved Reclamation Plan Components

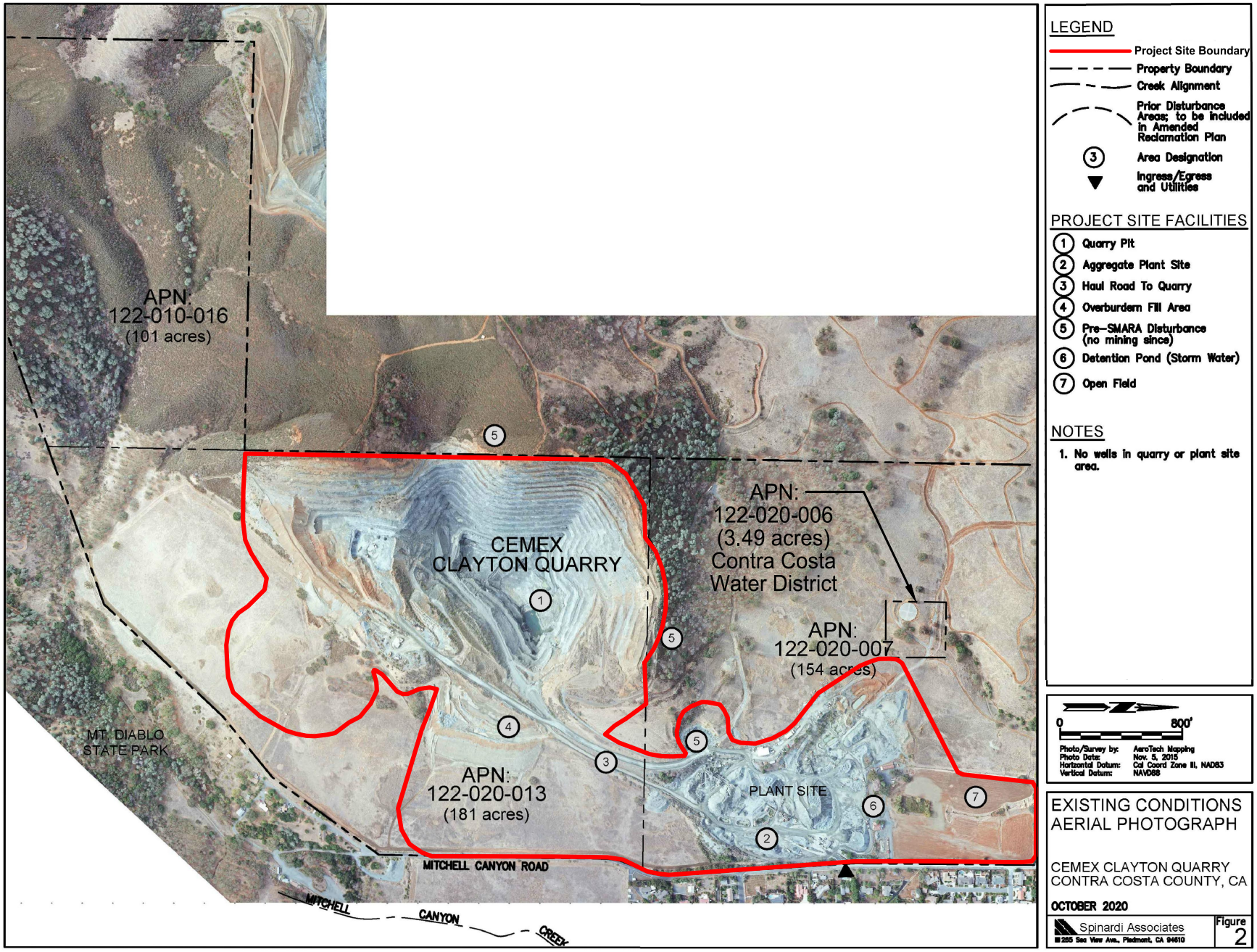
The 1983 approved reclamation plan calls for a reclaimed quarry that would appear as a large highwall with exposed vertical benches extending from a crest elevation of approximately 1,500 feet msl on the western quarry face to a backfilled floor elevation of approximately 650 feet msl, as shown in Figure 2-3. The quarry benches would be planted with pine trees and shrubs, some of which has already been completed to the extent practical. The currently approved plan calls for the backfilled quarry floor to be gently sloped toward Mitchell Canyon Road and revegetated with grasses and wildflowers with uncontrolled sheet flow drainage releases to the Mitchell Creek watershed. Processing plant equipment would also be removed, and the plant site would be revegetated with grasses.

2.5 PROPOSED PROJECT ELEMENTS

2.5.1 Final Reclamation Overview

CEMEX seeks to amend the approved reclamation plan. The proposed project provides for updated final grading contours, a post-mining land use of open space that would provide for a future quarry lake, a final drainage plan for the quarry and plant site, an updated revegetation plan, and achieve current state and County reclamation standards. All of these features are described in more detail below.

The reclaimed quarry under the proposed project, as shown in Figure 2-1, would provide for the quarry pit to slowly fill with storm water to form a quarry lake with a water surface, once full, at elevation 735 feet msl. The east rim of the quarry would remain intact buffering most quarry benches below elevation approximately 800 feet msl from viewsheds to the east. Quarry benches and highwalls would be visible from the quarry east rim up to the crest elevation of approximately 1,500 feet msl, with no new plantings on diabase benches. The top of the quarry east rim would be revegetated with 400 pine trees, which would form a tree screen with the purpose of blocking portions of the quarry highwalls.



SOURCE: Compass Land Group 2020, Project Description and Application Supplement; modified by Benchmark Resources in 2021
NOTES: Figure not to scale.

Existing Facilities
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
DRAFT EIR
Figure 2-5

BENCHMARK RESOURCES

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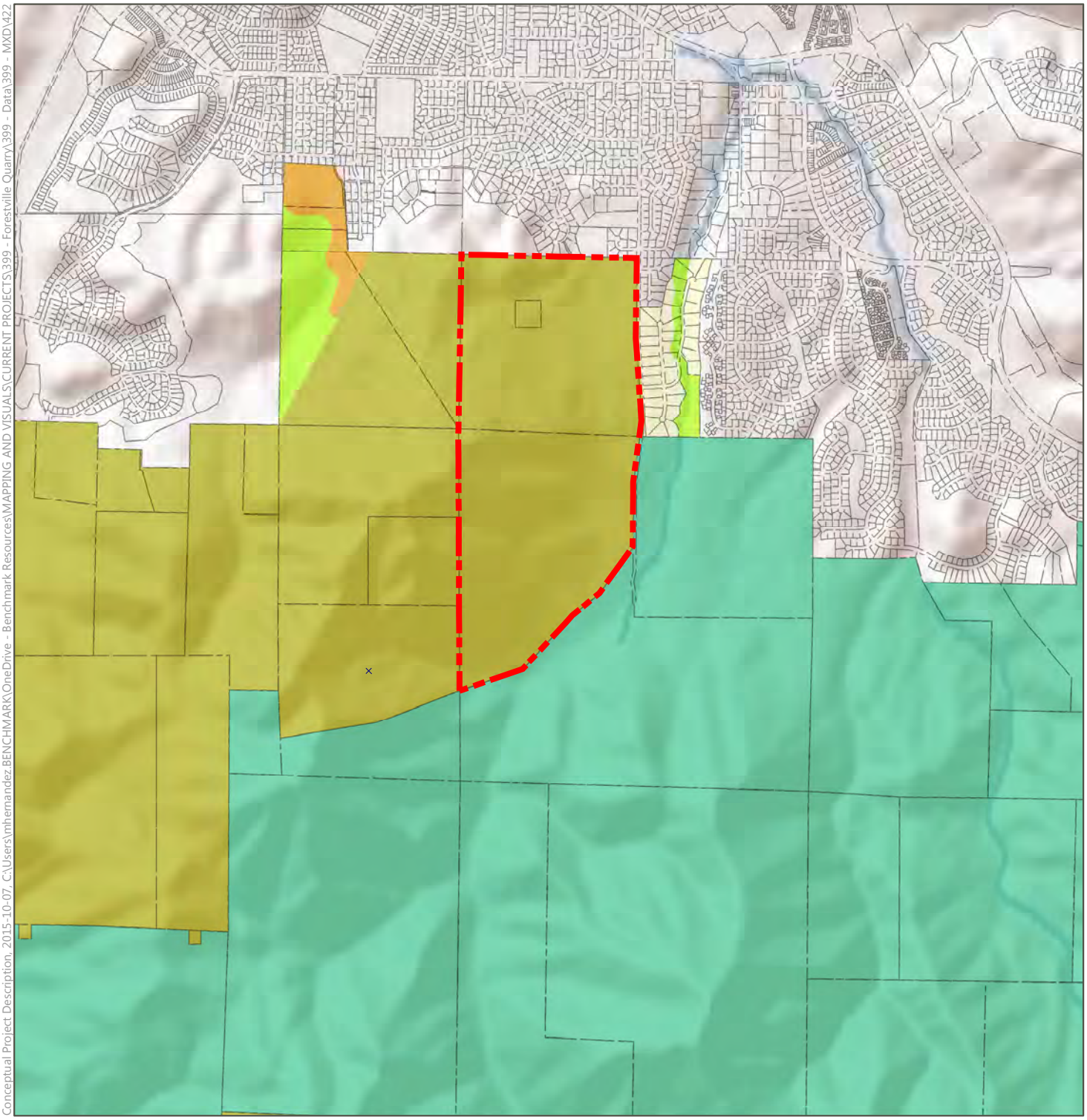

SOURCES: General Plan Land Use Designations–County of Contra Costa, Department of Information Technology, 12-14-2020; ESRI World Shaded Relief accessed Jan. 2021; compiled by Benchmark Resources in 2021

- CEMEX Clayton Quarry Property Boundary
- Parcel
- AL (Agricultural Lands) 5 Acre Minimum Parcel Size
- OS (Open Space)
- PR (Parks and Recreation)
- SH (Single Family Residential - High) 5.0 - 7.2 Units per Net Acre
- SV (Single Family Residential - Very Low) 0.2 - 0.9 Units per Net Acre

BENCHMARK RESOURCES

N

0 1,000 2,000 4,000 Feet

General Plan Designations
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 2-6

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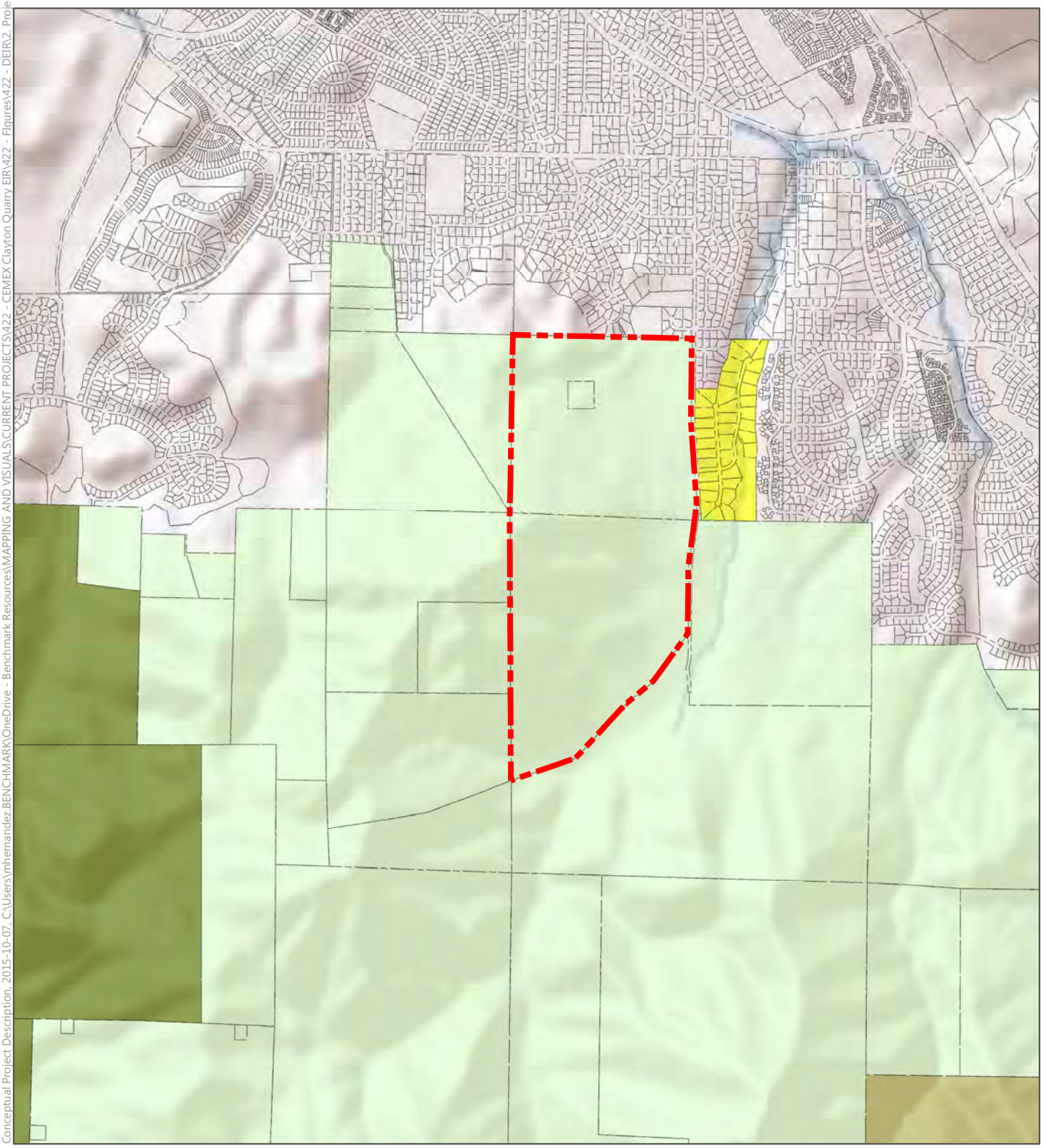

SOURCES:Zoning Designations–County of Contra Costa, Department of Information Technology, 12-14-2020; ESRI World Shaded Relief accessed Jan. 2021; compiled by Benchmark Resources in 2021

CEMEX Clayton Quarry Property Boundary

Parcel

R-40 (Single Family Residential)

F-R (Forestry Recreational)

A-2 (General Agriculture)

A-4 (Agricultural Preserve)

BENCHMARK RESOURCES

N

0 1,000 2,000 4,000 Feet

Zoning Designation

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 2-7

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The lower portions of the quarry east rim would be revegetated with native chaparral, while the overburden fill areas to the east of the quarry pit would be revegetated with native grasses. Processing plant equipment would be removed and the plant site would be revegetated with either native grasses or chaparral species depending on substrate conditions.

2.5.2 Reclamation Plan Boundary

The revised reclamation plan boundary encompasses approximately 190 acres on two assessor parcels (APNs 122-020-007 and 122-020-013), which assessor parcels total approximately 335 acres in size, with the remainder of the site left undisturbed (see Figure 2-1, Figure 2-4 and Figure 2-8, "Revised Reclamation Plan Detail"). The proposed project footprint is permitted for surface mining disturbances pursuant to CEMEX's existing County land use entitlements and vested rights. With the exception of portions of the proposed overburden fill areas (shown on Figure 1-2), most of the project boundary has already been disturbed by past and present surface mining activity.

2.5.3 Surface and Groundwater Quality Protection

While surface mining activities would not be conducted in surface waters or groundwater, the site is subject to storm water events and surface water discharges. Accordingly, CEMEX would continue to comply with its National Pollutant Discharge Elimination System Industrial General Permit requirements, including implementation of its Storm Water Pollution Prevention Plan (SWPPP) with Best Management Practices (BMPs) to control erosion, sedimentation, and pollution during surface mining and reclamation activity. These BMPs include stormwater basins in the northern portions of the site to prevent unauthorized releases of stormwater that comes into contact with processing operations from the property.

Under the revised reclamation plan, a quarry lake would be formed within the quarry pit after surface mining is complete. A design pipe outflow structure would be developed at the northeast corner of the pit (see Figure 2-8 and Figure 2-9, "Drainage Pipe Outlet Structure") to convey discharges from the future quarry lake to existing stormwater drainage infrastructure located along Mitchell Canyon Road and Diablo Downs Drive. The pipeline would consist of two segments:

1) A 300-linear-foot, 24-inch diameter high-density polyethylene (HDPE) pipe with 2% slope, inside of a 42-inch diameter reinforced concrete pipe. This segment would be constructed using jack and bore methods at a depth of approximately 10 to 30 feet below the ground surface.
2) A 1,700-linear-foot, 24-inch diameter HDPE pipe that would be constructed using cut and cover methods at a depth of approximately 5 to 10 feet below the ground surface.

2.5.4 Drainage, Sediment, and Erosion Control

The proposed project incorporated measures to control the potential for erosion and sedimentation on the project site.

Quarry Pit: As described above, the implementation of the revised reclamation plan would result in the formation of a lake in the quarry pit. The quarry pit would take about 158 years to fill with water to the design water surface elevation of 735 feet msl (see Appendix G-1, "Hydrology and Water Quality Evaluation Report"). Light-class rip-rap would be installed on the Knoxville slope faces on the east rim of the quarry that may come in contact with water in the future quarry lake. Slopes on the east rim of the quarry that do not receive rip-rap treatment would be ripped, disced, and/or scarified and then revegetated.

Quarry Pit East Rim: The quarry east rim access road and upper quarry haul roads would be designed to direct runoff to rock-lined ditches on the west side of the roads, and runoff would be discharged to erosion-resistant diabase faces of the quarry pit (diabase is not susceptible to erosion from direct precipitation or stormwater runoff). These drainage facilities would be designed to accommodate runoff from a 100-year, 24-hour storm.

North and South Overburden Fill Areas: Runoff from the north and south overburden fill areas would continue to be conveyed to Mitchell Creek via both natural drainages and existing stormwater drainage infrastructure located along Mitchell Canyon Road and Diablo Downs Drive. Erosion control measures at the north and south overburden fill areas would include:

- 2.5H:1V or flatter slopes with wheel and track rolling compactive effort;
- Slope heights under 50 feet vertical, unless interim benches are used for drainage control;
- Use of "J-ditches" or functional equivalent where beneficial to direct drainage horizontally across fill areas to designated drainage channels;
- Fill slopes revegetated with appropriate erosion control seed mix; and
- Erosion control fabric, wattles and other BMPs implemented as needed to reduce erosion and improve stability of the surficial layer of soil.

Processing Plant Site: Runoff from the processing plant site would be directed to the existing stormwater detention pond in the open field to the north of the plant site, as shown on Figure 2-4.

2.5.5 Maximum Mining Depth

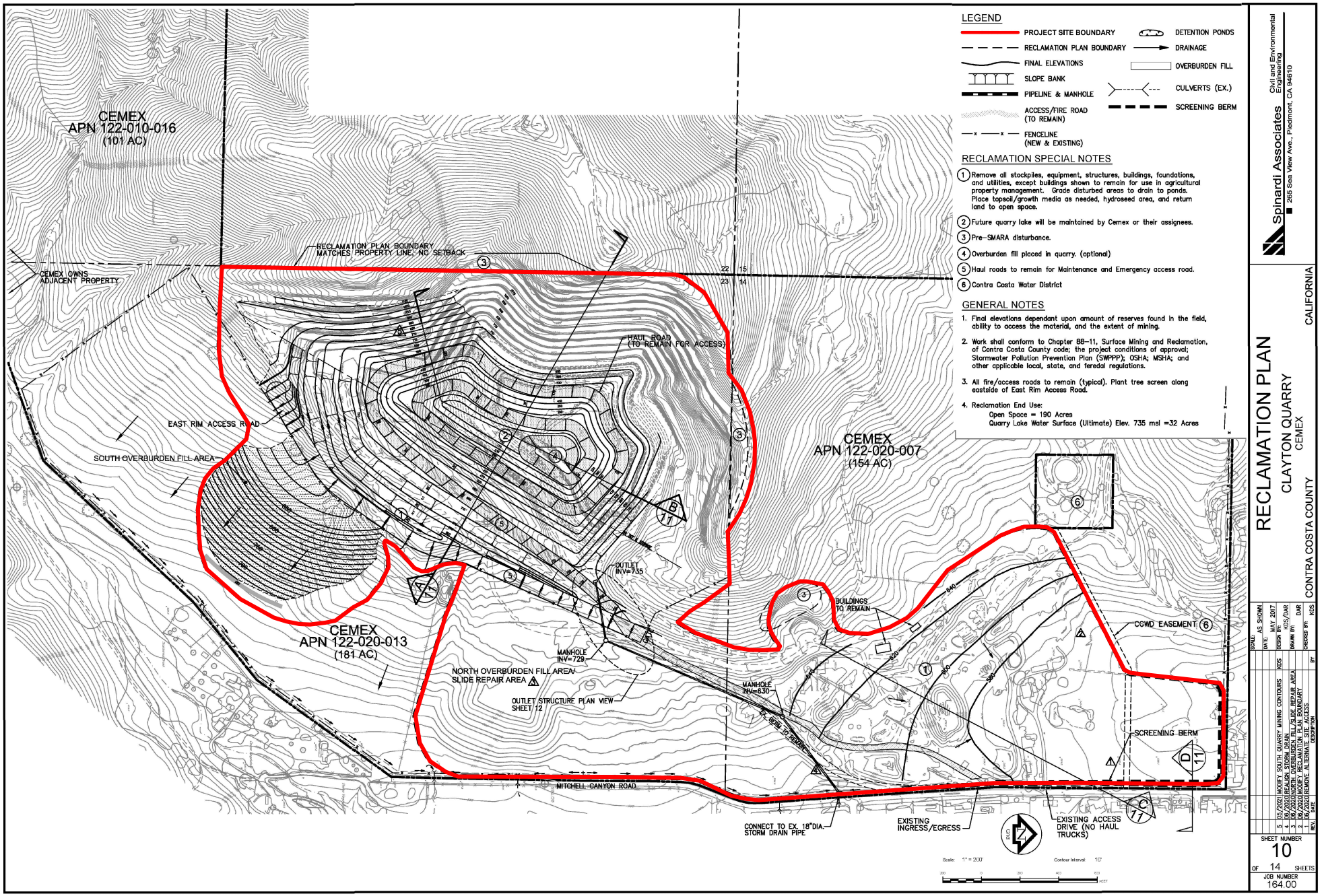
The maximum anticipated depth of the surface mining operation is 1,390 feet from the crest of the quarry to the planned pit floor, or to an elevation of approximately 110 feet msl (see Figure 2-4, Figure 2-10, "Clayton Quarry Plan," and Figure 2-11, "Reclamation Cross Sections"). Actual depths may vary depending on geologic and market conditions. The anticipated depth to the pit floor is 710 feet from the approximate midpoint of the quarry east rim, which has an elevation of 820 feet msl.

2.5.6 Fill Slopes and Compaction Standards

Quarry Pit: No fill and compaction is required for the quarry pit, since the planned end use of open space would provide for the quarry pit to slowly fill with stormwater to form a quarry lake.

North Overburden Fill Area: The existing north overburden fill area (see Figure 1-2) was improved in 2017 between the quarry haul road and Mitchell Canyon Road by a combination of removing and replacing the slide material with materials that have higher strength properties (shear key), coupled with adding weight to the toe of the slide to counteract the driving forces from the upper portion of the slide (gravity buttress fill), pursuant to Contra Costa County Grading Permit BLG16-011287. Additional work is underway to expand the shear key to improve stability of the north fill area and accomplish a more aesthetic profile for the buttress fill, pursuant to Contra Costa County Building Permit BLG20-003645. This work is anticipated to be completed in 2021. This work is being completed to stabilize the north overburden fill area and is separate from the proposed project and is described here so that the decision makers and public understand the existing conditions from a CEQA perspective.

South Overburden Fill Area: The planned south overburden fill area would be compacted to a maximum relative compaction of at least 85 percent and at a moisture content of between -1 and +4 percent of the optimum. The overburden fill slopes would be developed at an angle of 2.5H:1V.



SOURCE: Spinardi Associates 2021, Project Description and Application Supplement; modified by Benchmark Resources in 2021
NOTES: Figure not to scale.

Revised Reclamation Plan Detail
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
DRAFT EIR
Figure 2-8

BENCHMARK RESOURCES

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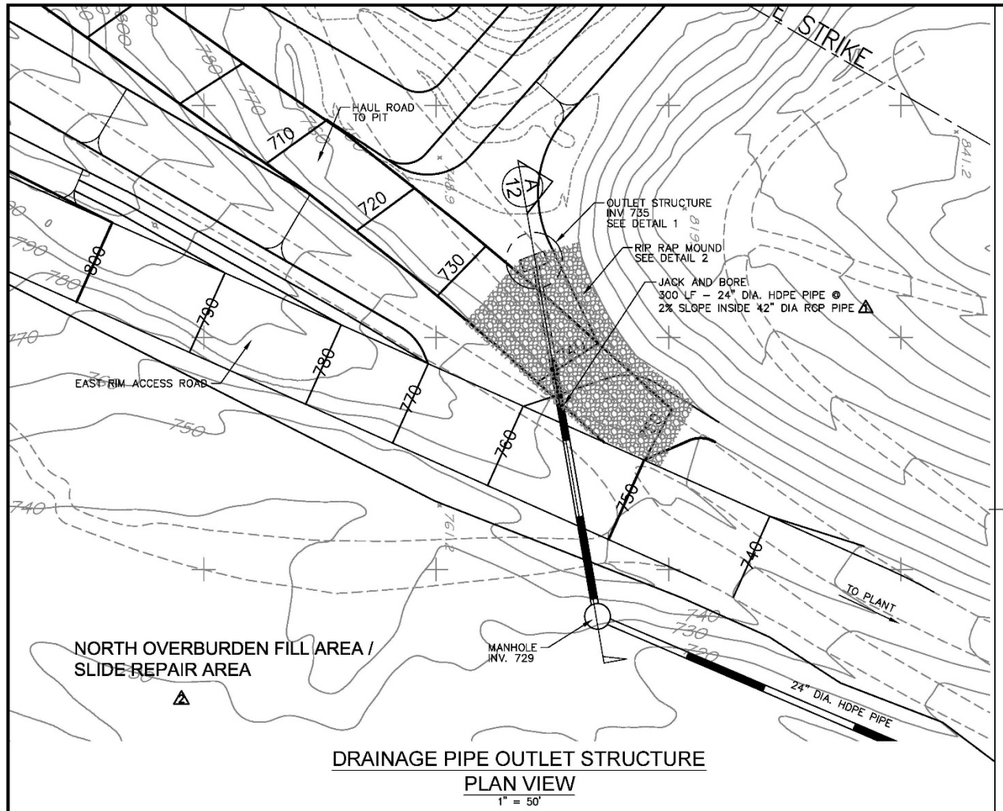
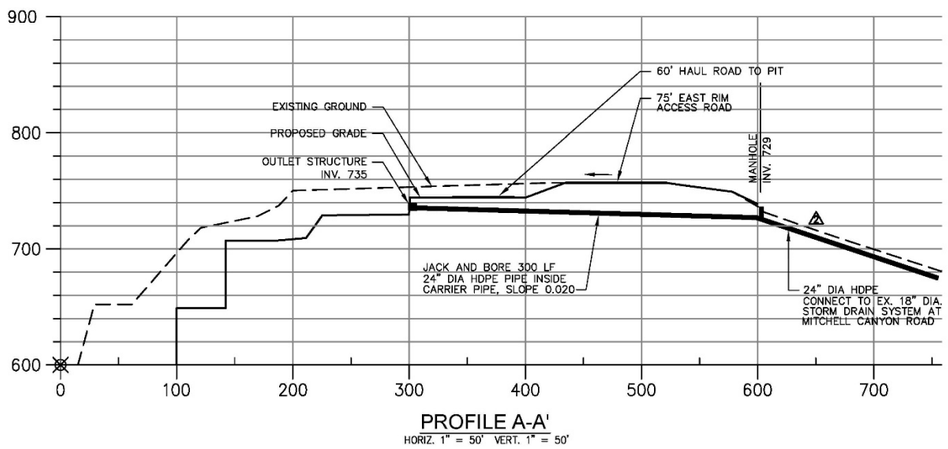
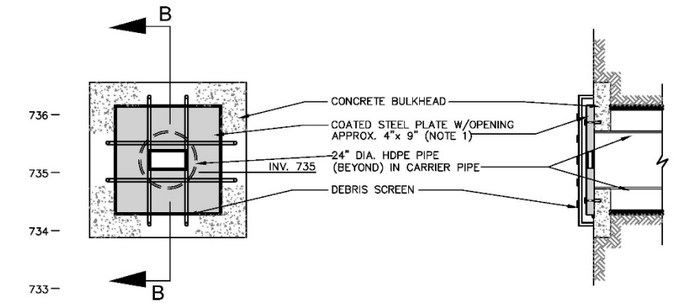


DRAINAGE PIPE OUTLET STRUCTURE
PLAN VIEW
1" = 50'



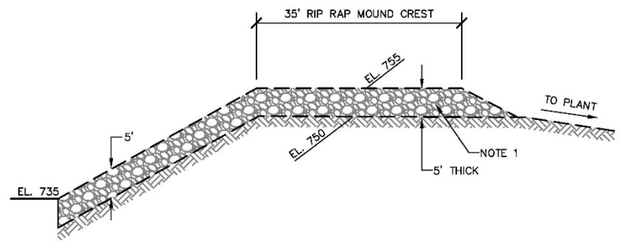
PROFILE A-A'
HORIZ. 1" = 50' VERT. 1" = 50'



DETAIL 1 OUTLET STRUCTURE FRONT VIEW
HORIZ. 1" = 1' VERT. 1" = 1'

SECTION B-B SIDE VIEW
HORIZ. 1" = 1' VERT. 1" = 1'

NOTE 1: FINAL DESIGN AND DIMENSIONS WILL BE DETERMINED AT THE TIME OF CONSTRUCTION BASED ON FINAL QUARRY PIT GRADES.



DETAIL 2 - RIP RAP MOUND
HORIZ. 1" = 10' VERT. 1" = 10'

NOTE 1: CONSTRUCT ROCK RIP RAP MOUND PRIOR TO QUARRY FILLING WITH WATER.

Spinardi Associates
Civil and Environmental Engineering
265 Sea View Ave., Piedmont, CA 94610

RECLAMATION DETAILS
CLAYTON QUARRY
CEMEX
CONTRA COSTA COUNTY CALIFORNIA

SCALE: AS SHOWN
DATE: MAY 2017
DESIGN BY: KDS/DAR
DRAWN BY: DAR
CHECKED BY: KDS

REV.	DATE	DESCRIPTION	BY
2	06/2020	NORTH OVERBURDEN FILL/SLIDE REPAIR AREA	KDS
1	07/2019	INCREASE PIPE 12" TO 24" DIA.	KDS

SHEET NUMBER 12
OF 14 SHEETS
JOB NUMBER 164.00

SOURCE: Spinardi Associates 2021, Project Description and Application Supplement; modified by Benchmark Resources in 2021
NOTE: Figure is not to scale *(original printed at 24x36).*

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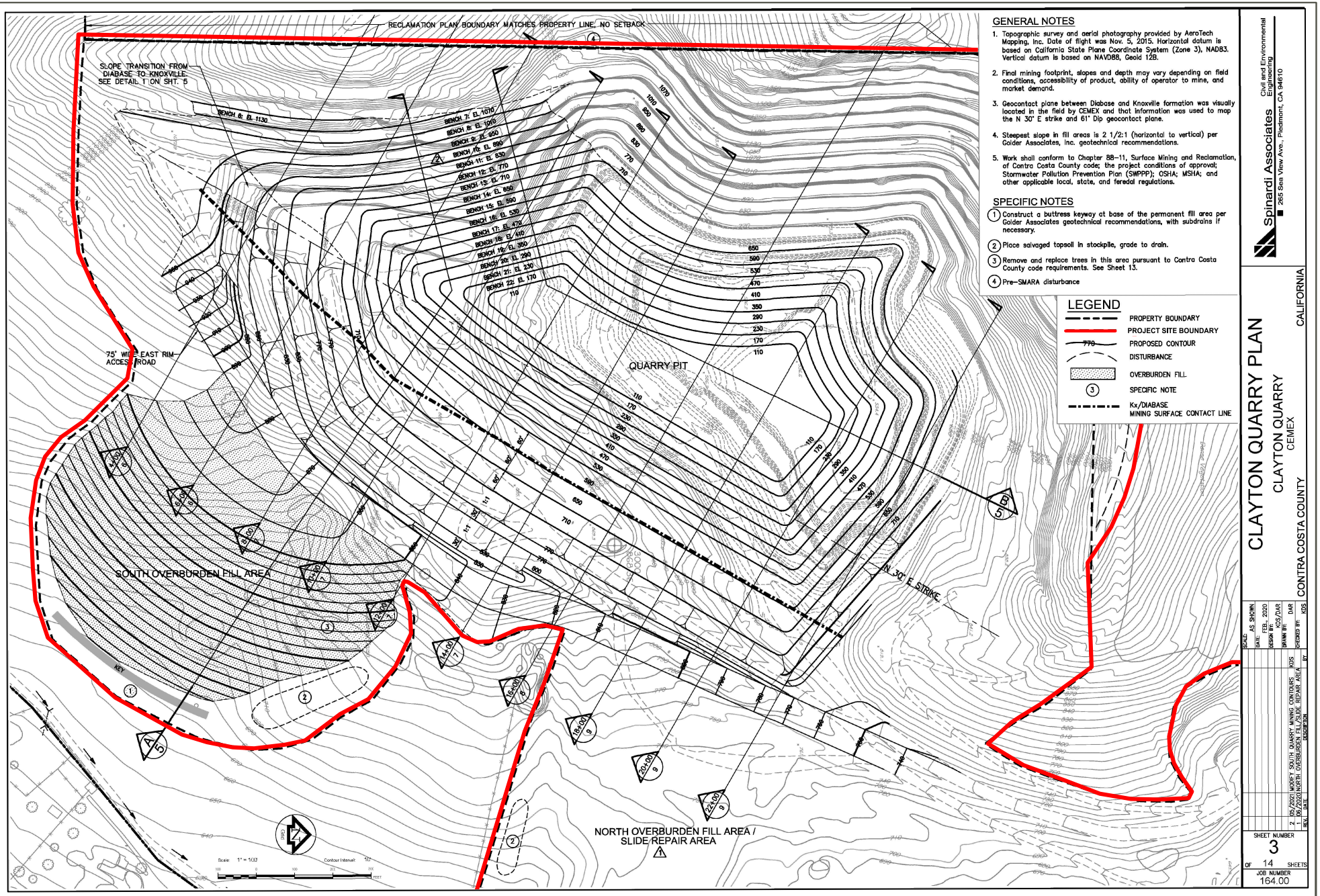

SOURCE: Spinardi Associates 2021, Project Description and Application Supplement; modified by Benchmark Resources in 2021
NOTES: Figure not to scale.

Clayton Quarry Plan
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
DRAFT EIR
Figure 2-10

BENCHMARK RESOURCES

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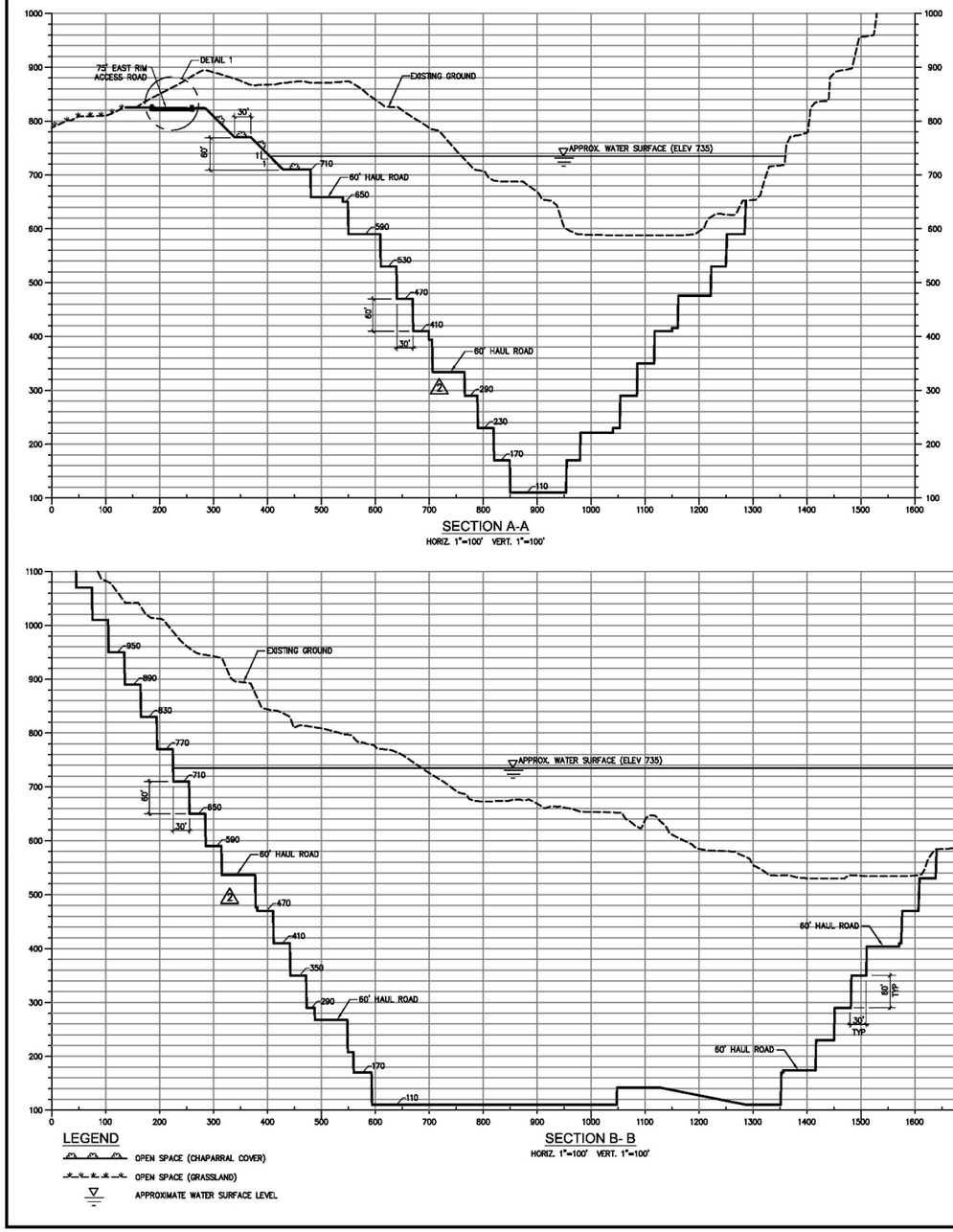
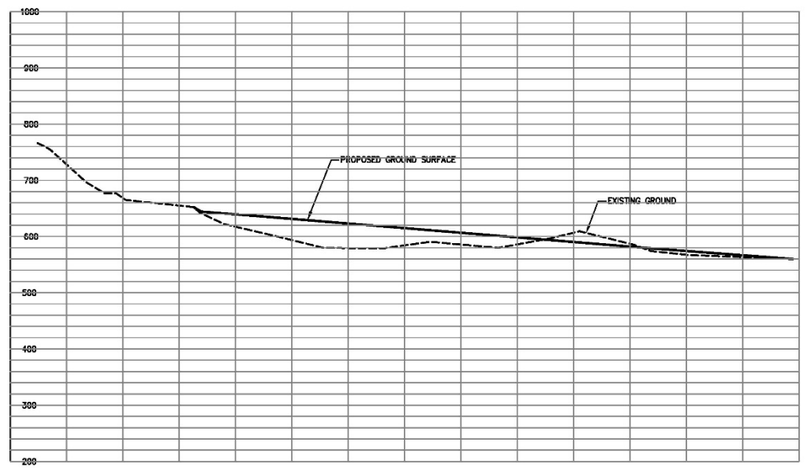
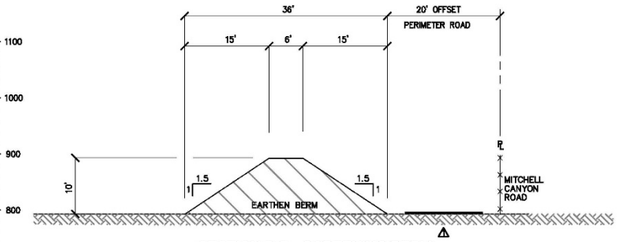


SECTION A-A
HORIZ. 1"=100' VERT. 1"=100'



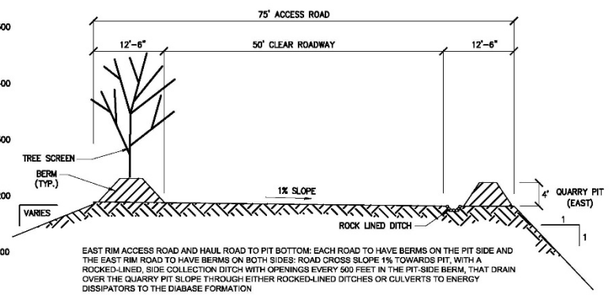
PLANT SITE CROSS SECTION
SECTION C-C
HORIZ. 1"=100' VERT. 1"=100'

SECTION B- B
HORIZ. 1"=100' VERT. 1"=100'



SECTION D-D - SCREENING BERM
HORIZ. 1"=10', VERT. 1"=10' SHEET 10

NOTE 1: LEAVE OPENING IN SCREENING BERM FOR ALTERNATE SITE ACCESS ROAD AND ROADWAY EASEMENT TO CONTRA COSTA COUNTY WATER DISTRICT PROPERTY.



EAST RIM ACCESS ROAD AND HAUL ROAD TO PIT BOTTOM: EACH ROAD TO HAVE BERMS ON THE PIT SIDE AND THE EAST RIM ROAD TO HAVE BERMS ON BOTH SIDES: ROAD CROSS SLOPE 1% TOWARDS PIT, WITH A ROCKED-LINED, SIDE COLLECTION DITCH WITH OPENINGS EVERY 500 FEET IN THE PIT-SIDE BERM, THAT DRAIN OVER THE QUARRY PIT SLOPE THROUGH EITHER ROCKED-LINED DITCHES OR CULVERTS TO ENERGY DISSIPATORS TO THE DIABASE FORMATION

DETAIL 1 - EAST RIM ACCESS ROAD
HORIZ. 1"=10', VERT. 1"=10'

LEGEND
OPEN SPACE (CHAPARRAL COVER)
OPEN SPACE (GRASSLAND)
APPROXIMATE WATER SURFACE LEVEL

Spinardi Associates
Civil and Environmental Engineering
265 Sea View Ave., Piedmont, CA 94610

RECLAMATION CROSS SECTIONS
CLAYTON QUARRY
CEMEX
CONTRA COSTA COUNTY CALIFORNIA

SCALE: AS SHOWN
DATE: MAY 2017
DESIGN BY: KDS/DAR
DRAWN BY: DAR
CHECKED BY: KDS

NO.	DATE	DESCRIPTION	BY
1	06/2020	LOWER SCREENING BERM	KDS
2	05/2021	MODIFY SOUTH QUARRY MINING CONTOURS	KDS

SHEET NUMBER 11 OF 14 SHEETS
JOB NUMBER 164.00

SOURCE: Spinardi Associates 2021, modified by Benchmark Resources in 2021

NOTES:
1. Figure is not to scale (original printed at 24x36).
2. Cross section locations are shown on Figure 2-8.

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2.5.7 Contaminant Control and Mine Waste Disposal

Overburden materials would either be sold as a product (e.g., for fill), placed in the designated overburden fill areas, or used in reclamation (e.g., redistributed as growth media across the plant site prior to revegetation). No material stockpiles would be left following reclamation. Screening berms, such as those along Mitchell Canyon Road, would be left in place.

2.5.8 Protection of Fish and Wildlife Habitat

For new disturbances in the proposed reclamation plan boundary (e.g., construction of the planned south overburden fill area), CEMEX would implement avoidance and minimization measures from LSA Associates Inc. (LSA) (see Appendix E-1, "Biological Resources Assessment" and Appendix E-3, "Clean Water Act Jurisdictional Delineation" of Section 4.3, "Biological Resources"). While no wetlands have been mapped in the plan boundary, LSA mapped one unnamed ephemeral channel (300 linear feet) in the footprint of the south overburden fill area. CEMEX would avoid this channel until such time as it obtains necessary authorizations, if any, from regulatory agencies to place fill (e.g., Corps of Engineers and/or Regional Water Quality Control Board).

2.5.9 Resoiling

Quarry Pit and East Rim: No resoiling is planned for the proposed project. The Knoxville substrate underlying this portion of the project site constitutes the best available substrate material for revegetation.

Overburden Fill Areas: Resoiling of the north overburden fill area is complete, and no action is proposed for this area under the revised reclamation plan. The south overburden fill area would be divided into sub-areas measuring approximately one-quarter to one-half acre in size. Prior to the use of a particular sub-compartment, the topsoil would be salvaged up to a depth of eighteen inches and used as cover for reclamation of a previously disturbed sub-compartment. If salvaged topsoil cannot be used immediately, then the topsoil will be stockpiled separately and not disturbed until needed for reclamation.

Processing Plant Site: A soil scientist would determine whether substrate requires resoiling at the processing plant site once removed. If required, Knoxville-derived overburden materials would be imported from the quarry or fill areas to use as planting medium and spread to a depth of eighteen inches over the plant site. These materials may also be blended with wash fines from on-site settling ponds.

2.5.10 Screening Berm

As noted above, a new screening berm would be developed between the existing processing plant site and residential communities to the north, to create a visual barrier between the processing plant site and residential community (see Figure 2-4).

2.5.11 Revegetation

Quarry Pit: No further revegetation is proposed for the quarry pit, as the existing diabase benches can no longer be safely accessed for purposes of revegetation.

Quarry Pit East Rim: The quarry pit's east rim would be hydroseeded with California native chaparral seed mix and 400 foothill pine trees installed as a tree screen for visual benefit.

Overburden Fill Areas: The overburden fill areas would be hydroseeded with California native chaparral seed mix. The project would also involve removal of 79 out of 123 existing trees (shown on Sheet 13 of Appendix B-1). These trees would be replaced by the 400 foothill pines that form the tree screen, described above.

Processing Plant Site: The processing plant site would be hydroseeded with California native chaparral or grassland seed mix, depending on soil scientist assessment of substrate conditions.

Screening Berm: The newly established screening berm would be hydroseeded with California native grassland seed mix, or with native chaparral seed mix, depending on soil scientist assessment of substrate conditions.

Revegetation at the project site would adhere to performance standards, including cover, density, and species richness set forth in the revised reclamation plan. Qualified conservation biologists or botanists would monitor revegetated areas annually for a minimum of three years after seeding to assess whether revegetation is proceeding successfully. The revegetation plan proposed under the revised reclamation plan has been reviewed by the State Department of Conservation Division of Mine Reclamation, with no comment.

2.5.12 Equipment for Reclamation Activities

Table 2-2, "Equipment for Reclamation Activities," outlines equipment needed to carry out each reclamation activity under the proposed project. Most of this equipment is already used on-site for mining activities (not part of the project). New equipment that would be brought to the site to support reclamation activities would consist of specialized equipment required for the construction of the proposed outlet structure drainage pipeline at the quarry lake (i.e., boring machine, 25-ton hydro crane, concrete pumper truck).

TABLE 2-2
EQUIPMENT FOR RECLAMATION ACTIVITIES

Phase Name	Proposed Equipment
OVERBURDEN FILL AREAS	
Finish Slopes and Drainage	Backhoe, water truck
Revegetation	Hydroseed truck
QUARRY PIT AREA	
Contour Final Knoxville Slope	Excavator, loader, haul truck, water truck
Riprap Knoxville Slope Face	Excavator, loader, haul truck, water truck
Drainage: East Rim Haul Road	Grader, loaders (2), backhoe, water truck
Drainage: Rock Slope Protection Swales on Knoxville Face	Backhoe, excavator, loader, haul truck, water truck, concrete pumper truck
Drainage Outlet Structure	Backhoe, loader, welder, water truck, concrete pumper truck
Jack and Bore: Excavate Receiving Pit	Excavator, loader
Jack and Bore: Boring Sub Casing Pipe	Boring machine, loader, 25-ton hydro crane
Tree Screen Along East Rim Road	Backhoe
Install Drainage Outlet Pipe to Mitchell Canyon Road	Excavator, loader, welder
Riprap Mound at Quarry Drainage Outlet	Excavator, loader, haul truck, water truck
Fencing and Gates	Backhoe
Revegetation	Hydroseed truck

Phase Name	Proposed Equipment
PLANT AREA	
Landscape Screening Berm	Loader, scrapers (2), dozer, water truck
Removal of Processing Plant and Support Structures	80-ton rough terrain crane, excavators (3), loaders (3), dozer, concrete industrial saws (3), welders (3), forklift, water truck
Contour Grading and Resoiling	Dozers (2), scrapers (3), loader, grader, water truck
Revegetation	Hydroseed truck

Source: Appendix D-1, "Air and Greenhouse Gas Emissions Study."

2.5.13 Mining and Reclamation Sequence and Schedule

Under the revised reclamation plan, 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 mined lands that would not be subject to further disturbance by the surface mining operation. For example, many of the benches near the top of the quarry that will not undergo further mining have already been reclaimed and planted with pine trees. To the extent feasible, slope contouring and revegetation of the overburden fill areas would occur concurrent with ongoing mining activities. Final reclamation activities would begin after surface mining activities are terminated, currently estimated at 47 years from approval of this Revised Plan in 2068. Final reclamation activities would consist of finish slope contouring, revegetation, drainage facility construction, and processing plant removal, and would be anticipated to begin and end in 2068.

Under the revised reclamation plan, the number of employees on the project site would not increase relative to existing conditions.

2.6 DISCRETIONARY ACTIONS

It is anticipated that this Draft EIR will provide the required 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 operation at the project site could proceed, although quarrying operations pursuant to the currently effective operating permit (LUP #363-67) are anticipated to continue throughout the environmental review period.

As lead agency for the proposed project, the County is primarily responsible for the approvals required. The primary approval being sought is to replace the approved reclamation plan with the revised 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 and reporting program. In Contra Costa County, the County Planning Commission is the approval authority for certification of the Final EIR and for the land use permit amendments and reclamation plan amendment, which action is appealable to the County Board of Supervisors.

2.7 OTHER AGENCIES WHOSE APPROVAL MAY BE REQUIRED AND RELATED APPROVALS

In addition to the discretionary approvals by the County, 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 (advisory review of revised reclamation plan and related financial assurance);

- San Francisco Bay Regional Water Quality Control Board (Section 401 certification and/or Waters of the State permit);
- California Department of Fish and Wildlife (Section 1600 Lake and Streambed Alteration Agreement and possibly a California Endangered Species Act permit);
- U.S. Fish and Wildlife Service (Section 7 consultation; incidental take statement); and
- U.S. Army Corps of Engineers (Section 404 permit).

3—TERMINOLOGY, APPROACH, AND ASSUMPTIONS

This chapter provides an overview of the terminology, approach, and assumptions underlying the following topic-specific sections of this Draft Environmental Impact Report (Draft EIR). 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 Draft EIR, 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 Draft EIR 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 Draft EIR 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 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), 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 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."

3.3 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, if significant and unavoidable impacts are identified that would result with implementation of the project, these impacts cannot be reduced to a less-than-significant level after application of feasible mitigation measures and alternatives. As a condition of project approval, the applicant for the proposed project would be required to implement all of the mitigation measures identified in this Draft 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 Final 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 an Environmental Impact Report," of this Draft Environmental Impact Report (Draft EIR), 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 (Appendix A-4, "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, and
- Noise.

Section 1.3.2, "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, tribal cultural resources, utilities and services systems, and wildfire.

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

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4.1—AESTHETICS AND VISUAL RESOURCES

This section of the Draft EIR describes the existing visual setting of the project site as it exists today and as depicted in the approved 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.

The information in this section is based on a peer review of applicant-prepared visual simulations and publicly available sources. The applicant-prepared simulations, compiled by Compass Land Group and produced by Rocket Red Media, are located in Appendix C, "Visual Simulations." The simulations were peer reviewed by County-retained Benchmark Resources in 2020. The peer review letter reports are on file with the County.

4.1.1 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.

4.1.1.1 Regional Character

The project site is situated in the central portion of Contra Costa County, which is characterized by its location at the northern base of Diablo Range and significant topographic variations in the landscape, including views of Mount Diablo, Mount Zion, and their surrounding foothills, ridgelines, and valleys (see Figure 1-2, "Site Location," in Chapter 1, "Introduction"). The largest and most prominent of the hills form the backdrop for much of the developed portions of the region. Views of the major ridgelines generate a rural feeling for the county's various communities. Figure 9-1 of the Open Space Element of the *Contra Costa County General Plan* identifies the major scenic resources in the county, including major ridges and scenic waterways. The proposed project is not located on one of these recognized scenic features (Contra Costa County 2014).

The county has other smaller, localized scenic resources, such as isolated hilltops, rock outcroppings, mature stands of trees, lakes, reservoirs, and other natural features. These smaller resource areas are not identified in the *Contra Costa County General Plan*, but they contribute to the overall character of the region and therefore should be considered as part of visual impact analysis.

4.1.1.2 Vicinity Character

The topography surrounding the project site to the west and south is comprised of Mount Zion, which lies at northern toe of Diablo Range with an elevation of 1,635 feet and contains rolling grassland, chaparral, and oak woodland habitat. To the north and east, the topography flattens out towards the City of Clayton, a small but urban area situated at the convergence of Mitchell, Mount Diablo, and Donner Creeks.

Land uses surrounding the project site include other mining operations (west), open space areas (south and east), recreational facilities (south and southeast), and residential development (north and northeast) (see Figure 2-5, "Existing Facilities," in Chapter 2, "Project Description"). Mitchell Canyon Road is the only transportation corridor adjacent to the site.

Open space and a separate mining operation, the Lehigh Hanson Aggregates Kaiser Quarry, currently operated by Hanson Aggregates, abuts the proposed project site's western border. To the south and east, the site is bound by open space and Mount Diablo State Park. Mitchell Canyon Road and Mitchell Creek are also located east of the quarry. Residential uses are also located in the city of Concord and unincorporated Contra Costa County to the north and east of the project site. The nearest residential developments are contiguous to the northern and northeastern boundaries of the project area, with the nearest home approximately 30 feet from the northeast corner of Assessor Parcel Number (APN) 122-020-007, the location of the open field. The nearest home to the site entrance driveway is approximately 65 feet away.

4.1.1.3 Project Site Character

The project site is located on the east side of Mount Zion and consists of approximately 190 acres on a 335-acre property. The site is predominated by mining and processing facilities associated with CEMEX's operation (see Figure 2-5). The northern portion of the site (within APN 122-020-007) contains the plant site, sites of pre-Surface Mining and Reclamation Act (SMARA) mining disturbance (no mining since 1975), a storm water detention pond, and an open field consisting of rolling grassland and oak woodland. CEMEX's current mining operations are being conducted in a quarry pit within APN 122-020-013, which has visible benches exposing the hard rock of Mount Zion. This area also contains a haul road to the quarry site and the overburden fill areas. Additional visible features include processing activities, retention/detention basins, stockpiles, administrative offices, truck scales, and other facilities related to mining and processing.

4.1.1.4 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. No highways are within view of the project site, including those designated by California Department of Transportation (Caltrans) as scenic (Caltrans 2020).

Residential viewers typically have extended viewing periods and, depending on location, may have high visual sensitivity. Views from public parks, recreational trails, and/or culturally important sites also have high visual sensitivities and are therefore considered as sensitive viewpoints.

The Open Space Element of the *Contra Costa County General Plan* identifies scenic ridges, hillsides, rock outcroppings, and waterways and is intended to serve as a policy framework and implementation program for preservation of open space lands. The proposed project is not located on one of these recognized scenic features (Contra Costa County 2014).

4.1.1.5 Key Observations Points

To identify viewpoints, or key observation points (KOPs), from which the project may visible, Compass Land Group and Rocket Red Media studied the project area on October 13, 2015. Conditions at the project site have not substantially changed since site photos were taken on this date. 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 trails and parks. The quality of views from these locations are described and rated below. See Figure 2-1, "Revised Reclamation Plan Overview," for an aerial map of the existing project boundaries and proposed features of the screening berm, overburden fill areas, open space, and quarry lake. Figure 4.1-1, "Location of Key Observation Points," shows the location of each viewpoint. Figure 4.1-2, "KOP 1: View from Mount Diablo State Park (Looking Northwest)," Figure 4.1-3, "KOP 2: View from Clayton Community Park (Looking West)," Figure 4.1-4, "KOP 3: View from Marsh Creek Road (Looking West)," and Figure 4.1-5, "KOP 4: View from Marsh Creek Road and Easley Drive (Looking Southwest)," 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 at the Mitchell Canyon entrance to Diablo State Park at the southern terminus of Michell Canyon Road and is oriented northwest toward the southeastern portion of the project site, the east rim of the quarry pit, and the west face of Mount Zion. Viewers would include park visitors and employees, including drivers, cyclists, and pedestrians. 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 open space covered with grass and shrubs. Middle-ground views include rolling hills covered in oak woodland and the quarry pit east rim. The West Face of Mount Zion dominates the background view, which also features exposed rock and quarry benches from past mining activity.
- **KOP 2 (Medium):** This viewpoint is located at the northern terminus of Regency Drive and the Clayton Community Park and is oriented west toward the center of the project site and the West Face of Mount Zion. Viewers would include residents of the Regency-Woods and Diablo Estates residential communities, students and employees of Diablo View Middle School, and visitors of the Community Park. The quality of this view is considered medium because while the view includes open space lands, the area is disturbed by mining and visible residential neighborhoods. The view includes foreground views of baseball fields separated by a riparian corridor with trees, middle ground views of residential homes between trees, and background views of the West Face of Mount Zion and the project site, including the plant site, exposed rock face and east rim of the quarry pit, the access road, and open space.
- **KOP 3 (Medium):** This viewpoint is located on the west side of Marsh Creek Road near Pine Lane in southeast Clayton and is oriented west toward the center of the project site and the West Face of Mount Zion. Viewers would primarily consist of drivers on Marsh Creek Road (travelling at approximately 45 miles per hour), as no bike or pedestrian paths are located in the vicinity. The quality of this view would be medium because, while the view includes open space in the background, views are brief (mainly visible for passengers) and of the mined Mount Zion West Face and commercial and residential areas of Clayton. The view includes Marsh Creek Road and commercial property separated by a wire fence in the foreground, open space, and residential areas of Clayton in the middle ground, and the mined Mount Zion West Face and east rim surrounded by open space in the background.
- **KOP 4 (Medium-High):** This viewpoint is located at the intersection of Marsh Creek Road and Easley Drive and is oriented southwest toward the northern end of the project site. Viewers would include drivers traveling approximately 45 miles per hour (mph) (or 25 mph when children are present)) on Marsh Creek Road, drivers traveling approximately 25 mph on Easley Drive,

pedestrians on sidewalks and the nearby trail within Regency Woods Park, and cyclists. While the view includes some open space lands and the riparian area of Mount Diablo Creek, the area is disturbed by mining and visible residential neighborhoods. The foreground views consist of Marsh Creek Road, fenced residential property, and an open field leading to Regency Woods Park. Middle ground views include the riparian corridor of Mount Diablo Creek, and background views include residences between trees and the mined Mount Zion West Face.

4.1.2 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.

4.1.2.1 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).

4.1.2.2 Local

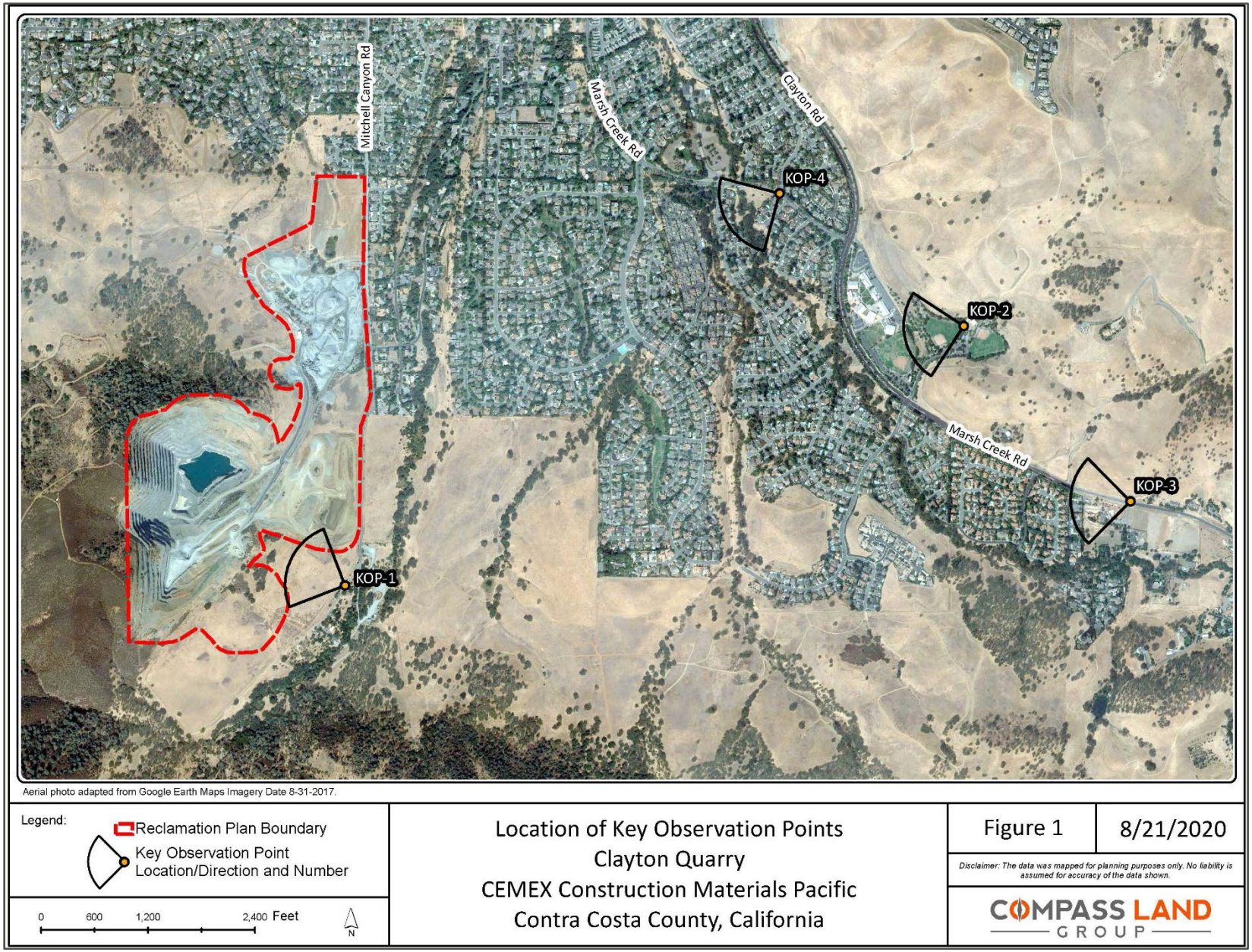
Contra Costa County General Plan

The *Contra Costa County General 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.

Land Use Element

Goal 3-G: To discourage development on vacant rural lands outside of planned urban areas which is not related to agriculture, mineral extraction, wind energy, or other appropriate rural uses; discourage subdivision down to minimum parcel size of rural lands that are within, or accessible only through, geologically unstable areas; and to protect open hillsides and significant ridgelines.

Policy 3-12: Preservation and buffering of agricultural land should be encouraged as it is critical to maintaining a healthy and competitive agricultural economy and assuring a balance of land uses. Preservation and conservation of open space, wetlands, parks, hillsides and ridgelines should be encouraged as it is crucial to preserve the continued availability of unique habitats for wildlife and plants, protect unique scenery, and provide a wide range of recreational opportunities for county residents.



SOURCE: Compass Land Group 2020; modified by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Location of Key Observation Points

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

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Figure 4.1-1

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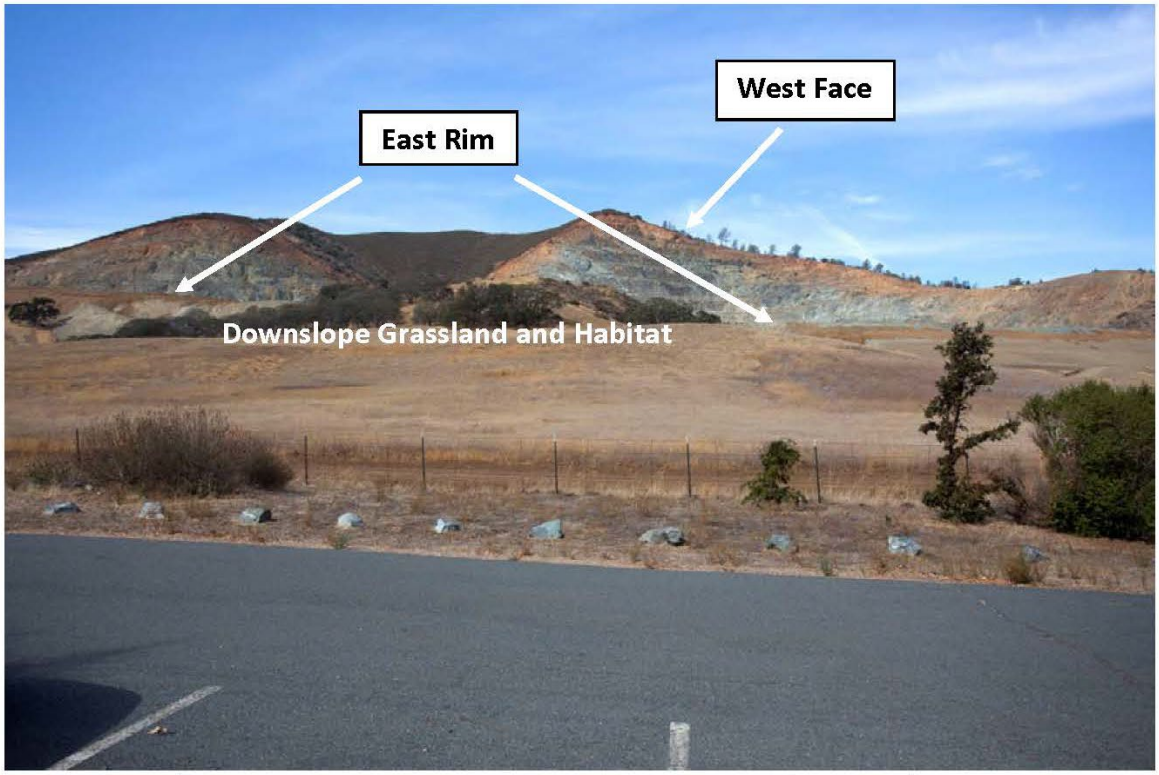

Existing Conditions Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; compiled by Benchmark Resources in 2021

Key Observation Point (KOP) 1:
View from Mount Diablo State Park (Looking Northwest)
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.1-2

BENCHMARK RESOURCES

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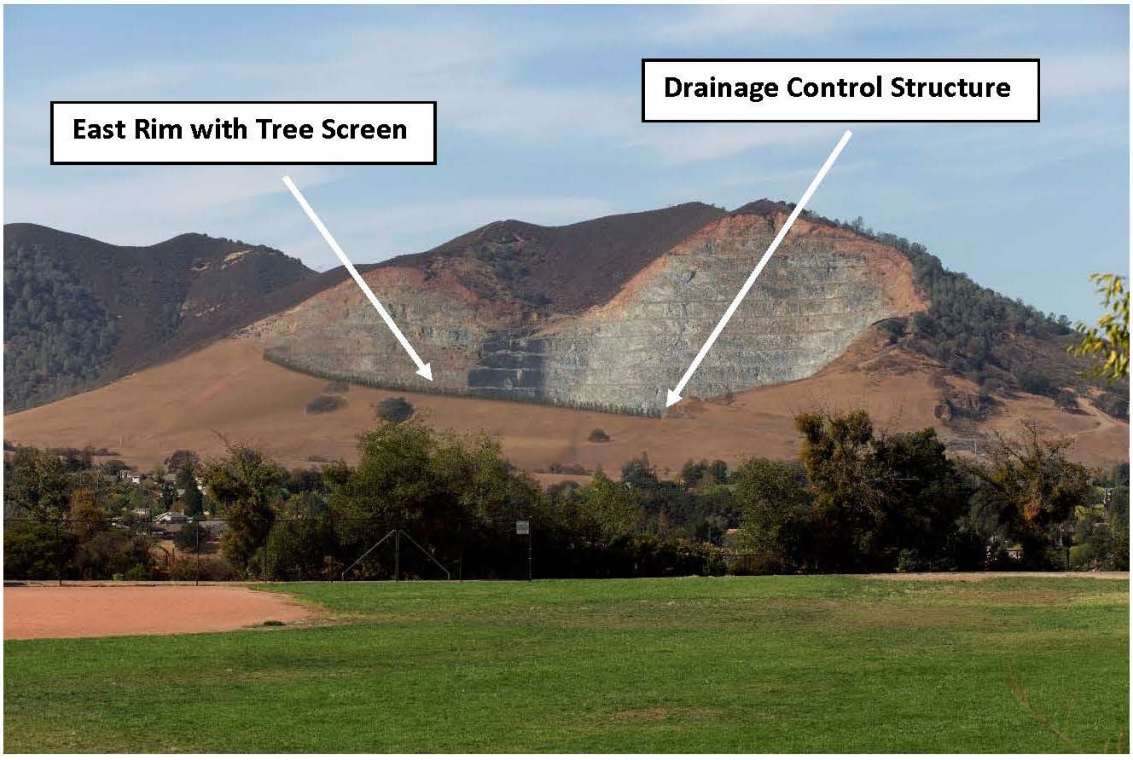

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; compiled by Benchmark Resources in 2021

KOP 2: View from Clayton Community Park (Looking West)
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.1-3

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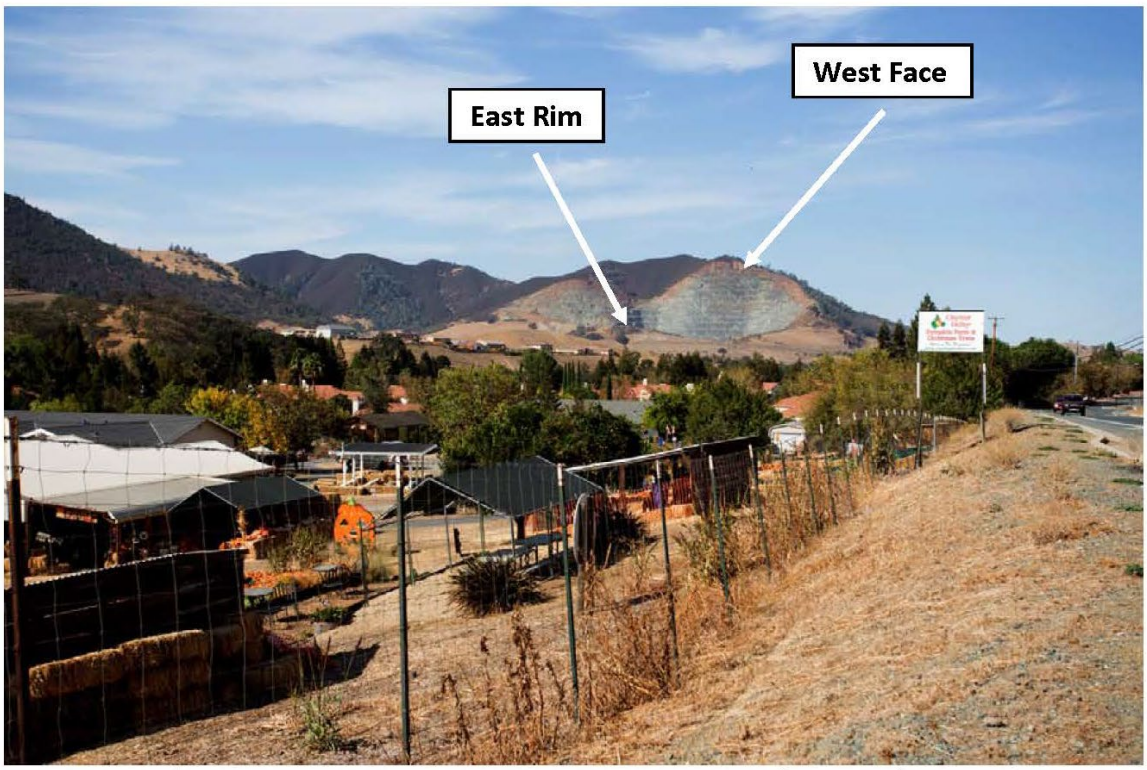

Existing Conditions Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; compiled by Benchmark Resources in 2021

KOP 3: View from Marsh Creek Road (Looking West)
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.1-4

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Existing Conditions Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; compiled by Benchmark Resources in 2021

KOP 4: View from Marsh Creek Road and Easley Drive (Looking Southwest)
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.1-5

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Conservation Element

Policy 8-1: Resource utilization and development shall be planned within a framework of maintaining a healthy and attractive environment.

Policy 8-21: The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.

Open Space

Goal 9-A: To preserve and protect the ecological, scenic, cultural/historic, and recreational resource lands of the county.

Policy 9-2: Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Policy 9-4: Where feasible and desirable, major open space components shall be combined and linked to form a visual and physical system in the county.

4.1.3 Significance Criteria and Analysis Methodology

4.1.3.1 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. If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality; or

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

4.1.3.2 Analysis Methodology

To identify viewpoints, or KOPs, from which the project may visible, Compass Land Group and Rocket Red Media studied the project area on October 13, 2015. Conditions at the project site have not substantially changed since site photos were taken on this date. 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 and parks. 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., *Contra Costa County General Plan* [Contra Costa County 2014]) 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 tree screening, topography, screening berm, 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.

4.1.4 Project Impacts and Mitigation Measures

Impact 4.1-1: Substantial Adverse Effect on a Scenic Vista

The proposed project is not located within or within view of a scenic vista (Contra Costa County 2014). Therefore, implementation of the proposed project would have no impact on a scenic vista.

Level of Significance: No impact.

Mitigation Measure: None required.

Impact 4.1-2: Substantially Damage Scenic Resources Within View of a Scenic Highway

The proposed project is not located near or within view of a scenic highway (Caltrans 2020). Therefore, implementation of the proposed project would have no impact on a scenic highway.

Level of Significance: No impact.

Mitigation Measure: None required.

Impact 4.1-3: Substantial Degradation of the Existing 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 4.1-5, show photographs of the existing viewpoints and simulations of proposed conditions for the existing viewpoints. 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 similar to existing conditions, including barbed-wire fencing in front of open space covered with grass and shrubs. Middle-ground views would be similar in character to existing conditions, but they would include the newly graded downslope grassland for the overburden fill areas, removal of some existing trees (discussed in greater detail in Section 4.3, "Biological Resources"), and addition of the east rim tree screen. The east rim tree screen would feature 400 foothill pines lined up along the rim to obscure a portion of the exposed rock face. The West Face of Mount Zion would continue to dominate the background view, including the exposed rock and quarry benches from past mining activity. 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 and the tree screen would provide some cover of the existing exposed rock and quarry benches. While the existing view and visual simulation are from the vantage point of the park entrance, park users that would view the proposed project site from the trails and northern portion of the park would be expected to have similar vantage points, and the impact determination would be the same for all park users at Mount Diablo State Park.
- **KOP 2:** As shown in Figure 4.1-3, the proposed project from this viewpoint would result in similar foreground views to existing conditions, including baseball fields separated by a riparian corridor with trees. Middle ground views would still feature residential homes visible in between mature trees as the landscape slopes upwards out of the valley. However, background views of the West Face of Mount Zion and the project site would feature a more uniform slope at the overburden fill areas, the east rim tree screen, and the reclaimed plant site. The drainage control structure would not be visible from this viewpoint. Views of the proposed project from this viewpoint would be of improved quality compared to existing conditions because the views would provide a more natural, landscaped setting.
- **KOP 3:** As shown in Figure 4.1-4, the proposed project from this viewpoint would result in similar foreground views to existing conditions, featuring Marsh Creek Road and commercial property separated by a wire fence. Middle ground views of would still include open space and residential areas of Clayton. The background view of the West Face of Mount Zion and the project site would appear similar in character to existing conditions, and the drainage control structure would not be visible. The overburden fill areas would result in a more natural-looking downward slope compared to the existing topography of the area, which includes existing overburden deposits. In addition, the tree screen along the east rim would be visible and obscure a small portion of the quarry rock face, resulting in a beneficial visual impact. Overall, the increase in plantings and the tree screen would not degrade the 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 improved compared to existing conditions.
- **KOP 4:** As shown in Figure 4.1-5, the proposed project from this viewpoint would result in foreground views similar to existing conditions, featuring Marsh Creek Road, fenced single-family residential property, and an open field leading to Regency Woods Park. Middle ground

views would continue to primarily consist of the riparian corridor of Mount Diablo Creek. Background views would also still include residences between trees and the mined Mount Zion West Face, with the east rim tree screen serving as the primary notable change. Views of the proposed project from this viewpoint would be of similar quality compared to existing conditions. Overall, the differences between existing conditions and the proposed project would result in improved views because the screening berm and tree screen along the East Rim would decrease views of the existing exposed quarry benches, which are considered undesirable. Also, removed trees would be replaced with 400 foothill pines, resulting in additional trees, which are considered visually desirable. Overall, the proposed project would provide a more natural setting, more native vegetation, and a higher quality of visual character than under existing conditions. 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 4.1-4: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area

Construction equipment related to reclamation activities and security lighting may introduce glare or light levels that could adversely affect nighttime views in the area. Potential sources of light and glare, such as vehicles and structures, would be removed from the site upon the completion of reclamation activities. The Applicant has agreed to Mitigation Measure 4.1-4, "Daily Limitation of Construction Activities," which limits reclamation activities to daytime hours. With the incorporation of Mitigation Measure 4.1-4, no reclamation activities would occur at night, and the completed project would not include lighting. 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 with mitigation.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measure 4.1-4: Daily Limitation of Reclamation-Related Construction Activities
All reclamation-related construction activities shall be limited to the hours of 7 a.m. to 7 p.m. Monday through Friday.

Level of Significance After Mitigation: Less than significant.

4.2—AIR QUALITY

This section of the Draft EIR 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, Clayton Quarry Reclamation Plan Amendment* prepared by Compass Land Group (Appendix D-1, "Air and Greenhouse Gas Emissions Study")
- *Public Health Risk Assessment of Site Reclamation* (HRA) prepared by Compass Land Group (Appendix D-2, "Public Health Risk Assessment of Site Reclamation")

These analyses were peer reviewed by County-retained Rincon Consultants, Inc. in February and October of 2020. The peer review letter reports are on file with the County. The applicant revised the referenced air quality analysis; the revised report is located in Appendix D-1. The final *Air and Greenhouse Gas Emissions Study*, dated July 2020, adequately addressed the peer reviewer's comments and questions. The peer reviewer had no comments or questions on the HRA (see Appendix D-2).

4.2.1 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 eastern Contra Costa 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.

4.2.1.1 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, which are 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.

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.

Local Topography, Meteorology, and Climate

Temperatures in and around the San Ramon and Diablo Valleys are warm in the summer and cool in the winter, largely because of their distance from the moderating effect of water bodies and because the California Coast Range blocks marine air flow into the valleys. The Carquinez Strait region remains temperate due to its proximity to water and oceanic air flows. In winter, average daily temperatures are mild, with tule fog common at night. Average summer temperatures are typically mild overnight and warm during the day, with cooler temperatures and stronger winds more common along the western coast. Wind speeds are generally low throughout the region and winds typically blow from northwest to southwest. However, strong afternoon gusts are common in the northern portion of the county around the Carquinez Strait. Annual rainfall averages between 18 and 23 inches across the county (BAAQMD 2019).

Clayton is located in the upper reaches of Clayton Valley. In general, valleys with surrounding ridges and mountains (also called box-end configurations) such as this have a greater susceptibility to poor air quality because they tend to trap air and have greater potential for temperature inversions. Since box-end configurations block winds, these areas lack the flushing action that winds give to coastal and estuarine areas (City of Clayton 2016). The topography within 2 miles of Clayton contains very significant variations in elevation, with a maximum elevation change of 1,309 feet and an average elevation above sea level of 655 feet. Within 10 miles of Clayton there are very significant variations in elevation (3,802 feet).

The air pollution potential of the project vicinity is mostly influenced by air quality in the adjacent Concord area. Concord is particularly susceptible to air pollution due to regional airflow patterns in conjunction with upwind emission sources. When southwesterly or northwesterly winds occur, pollutants from the South Bay/Livermore area or North Bay are carried into the Concord area. South-southwesterly winds predominate about 40 percent of the time while northwesterly winds occur 5 to 10 percent of the time. Pollutant concentrations can also increase further during relatively calm periods because of local emission sources. Calm conditions occur about 30 percent of the time (City of Clayton 2016).

The nearest meteorological station is in the City of Concord (Buchanan Field) approximately 6 miles west of the project site. Although the Concord area influences the larger airflow patterns in the Clayton Valley, the HRA determined that the meteorological station data from Buchanan Field would not be representative for use in its exposure assessment due to the complex terrain around the project site (e.g., rapidly changing topographic conditions over short distances associated with the quarry and Mt. Zion). Therefore, the 5th generation mesoscale (MM5) model developed by National Center for Atmospheric Research (NCAR) was used to generate site-specific meteorological data for the period January 1, 2015 to December 31, 2019. According to the data, winds are predominantly from the west-southwest with an average annual speed of 7.3 knots. Calm winds occur approximately 2 percent of the time (see Appendix D-2).

Ozone and fine particle pollution, or $PM_{2.5}$, are the major regional air pollutants of concern in the Bay Area. Ozone is primarily a problem in the summer, and fine particle pollution in the winter. Ozone and $PM_{2.5}$ infrequently exceed health standards in the portion of Contra Costa County west of the East Bay hills. The San Francisco Bay keeps air temperatures above freezing in winter and well below 100 degrees on even the warmest summer days. In eastern Contra Costa County, summer afternoon temperatures frequently approach triple digits, spurring ozone levels to exceed health standards. In winter, $PM_{2.5}$ can be transported westward through the Carquinez Strait from the Central Valley where it adds to wood smoke, causing health standards to be exceeded (BAAQMD 2019).

4.2.1.2 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. California Air Resources Board (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 2013).

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 2021).

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. EPA, CARB, and BAAQMD have all adopted measures to reduce emissions of nitrogen oxides. BAAQMD 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 2014).

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 and

salts from the ocean. 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 2013).

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 2013).

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 intelligence and behavioral problems (EPA 2013).

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 life stages (EPA 2013).

4.2.1.3 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. TACs 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* (see Appendix D-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 a hazard index (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.).

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," below.

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 percent	—	—

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

Source: CARB 2016.

Acronyms: CO=carbon monoxide; µg/m^3 = micrograms per cubic meter; mg/m^3= milligrams per cubic meter; NO_2=nitrogen dioxide; O_3=ozone, ppm = parts per million by volume; SO_2=sulfur dioxide, PM_{10} and $PM_{2.5}$= suspended particulate matter.

Notes:

1. California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, 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.
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 (µg/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 degrees Celsius (°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 Station 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 Concord (Treat Blvd.) air monitoring station (ID 06-013-0002), is located at approximate GPS coordinates 37.936013, -122.026154 and at the intersection of Oak Grove Road and Treat Boulevard. Recent air quality monitoring results from the Concord station are summarized in the *Air and Greenhouse Gas Emissions Study* (see Appendix D-1).

4.2.2 Regulatory Setting

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

4.2.2.1 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.

4.2.2.2 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 describe adverse conditions for certain emissions (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 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 (ROAR) 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 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 pounds 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 (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. 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 pounds have replacement requirements starting January 1, 2015. 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).

Assembly Bill 1807 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), CARB and OEHHA determined if a substance should be formally identified as a TAC in California. In the second step (risk management), CARB 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 CARB 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.

4.2.2.3 Local

Contra Costa County General Plan

The *Contra Costa County General Plan* Conservation Element contains air quality goals and policies to address air pollution in the county. General Plan air quality goals and policies applicable to the project include the following:

Conservation Element

Goal 8-AA: To meet Federal Air Quality Standards for all air pollutants.

Goal 8-AB: To continue to support Federal, State and regional efforts to reduce air pollution in order to protect human and environmental health.

Goal 8-AC: To restore air quality in the area to a more healthful level.

Policy 8-103: When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.

Policy 8-104: Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.

Bay Area Air Quality Management District

BAAQMD has local air quality jurisdiction over projects in Contra Costa 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 NOx 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 Community Air Risk Evaluation (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. The CARE program served as a starting point for the Air District's Community Health Protection Program.

BAAQMD's CEQA Guidelines document provides guidance to assist lead agencies in determining the level of significance of project-related emissions, and contain 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.

4.2.3 Significance Thresholds and Analysis Methodology

4.2.3.1 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 significance 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	

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)

Source: BAAQMD 2017b.

Notes:

1. Project level thresholds of significance adapted from Tables 2-1 and 2-2 of the BAAQMD CEQA Guidelines (BAAQMD 2017b).
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 2017b: 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 4.2.4, "Project Impacts and Mitigation Measures." Issues related to greenhouse gas are presented in Section 4.5, "Greenhouse Gas Emissions."

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) hazard index 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 hazard index (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, "Cumulative Impacts."

4.2.3.2 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 4.2.4, "Project Impacts and Mitigation Measures," the *Air and Greenhouse Gas Emissions Study* and the HRA (see Appendix D), evaluates the potential air quality and health risk impacts 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.

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 over an anticipated period of 47 years, ending in 2068.

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 overburden fill, quarry pit, off-site drainage improvement, and processing plant areas. For modeling purposes, certain end-of-life Project reclamation activities are assumed to be constructed in year 2049 (ahead of CEMEX's anticipated final reclamation date of 2068). 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 in 2068. 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, BAAQMD's preliminary screening methodology was applied, 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. Compass Land Group 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 at Treat Boulevard in Concord (nearby), which are still well below the NAAQS and CAAQS.

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 hazard index)
3. Chronic non-cancer risk (reported as a hazard index)

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 D-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 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 processing facility located on the project site to show that this permitted use (even though it is not part of the proposed project) has not resulted in a significant number of odor complaints as compared to BAAQMD thresholds of significance that are discussed in Table 4.2-2. Detailed estimating methods and assumptions are provided in the *Air and Greenhouse Gas Emissions Study*'s appendices (see Appendix D-1).

4.2.4 Project Impacts and Mitigation Measures

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

The BAAQMD's 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 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 *Contra Costa County General Plan*.

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 2017a). As discussed under Impact 4.2-2 below, model years are below the applicable thresholds for all criteria pollutants. Therefore, project emissions would not hinder the air district in its goals for reducing significant air pollutants in the air basin, resulting in a less than significant impact on consistency with the Clean Air Plan.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.2-2: 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

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, revegetation, removal of mining equipment and facilities, and construction of drainage facilities.

Table 4.2-3, "Daily Criteria Air Pollutants and Precursor Emissions Analysis (lb/day)," 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)," presents the annual criteria air pollutants and ozone precursor emissions analysis. A complete report of project emissions is included in the *Air and Greenhouse Gas Emissions Study*'s (see Appendix D-1) Appendix A, "Proposed Project Models and Inputs."

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

Emissions Category	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
2022 Project Emissions	3.8	38.0	1.5	1.4
2025 Project Emissions	2.6	19.0	0.7	0.6
2068 Project Emissions	4.6	12.9	0.4	0.4

Emissions Category	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Highest Year Project Emissions	**4.6**	**38.0**	**1.5**	**1.4**
BAAQMD CEQA Significance Thresholds	54	54	82	54
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**	**No**

Source: Appendix D-1.
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 (see Appendix D-1) 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)

Emissions Category	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
2022 Project Emissions	0.1	0.13	$5.4x10^{-3}$	$5.0x10^{-3}$
2025 Project Emissions	0.05	0.39	0.01	0.01
2068 Project Emissions	0.2	0.52	0.01	0.01
Highest Year Project Emissions	**0.2**	**0.52**	**0.01**	**0.01**
BAAQMD CEQA Significance Thresholds	10	10	15	10
Exceeds Threshold (Yes/No)?	**No**	**No**	**No**	**No**

Source: Appendix D-1.
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 (see Appendix D-1) 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 Tables 4.2-3 and 4.2-4, above, all project criteria pollutant emissions are below applicable BAAQMD thresholds of significance for CEQA (BAAQMD 2017b). Therefore, the Project's potential criteria air pollutant impacts would be less-than-significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

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

Health Risk

In the HRA (see Appendix D-2), the emission rates discussed in Impact 4.2-2, above, were used as a basis to calculate emissions concentrations using dispersion modeling and then 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 0.39 cancers per million. The risk varies from approximately less than 0.4 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 0.01 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 residential risk levels are parallel to and on the east side of Mitchell Canyon Road, immediately east of the Project area. The highest residential risk level is identified at a residence located at the southwest side of the cul-de-sac at the south end of Widmar Place. Risk at nearby schools, day care centers, and medical centers are estimated to be 0.06 or less cancers per million. The highest worker risk occurs at the Mitchell Canyon Visitor Center within the Mount Diablo State Park at the south end of Mitchell Canyon Road.

The maximum non-cancer risks at nearby homes and businesses are calculated in terms of a hazard index (HI). The highest acute hazard index values of 0.3 occurs east of Mitchell Canyon Road, south of Diablo Downs Drive, and west of Tally Ho Court. Chronic hazard index was at or below 0.005 at all off-site receptors and as a result a meaningful contour map could not be generated.

The project's incremental annual average $PM_{2.5}$ concentration is 0.11 micrograms per cubic meter ($\mu g/m^3$), which is less than the applicable threshold of greater than 0.3 $\mu g/m^3$ (see Appendix D-2). 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 Project Health Risks," below. For additional detail, refer to Appendix D-2.

TABLE 4.2-5
SUMMARY OF PROJECT HEALTH RISKS

Risk Metric	Maximum Off-Site Value	Significance Threshold	Significant?
Residential Cancer Risk per Million (30-year exposure)	0.39	10	No
Worker Cancer Risk (25-year exposure)	0.01 at Mitchell Canyon Visitor Center	10	No
Cancer Risk per Million at Sensitive Receptors (schools, hospitals)	0.028 at Mt. Diablo Elementary School 0.022 at Pine Hollow Middle School 0.064 at Clayton's Children Center 0.028 at Clayton Community School 0.022 at Sho Day Care 0.006 at John Muir Medical Center	10	No
Chronic Hazard Index	Residential 0.005 Worker 0.002	1.0	No
Acute Hazard Index	Residential 0.34 Worker 0.235	1.0	No
Annual $PM_{2.5}$	0.11 ug/m3	> 0.3 ug/m^3	No

Source: Appendix D-2.

Carbon Monoxide (CO) Hotspots

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuel. The largest source of CO is vehicle engines, and the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Consequently, violations of the CO standard are generally limited to major intersections during peak-hour traffic conditions. Exposure of humans to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches,

nausea, dizziness, fatigue, impaired central nervous system function, and angina (chest pain) in persons with serious heart disease. Very high concentrations of CO can be fatal. However, high concentrations are not expected as a result of the project.

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.

   The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
2. 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 Contra Costa Transportation Authority (CCTA) serves as the congestion management agency for Contra Costa County and develops and implements the applicable Congestion Management Program (CMP). The CMP outlines CCTA's strategies for managing the performance of regional transportation within the County and must be updated every other year. CCTA updated the CMP most recently in 2019. The CMP covers State highways, principal arterials, and the Bay Area Rapid Transit (BART) system.

CCTA recognizes I-680 and State Route 242 as the nearest CMP-covered highways, and Kirker Pass Road, Ignacio Valley Boulevard, and Clayton Road (west of the intersection of Kirker Pass/Ignacio Valley) as the nearest principal arterials and routes of regional significance. The CMP designates principal arterials with average daily traffic that equals or exceeds 20,000 vehicles per day for a segment of one mile or greater. Chapter 5 of the CMP includes a program to analyze the impacts of land use decisions made by local jurisdictions on these regional transportation systems. For short-range analysis of land use impacts, the CMP relies on the traffic impact analysis required by the Measure J Growth Management Program. That program requires every jurisdiction to conduct a traffic impact analysis for any proposed development project, development plan, or General Plan Amendment that would generate more than 100 net new peak hour vehicle trips (CCTA 2019).

Although the project is located within two miles of the principal arterials and roadways of regional significance that are designated in the CMP, the project would not conflict with the CMP because reclamation activities would only occur for short periods of time and would 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 and far less than 100 net new peak hour vehicle trips. Based on the project trip generation estimates reported in Appendix D-1, the project would generate up to 98 daily vehicle trips associated with reclamation activity (during removal of the processing plant which is the reclamation activity with the highest trip count), including all worker, vendor, and hauling trips. This corresponds to 49 trips entering and 49 trips leaving the site each day. To put these figures into perspective, as of 2017 Caltrans estimated that State Route 242 at Concord Avenue, which is the closest of the nearby highways, will experience 136,500 annual average daily traffic (AADT) (Caltrans 2017).

In addition, the proposed 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, the project's potential CO impacts would be less than significant.

Compass Land Group's CalEEMod modeling results indicate that proposed project's CO emissions would peak at approximately 31.85 pounds per day and 1.29 tons per year in model year 2049 (representing the period of final reclamation activities anticipated to occur in 2068). These values represent mass emissions estimates and not an emissions concentration, which is the metric used in BAAQMD's operational thresholds. As documented by 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 (BAAQMD 2017c). 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 Concord air monitoring station since January 2019 indicate a maximum CO concentration of 2.0 ppm (8-hour average) and 9.4 ppm (1-hour average) occurring in April 2020 . Given that these CO concentrations are measured in the urban core where traffic is congested during the morning and afternoon peak hours, they represent much higher concentrations of CO than would be expected at the project site. To put these concentrations into perspective, in 2019 BAAQMD estimated that Treat Blvd. at the Concord air monitoring station would generate 39,864 AADT based on updated traffic count data from April 1, 2019. The project would generate up to 98 daily vehicle trips associated with reclamation activity per day (or 0.2% of the traffic volume at the air monitoring station) (see Appendix D-1).

As a result, the proposed project's impacts relating to CO would be less than significant based on BAAQMD CO screening criteria and Concord (Treat Blvd.) air monitoring station data.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.2-4: Result in Other Emissions 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. The air consultant also obtained compliance history from BAAQMD for the existing processing facility located on the project site to show that this permitted use (even though it is not part of the proposed project) has not resulted in a significant number of odor complaints as compared to BAAQMD thresholds of significance. CEMEX has received no odor complaints in the last three years.

The project's potential odor impacts are less-than-significant based on the nature of reclamation construction activities and BAAQMD's odor screening criteria.

Level of Significance: Less than significant.

Mitigation Measures: None required.

4.3—BIOLOGICAL RESOURCES

This section of the Draft EIR 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:

- *Results of Biological Resources Assessment, Cemex Clayton Quarry, Contra Costa County* (BRA) prepared by LSA Associates, Inc. (LSA) (Appendix E-1, "Biological Resources Assessment")
- *Arborist Report, Cemex Clayton Quarry* (Arborist Report) prepared by LSA (Appendix E-2, "Arborist Report")
- *Clean Water Act Jurisdictional Delineation, Cemex Clayton Quarry, Clayton, California* prepared by LSA (Appendix E-3, "Clean Water Act Jurisdictional Delineation")

The BRA (Appendix E-1), Arborist Report (Appendix E-2), and Clean Water Act Jurisdictional Delineation (Appendix E-3) prepared by LSA were peer reviewed by County-retained Rincon Consultants in 2020. LSA revised the BRA and Arborist Report in response to the comments received (the Clean Water Act Jurisdictional Delineation was determined to be adequate and no changes were necessary). The peer review letter reports are on file with the County.

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 Data Collection and Field Survey Methods

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

Literature Review

LSA collected observational records for natural resources within the Clayton 7.5-minute U.S. Geological Survey (USGS) quadrangle and the surrounding eight quadrangles (Vine Hill, Honker Bay, Antioch North, Antioch South, Tassajara, Diablo, Las Trampas Ridge, and Walnut Creek) 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 Department of Agriculture (USDA), Natural Resources Conservation Service's (NRCS) Web Soil Survey

LSA reviewed the USDA Web Soil Survey (NRCS 2015, cited in Appendix E-1) 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. LSA followed the guidelines for site assessments as described in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (United States Fish and Wildlife Service [USFWS] 2005), by identifying known

records of California red-legged frogs within a 1 mile radius of the site. LSA also identified the habitats within the project site and within 1 mile of the site by reviewing aerial imagery.

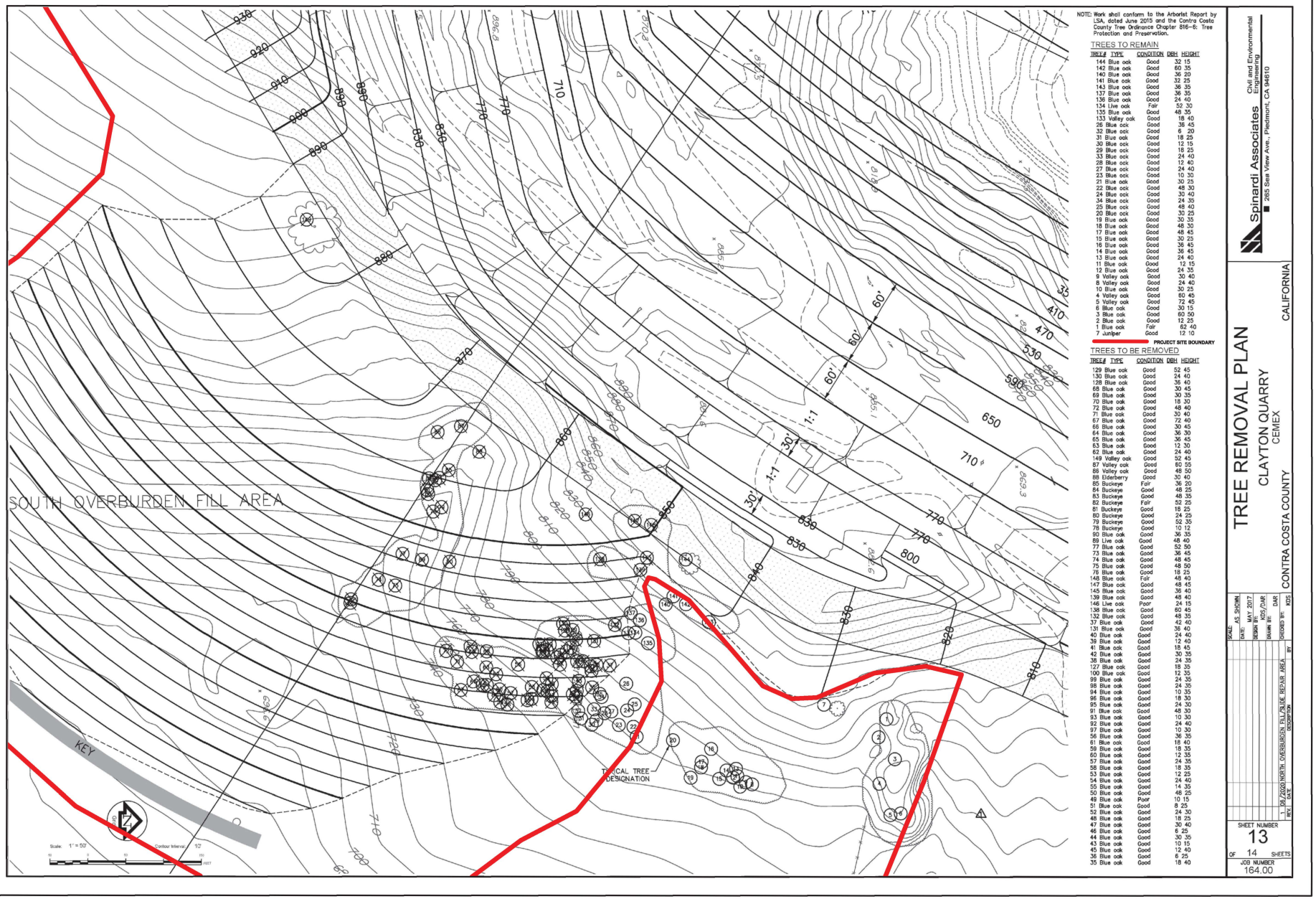
Field Surveys

As documented in the BRA (Appendix E-1) LSA conducted biological resource field surveys on September 18, 2015 and December 2, 2016. During the September 18, 2015 visit, LSA conducted a habitat assessment focused on Assessor Parcel Number (APN) 122-020-013 (shown on Figure 1-2, "Site Location" in Chapter 1, "Introduction") for California red-legged frogs (*Rana draytonii*), Alameda striped racers (*Coluber lateralis euryxanthus*), and steelhead (*Oncorhynchus mykiss*). An LSA biologist traversed the site on foot and also surveyed a nearby portion of Mitchell Creek within Mount (Mt.) Diablo State Park on that date. During the visit on December 2, 2016, the biologist focused on APN 122-020-007 and the associated inholding of APN 122-020-006 (shown on Figure 1-2). Due to safety concerns, LSA did not enter areas with active mining operations. These areas do not have the potential to support special-status species because they have been highly disturbed.

During the site visits, LSA assessed the current conditions and evaluated the site's potential to support special-status plant or animal species. All observations were recorded in field notes and on maps. Full protocol-level surveys were not conducted. The LSA biologist followed the guidelines for site assessments as described in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (USFWS 2005) by identifying known records of California red-legged frogs within a 1.6 kilometer (1 mile) radius of the site. The biologist also identified the habitats within the project site and within 1 mile of the site by reviewing aerial imagery. Following the site surveys, 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 E-1.

LSA also conducted a tree survey on May 12 and June 14 of 2015. The tree survey involved recording the species, trunk diameter at breast height (DBH; in inches as measured 4.5 feet above natural grade), and condition of all the trees within the study area. If an individual tree had multiple trunks, the diameters of all the trunks were totaled. Individual surveyed trees were mapped and numbered on the site plan (see Figure 4.3-1, "Tree Removal Plan") and marked in the field using numbered tree tags that correspond with the tree numbers provided in Figure 4.3-1. LSA used the grading plan to designate a survey area which was overlaid on a map with aerial imagery. The arborist brought this map into the field and numbered the trees as they were inventoried. Tree locations were also recorded using a submeter accurate Global Positioning System (GPS) unit. Because GPS reception is poor under the canopy of mature trees, the arborist used a TruPulse 360R laser rangefinder with the GPS to calculate offsets to the tree locations while standing outside of the tree canopies. Trees that had any grading within the drip line were considered to be permanently impacted (see Appendix E-2).

Finally, LSA conducted a field investigation and Clean Water Act (CWA) jurisdictional delineation on the portion of the project site that might include impacts to jurisdictional waters on November 18, 2015 (see Appendix E-3). The study area encompassed an ephemeral ravine and a debris retention basin at the bottom of the ravine that are located adjacent to older overburden spoil piles and entirely within property owned by CEMEX. The field investigations of potentially jurisdictional wetlands were conducted using the routine determination method provided in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the revised procedures in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (United States Army Corps of Engineers [USACOE] 2008). This methodology entails examination of specific sample points within potential wetlands for hydrophytic vegetation, hydric soils, and wetland hydrology.



SOURCE: Spinardi Associates 2021, Project Description and Application Supplement; modified by Benchmark Resources in 2021
NOTES: Figure not to scale.

Tree Removal Plan
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Figure 4.3-1

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By the federal definition, all three parameters must be present for an area to be considered a wetland. LSA mapped the watercourse in the ravine using a GPS receiver with sub-meter accuracy. No potential wetlands were present in the project site, so LSA had no need to apply federal wetland delineation methodology.

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;
- Identified as Rank 1 through 4 by CNPS; or
- Receive consideration during environmental review under the California Environmental Quality Act (CEQA).

Special-status species considered for this analysis were based on queries of the CNDDB, USFWS, and CNPS ranked species (online versions) for the Clayton and eight surrounding quadrangles: Vine Hill, Honker Bay, Antioch North, Antioch South, Tassajara, Diablo, Las Trampas Ridge, and Walnut Creek. 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.
- **Moderate:** Species known to occur in the vicinity of the project site and there is a moderate amount of 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.

Protected Trees Determination

The health and structural condition of each tree were classified as follows:

- **Good:** Trees with good health and structure that have potential for longevity on site;
- **Fair:** Trees with somewhat declining health and/or structural defects; or
- **Poor:** Trees in poor health or with significant structural defects that cannot be mitigated. Trees in this category are expected to continue to decline.

The arborist also determined which trees in the study area qualify as "heritage" and/or "protected" as defined by the Contra Costa County Tree Protection and Preservation Ordinance and determined as follows:

- **Heritage tree.** A tree 72 inches or greater in circumference (22.9 inches in diameter) measured 4 ½ feet above the natural grade or any tree or a group of trees particularly worthy of protection and specifically designated as a heritage tree by the board of supervisors pursuant to the provisions of this chapter, because of:
  A. Having historical or ecological interest or significance; or
  B. Being dependent upon each other for health or survival; or
  C. Being considered an outstanding specimen of its species as to such factors as location, size, age, rarity, shape, or health.
- **Protected tree.** A subject tree that is adjacent to or part of a riparian, foothill woodland, or oak savanna area, or part of four or more trees, that measures 20 inches or larger in circumference (6.4 inches in diameter) at breast height (measured 4.5 feet above natural grade). Subject trees include any California buckeye (*Aesculus californica*), California juniper (*Juniperus californica*), coast live oak (*Quercus agrifolia*), blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), or native blue or red elderberry (*Sambucus nigra* subsp. *caerulea* or *S. racemosa* var. *racemosa*). Heritage trees are also protected trees by this definition.

4.3.1.2 Vegetation Cover Types and Associated Wildlife Species

The BRA identified several vegetation types characteristic of Mount Diablo in the undeveloped portions of the project site. They include non-native grassland, chaparral, oak woodland, and ruderal/disturbed. These vegetation types are described in below.

Non-Native Grassland

Non-native grasslands cover most of the flatter areas of the site. Plant species composition within the non-native grassland is dominated by introduced annual grasses and broadleaf forbs. Common grass species include wild oats (*Avena barbata* and *A. fatua*), soft chess (*Bromus mollis*), and ripgut brome (*Bromus diandrus*). Common introduced broadleaf species include black mustard (*Brassica nigra*), filaree (*Erodium cicutarium*) and Italian thistle (*Carduus pycnocephalus*). Foothill needlegrass (*Stipa lepida*) and California melic (*Melica californica*) are two native grasses that grow along the margins of chaparral stands. Ithurial's spear (*Triteleia laxa*), a native wildflower, is also present. Very few other native species occur in the grassland and only in small numbers.

Chaparral

Stands of chaparral are present on steeper slopes. The chaparral vegetation type is composed of several shrub species which form a dense cover with little or no understory vegetation. Black sage (*Salvia mellifera*) is often the dominant species with chamise (*Adenostoma fasciculatum*), California sagebrush (*Artemisia californica*), sticky monkeyflower (*Mimulus aurantiacus*), and yerba santa (*Eriodictyon californicum*) present around the margins of the chaparral. Deer weed (*Lotus scoparius*), an herbaceous perennial, grows in openings and along the margins of the chaparral.

Oak Woodland

Oak woodland stands are present on slopes. The dominant trees are blue oak (*Quercus douglasii*) and valley oak (*Quercus lobata*). Grass species, similar to those found in the non-native grassland, are present in the understory. Coast live oak (*Quercus agrifolia*) and gray pine (*Pinus sabiniana*) are the dominant trees in some areas, with some California buckeye (*Aesculus californica*) and blue elderberry (*Sambucus mexicana*) also present.

Ruderal/Disturbed

Much of the site has been disturbed by previous quarry activities, including previous overburden fill disposal. A variety of weedy species which have colonized these sites form a ruderal/disturbed vegetation type.

Suitable Wildlife Habitat

Wildlife species are found in association with those vegetation cover types which fulfill their requirements for food, water and cover. Depending on the species and its specific habitat requirements, an animal may use several vegetation cover types or just one.

Grassland is one of the three primary vegetation communities present. Common wildlife species that depend primarily on grasslands include Botta's pocket gopher, California meadow mouse, western harvest mouse, western meadowlark, and lark sparrow. Species which move regularly between the grassland and adjacent habitats include brush rabbits and western bluebirds. Although they do not depend solely on it, larger mammals and birds also regularly use the grassland for hunting or feeding. This group includes bobcat, coyote, black-tailed deer, American kestrel, redtailed hawk, and great horned owl. Reptiles likely to be found in the grassland include the western fence lizard, California kingsnake, gopher snake, and western yellow-bellied racer.

The chaparral is composed of shrubs with varying heights. Bird species found primarily within the chaparral include wrentit, Bewick's wren, blue-gray gnatcatcher, and spotted towhee. These species remain within the shrubs, only occasionally moving into adjacent areas. Other bird species regularly move between the chaparral and adjacent grasslands or woodlands. This group includes Anna's hummingbird, scrub jay, bushtit, California towhee, dark-eyed junco, white-crowned, and goldencrowned sparrows. Larger mammals, including bobcat, coyote, gray fox, and deer, use the chaparral for rest and cover. A variety of small mammals are also found in the chaparral. They include brush rabbit, deer mouse, and striped skunk. Expected reptiles include western fence lizard, southern alligator lizard, western rattlesnake, and Alameda striped racer. Western whiptails and coast horned lizard are also present in areas of undisturbed chaparral.

The oak woodland supports a variety of bird species that favor deciduous oaks. These species include acorn woodpecker, Nuttall's woodpecker, ash-throated flycatcher, oak titmouse, whitebreasted nuthatch, western bluebird, and Bullock's oriole. A variety of other bird species depend on the oaks for roosting, nesting, and feeding. The natural and excavated cavities which are present are important nest sites. Acorns are a food source for a variety of bird and mammal species (see Appendix E-1).

4.3.1.3 Project Site General Habitat Conditions

The habitat conditions within the project parcels are shown in a series of site photographs taken by LSA on Figures 4.3-2a-2g, "Site Photographs," and described below.

APN 122-020-006

This approximately 3.5-acre in-holding parcel is owned by the Contra Costa Water District (CCWD) and is not part of the proposed project (see Figure 2-5, "Existing Facilities" in Chapter 2, "Project Description"). However, LSA included the site in its assessment since it is adjacent to the project boundary and situated within APN 122-020-007, discussed below. It is crossed by a graveled access road which leads to CCWD's Murchio Reservoir, which is a covered reservoir (Figure 4.3-2a [Photograph 1]). The undeveloped portion of the site is dominated by non-native annual grasses, with a few mature coast live oak trees. It appears that the undeveloped portion of the parcel is regularly

mowed. The gravel road and graveled areas around the reservoir appear to be treated with herbicides to control vegetation.

APN 122-020-007

This parcel is approximately 154.2 acres in size (see Figure 2-5). Soils on the parcel mainly consist of Gilroy Clay Loam, a well-drained upland soil underlain by basic igneous rock. Approximately 25 percent of this parcel is developed and used for quarrying operations, primarily the processing and storage of quarried rock. An old dilapidated residence with associated ornamental trees is located near the quarry operations.

Most of the parcel is covered with non-native annual grasses, with evidence of historical use for cattle grazing. The grassland transitions into a blue oak savannah on the north-facing slope in the southwest corner of the parcel (Figure 4.3-2a and -2b [Photographs 2 and 3]). This blue oak woodland transitions into a gray pine forest near the top of the slope. A row of planted dwarf blue gum eucalyptus (*Eucalyptus globulus* var. *compacta*) lines Mitchell Canyon Road on the east side of the parcel. Several basins that are used for collecting mining process water are present on the parcel (Figure 4.3-2b [Photograph 4]). There are several drainages that are potentially subject to resource agency jurisdiction. A small pool formed by an intermittent stream and undermined culvert is present on the east side of the parcel (Figure 4.3-2c [Photograph 5]).

APN 122-020-013

This irregularly shaped parcel is approximately 181.7 acres in size (see Figure 2-5). The soils on this parcel are mapped as Quarry, Los Osos clay loam, Perkins gravelly loam, and Gilroy clay loam. Almost all of the surface soil has been impacted and changed by quarrying operations.

The disturbed soils on the eastern and southern portions of the parcel are dominated by non-native introduced grasses. Mature native trees are also located within the grasslands, as shown in Figure 4.3-2c (Photograph 6). A ravine in this area and a slope to the east supports a mature oak woodland composed of blue oak, buckeye, and valley oak. Several additional mature native trees are located in the southwestern corner of the parcel but were not inventoried.

The quarry wall on the west side of the pit is benched, as shown in Figure 4.3-2d (Photograph 7). These benches are in the process of being reclaimed by planting California sagebrush, black sage, and blue oak. Seeds of deerweed and California buckwheat are placed on the benches. Narrowleaf goldenbush (*Ericameria linearifolia*) and coyote brush (*Baccharis pilularis*) have naturally established.

Patches of scrub vegetation have colonized areas that were previously disturbed by quarry operations, as shown in Figure 4.3-2d and -2e (Photographs 8 and 9). The dominant plant species in these areas is coyote brush. California sagebrush has also colonized some areas. Tree tobacco (*Nicotiana glauca*), an introduced species, also quickly colonizes disturbed soils on the site, as shown in Figure 4.3-2e (Photograph 10).

Photograph 1: Murchio Reservoir at left on parcel APN 122-020-006. A portion of the active quarry is shown at right.

Photograph 2: The nonnative grassland, showing a blue oak savannah farther up the hill and foothill pines near the top of the slope.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
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Figure 4.3-2a

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Photograph 3: A view of the blue oak savannah on APN 122-020-007.

Photograph 4: Water treatment basin.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.3-2b

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Photograph 5: A small pool formed by an intermittent stream.

Photograph 6: Grasslands with trees near the center of APN 122-020-013.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.3-2c

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Photograph 7: The benches on the west side of the quarry pit. One of the pictured benches has been planted with gray pines.

Photograph 8: A previously disturbed area near the quarry pit that has been colonized with coyote brush and other chaparral plant species.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.3-2d

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Photograph 9: Chaparral with woody debris near the top of the ravine on APN 122-020-013.

Photograph 10: A small tree tobacco plant growing in a disturbed area.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.3-2e

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Photograph 11: A view of typical undisturbed chaparral in APN 122-010-016.

Photograph 12: A chaparral broomrape plant in APN 122-010-016.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.3-2f

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Photograph 13: A coast horned lizard in APN 122-010-016.

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

Site Photographs
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.3-2g

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4.3.1.4 Wetlands and Waters of the United States

One ephemeral stream on parcel APN-122-020-013 has been delineated as a jurisdictional stream (see Appendix E-3). The USACOE provided a preliminary jurisdictional determination for this feature on January 26, 2016. However, in 2020, the Trump Administration passed the Navigable Waters Protection Rule (NWPR) that adopted a narrower definition of Waters of the U.S., which excluded ephemeral streams. Several federal court cases have been filed challenging the NWPR and on August 30, 2021 the U.S. District Court for Arizona vacated the NWPR. The ruling affects those states within the jurisdiction of the court and may apply more broadly within the jurisdiction of the U.S. Court of Appeals for the 9th Circuit (including California).

The stream is 300 feet long and varies in width from 4 to 7 feet. The stream flows into a constructed debris basin that lacks any evidence of ponding and does not support a wetland plant community. This stream was dry at the time of the 2015 site survey. There is no scour or further evidence of surface flow after the channel reaches the basin.

The debris basin is constructed on a mass of quarry overburden spoils. Gravelly spoils form both the bottom and surrounding walls of the basin. For this reason, the basin contains no high water line and supports no wetland cover. Any water entering the basin from the ravine soaks into the coarse spoils too rapidly for any ponding or saturation to take place. Plant cover in the basin is upland non-native grasses and weeds, similar to the plant cover on spoils elsewhere in the vicinity. There is no channel or high water line in the basin (see Appendix E-3).

LSA also observed a 30-foot gully segment adjacent to the channel that was scoured out by a cascade of runoff originating near the quarry. This runoff is not channelized within the quarry, but upon reaching the upper slope of the ravine the runoff converges into a cascade that has scoured a distinct gully into the side of the ravine. The gully is not mapped as an extension of the natural channel described above because it has characteristics that are more consistent with an erosional gully feature. Other features that are likely subject to the jurisdiction of the USACOE or San Francisco Bay Regional Water Quality Control Board (RWQCB) outside of the footprint of proposed mining activities and which would not be disturbed by reclamation were also observed on the site, but were not delineated (see Appendix E-3).

4.3.1.5 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 2020, cited in Appendix E-1). Sensitive plant communities are also identified by CDFW (CDFW 2020, cited in Appendix E-1) and the California Native Plant Society (CNPS 2016, cited in Appendix E-1). 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 (California Code of Regulations [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.

4.3.1.6 Sensitive Plant Communities

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 Clean Water Act. CDFW monitors the status of uncommon and declining plant communities/sensitive habitats in California. These are tracked in the CNDDB as special-status Terrestrial Communities. Many special status natural communities support special-status plants and animals and are addressed under CEQA as habitat for those species. The only special-status terrestrial community that has a CNDDB occurrence within 5 miles of the site is Serpentine Bunchgrass. The native bunchgrass species associated with this community include *Calamagrostis ophitidis*, *Elymus glaucus*, and *Festuca idahoensis*. No serpentine soils or bunchgrasses were observed on the site during the site visits (see Appendix E-1).

4.3.1.7 Wildlife Movement

The project site does not include any wildlife movement corridors that would be considered significant on a regional basis, based on a review of the *Contra Costa County General Plan* Conservation Element Conservation Element and the Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) (Contra Costa County 2014; East Contra Costa County Habitat Conservation Plan Association (Conservation Plan Association) 2006).

4.3.1.8 Special-Status Plant Species

According to the records search, 55 special-status plant species have the potential to occur on or in the vicinity of the project site. Of these 55 species, 28 were determined to have no potential to occur because the site does not have suitable habitat or is outside the range of the species. The remaining 27 species and their potential to occur on the project site are listed in Table 4.3-1, "Special Status Plant Species Potentially Occurring on the Project Site," below. Based on the BRA review of the 27 species described in Table 4.3-1, 18 special-status plant species have some potential to occur on the project site. In addition, LSA identified one special-status plant species present at the site—Mt. Diablo fairy-lantern (*Calochortus pulchellus*).

Figure 4.3-3, "CNDDB Plant Occurrences: Part 1," depicts the locations of plant species with more than five CNDDB occurrences within 5 miles of the CEMEX-owned parcels. Figure 4.3-4, "CNDDB Plant Occurrences: Part 2," depicts the locations of plant species with five or fewer occurrences within 5 miles of the CEMEX-owned parcels.

TABLE 4.3-1
SPECIAL-STATUS PLANT SPECIES POTENTIALLY OCCURRING ON THE PROJECT SITE

Species	Status*	Habitat Requirements	Potential to Occur on Site
Amsinckia grandiflora (Large-flowered fiddleneck)	FE; CE; 1B	Grassy openings in cismontane woodland, valley and foothill grassland; cannot occur in dense grass. Elevation: 275-550 m. Blooms: April-May	**None.** The non-native annual grasslands on the site do not provide suitable habitat. The CNDDB lists one extant occurrence approximately 4.7 miles from the site. This ex situ population was planted as part of a reintroduction effort. Currently known to occur only in Black Diamond Mines Regional Preserve and the 160-acre *Amsinckia grandiflora* Reserve on the Site 300 Experimental Test Facility of the Lawrence Livermore

Species	Status*	Habitat Requirements	Potential to Occur on Site
			National Laboratory, which was established in 2000.
Amsinckia lunaris (Bent-flowered fiddleneck)	--; --; 1B	Occurs in coastal bluff scrub, cismontane woodland, valley and foothill grassland; openings. Elevation: 3-500 m. Blooms: March-June	**Low.** May occur in the grassland on the site.
Arctostaphylos auriculata (Mt. Diablo manzanita)	--; --; 1B	Chaparral (sandstone), cismontane woodland. Elevation: 135-650 m. Blooms: January-March	**Low.** May occur in the chaparral and oak woodland on the site. The micro-habitat of this species is on sandstone derived soils. Soils on the site are primarily clay loam. Although there is low potential for this plant to occur, any manzanita (*Arctostaphylos* spp.) observed should be identified to species.
Arctostaphylos manzanita subsp. *laevigata* (Contra Costa manzanita)	--; --; 1B	Chaparral (rocky). Elevation: 233 -1,100 m. Blooms: January-April	**Low.** May occur in the chaparral and rocky outcrops present in the site. Any manzanita (*Arctostaphylos* spp.) observed on the site should be identified to species.
Blepharizonia plumosa (Big tarplant)	--; --; 1B	Valley and foothill grassland with clay to clay loam soils. Elevation: 50-505 m. Blooms: July-October	**Moderate.** May occur within the oak savanna understory and grassland.
California macrophylla (Round-leaved filaree)	--; --; 1B	Grassy openings in cismontane woodland, valley and foothill grassland with clay soils. Elevation: 15-1,200 m. Blooms: March-May	**Moderate.** Potential to occur on moderate slopes within the oak savanna understory and within sparse areas of annual grassland.
Calochortus pulchellus (Mt. Diablo fairy-lantern)	--; --; 1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland, in openings on slopes. Elevation: 30-840 m. Blooms: April-June	**Present.** This species was observed on APN 122-010-016.
Campanula exigua (Chaparral harebell	--; --; 1B	Chaparral (rocky, usually serpentinite). Elevation: 275-1,250 m. Blooms: May-June	**None.** No potential to occur on the site. The species has an affinity to grow on serpentine and rocky slopes on Mt. Diablo. There is no serpentine in the site area.
Cordylanthus nidularius (Mt. Diablo bird's-beak)	--; CR; 1B	Chaparral, serpentine. Elevation: 600 -800 m. Blooms: July-August	**None.** No potential to occur on the site. The species has a high affinity for serpentine soils, which are not present on the site.
Delphinium californicum subsp. *interius* (Hospital Canyon larkspur)	--; --; 1B	Generally associated with drainages within chaparral, grassy (and sometimes mesic) openings of cismontane woodland. Elevation: 230-1,095 m. Blooms: April-June	**Moderate.** Some potential to occur on slopes within chaparral, and oak savanna understory, and within mesic areas of grassland.

Species	Status*	Habitat Requirements	Potential to Occur on Site
Dirca occidentalis (Western leatherwood)	--; --; 1B	Broadleafed upland forest, chaparral, closed cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, and in riparian woodland on brushy slopes. Generally, in the fog belt. Elevation: 30-395 m. Blooms: January-March	**None.** Although appropriate vegetation communities are present, this species only occurs in the fog belt areas in the hills of the San Francisco Bay area. The site is too arid for this species to occur.
Eriastrum ertterae (Lime Ridge eriastrum)	--; --; 1B	Hard packed sand in openings at edge of chaparral (alkaline or semi-alkaline). Elevation: 200 – 290 m. Blooms: June – July	**None.** Although chaparral habitat is present, this species prefers hard packed sand. Soils on the site are primarily clay loam.
Eriogonum truncatum (Mt. Diablo buckwheat)	--; --; 1B	Dry, exposed clay or sandy substrates in chaparral, coastal scrub, and grassland. Elevation: 200-400 m. Blooms: April-September	**Low.** *Eriogonum truncatum* was presumed extinct until it was re-discovered on Mount Diablo in 2005 and at Black Diamond Regional Preserve in 2016.
Fritillaria liliacea (Fragrant fritillary)	--; --; 1B	Coastal scrub, valley and foothill grassland, and coastal prairie. Most often on serpentine soils, but not exclusively as other various soils reported, though usually heavy clay. Elevation: 3-410 m. Blooms: February-April	**Low.** May occur in mesic, annual grassland on the site.
Grimmia torenii (Toren's grimmia)	--; --; 1B	This is a moss which grows in rocky openings, on boulders, and rock walls of carbonate or volcanic base in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 325-1,160 m. Blooms: Wet season	**Low.** May occur in the limited undisturbed rocky opening on the site.
Helianthella castanea (Diablo helianthella)	--; --; 1B	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; usually in chaparral/oak woodland interface in rocky (azonal) soils, and often in partial shade. Elevation: 60–1300 m. Blooms: March-June	**Moderate.** May occur in annual grassland, chaparral, and oak woodland.
glans hindsii (Northern California black walnut)	--; --; 1B	Deep alluvial soil in riparian forest and riparian woodland. Elevation: 0-395 m. Blooms: April-May	**None.** Site lacks suitable riparian habitat. *Juglans hindsii* has been widely used as a rootstock for grafting J. regia and has been planted extensively in many parts of California for this purpose. It is now naturalized in many areas where it apparently did not occur

Species	Status*	Habitat Requirements	Potential to Occur on Site
			before the introduction of commercial walnut growing approximately 175 years ago. When encountered, a determination of rarity depends whether the tree is true native or a hybrid. This may be inferred by the size of the tree, location relative to known populations, or of a tree known to be planted prior to 1840. Otherwise, genetic investigation is the most reliable method for determining native status and thus rarity.
Madia radiata (Showy madia)	--; --; 1B	Valley and foothill grassland and openings in cismontane woodland. Elevation: 25-1,215 m. Blooms: March-May	**Low.** May occur within the oak savanna.
Malacothamnus hallii (Hall's bush mallow)	--; --; 1B	Chaparral, coastal scrub. Some populations on serpentine. Elevation: 10-760 m. Blooms: May-September (October)	**Low.** The species has an affinity to grow on serpentine and rocky slopes on Mt. Diablo.
Monolopia gracilens (Woodland wooly threads)	--; --; 1B	Openings in broadleaf upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland; Serpentine. Elevation: 100-1200 m. Blooms: March-July	**Low.** May occur within openings of the oak savanna and chaparral. Surveys for this species are recommended.
Navarretia gowenii (Lime Ridge navarretia)	--; --; 1B	Chaparral, clay and serpentine soils. Elevation: 180-305 Blooms: May-June	**Low.** May occur on clay soils in grasslands and chaparral.
Phacelia phacelioides (Mt. Diablo phacelia)	--; --; 1B	Chaparral and cismontane woodland/rocky; strong indicator of serpentine soils. Elevation: 500-1,370 m. Blooms: April-May	**None.** No potential to occur on the site due to lack of serpentine rock.
Sanicula saxatilis (Rock sanicle)	--;CR;1B	Rocky ridges or talus, broadleaved upland forest, chaparral, valley and foothill grassland. Elevation: 620-1,175 m. Blooms: April-May	**Low.** Present nearby on Mt. Diablo.
Senecio aphanactis (Chaparral ragwort)	--;--;2B	Alkaline terraces and rocky areas in cismontane woodland, chaparral, and coastal scrub. Elevation: 15-800 m. Blooms: January-Apri	**Low.** May occur on woodland edge and in chaparral.
Streptanthus glandulosus subsp. *glandulosus* [*S. albidus* ssp. *peramoenus*] (Bristly jewelflower)	--;--;1B,A2	Serpentine or metamorphic (Franciscan formation) soils on rocky, generally barren openings on slopes in chaparral, cismontane woodland, and valley and foothill grassland. Elevation: 150-1,400 m.	**None.** No potential to occur on the site due to lack of serpentine rocks.

Species	Status*	Habitat Requirements	Potential to Occur on Site
		Blooms: April-July	
Streptanthus hispidus (Mt. Diablo jewel-flower)	--;--;1B	Chaparral, valley and foothill grassland/rocky. Elevation: 365-1,200 m. Blooms: March-Jun	**Low.** May occur in undisturbed rocky areas within chaparral.
Viburnum ellipticum (Oval-leaved viburnum)	--;--;2B	Generally found on north facing slopes in chaparral, cismontane woodland, and lower montane coniferous forest. Elevation: 215-1400 m. Blooms: May – June	**Low.** May occur on woodland edge and in chaparral.

Source: Appendix E-1.
Notes:
***Status:**
FE = Federally listed as endangered
CE = California state listed as endangered
CC = California candidate for listing
CR = California state rare
1A = California Native Plant Society; plants presumed extinct in California
1B = California Native Plant Society; plants rare, threatened, or endangered in California and elsewhere
2A = Plants presumed extirpated in California, but common elsewhere
2B = California Native Plant Society; plants rare, threatened in California but more common elsewhere
A2 = Species of local concern, currently known from 3 to 5 regions in the two counties, or, if more, meeting other important criteria such as small populations, stressed or declining populations, small geographical range, limited or threatened habitat, etc. Reviewed under CEQA.

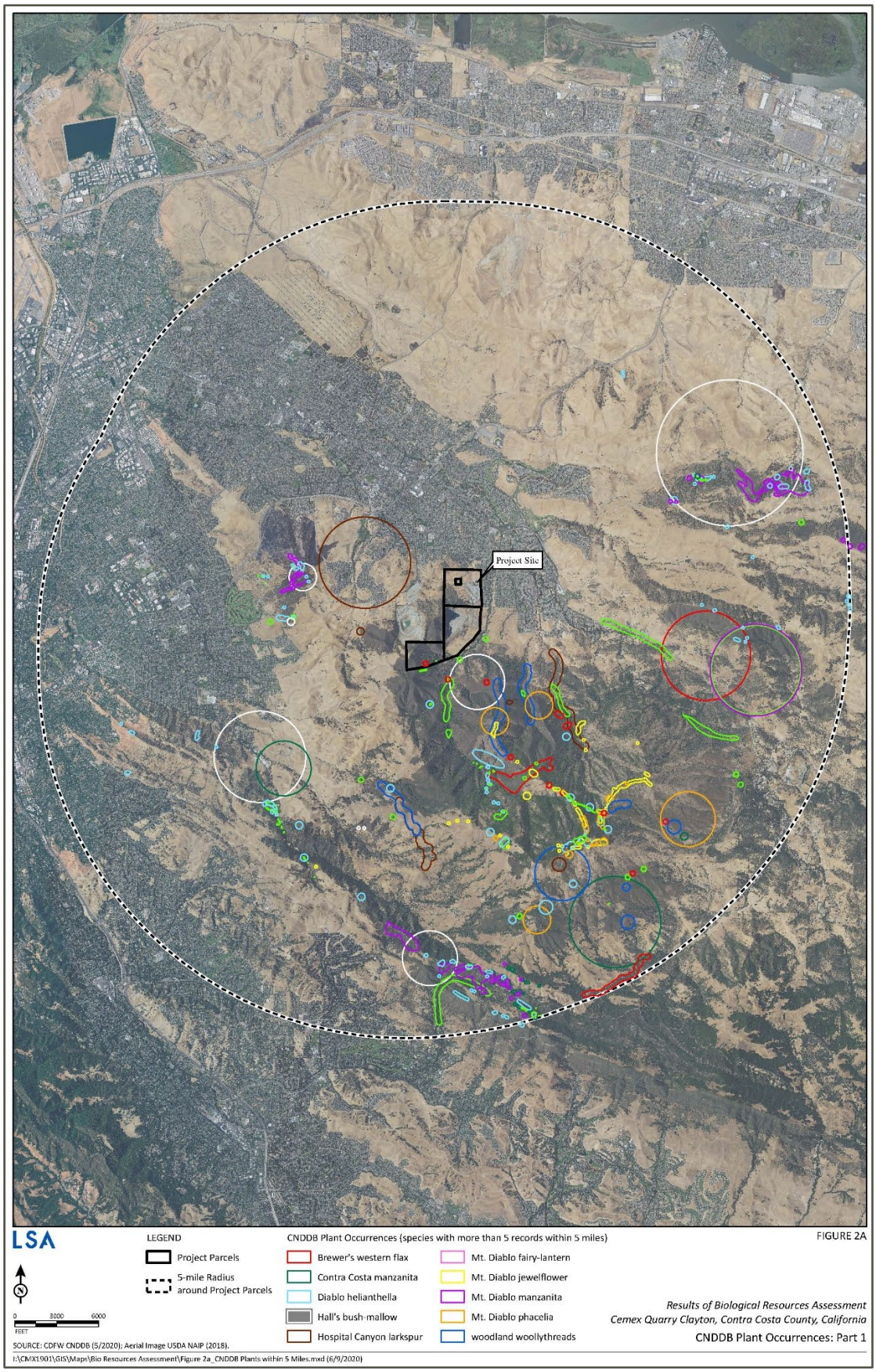
4.3.1.9 Listed and Special-Status Wildlife

Based on CNDDB records and LSA's knowledge of wildlife in the Clayton area, there are 19 special-status wildlife species with records and/or expected to occur in the vicinity of the site. See Table 4.3-2, "Special-Status Wildlife Species Potentially Occurring on the Project Site," below. Figure 4.3-5, "CNDDB Wildlife Occurrences," depicts the locations of CNDDB wildlife occurrences within 5 miles of the site.

The species with known presence or potential for occurrence are discussed below.

California Red-Legged Frog

The California red-legged frog is federally listed as threatened and is also considered a Species of Special Concern by CDFW. The project site is within the current and historic range of the species. There are 34 CNDDB occurrences with 5 miles of the site. California red-legged frogs are known to occur in Mitchell Creek, which provides non-breeding aquatic habitat approximately 400 feet east of the project site. In 2006, breeding was detected at a constructed cattle pond known as Bruce Lee Reservoir 0.3 mile east of the site. There is no suitable breeding or other aquatic habitat within the site, however, the undeveloped portions of the site provide suitable upland and dispersal habitat, and California red-legged frogs can disperse over 1 mile from their natal ponds. There are currently no complete barriers between Bruce Lee Reservoir or Mitchell Creek and the site, so there is potential for frogs to move into the site, including the north and south overburden fill areas that would be disturbed by the proposed project, particularly during the wet season. The non-native grasslands on the site have few burrows or large downed woody debris that could provide cover for California red-legged frogs.



SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

CNDDB Plant Occurrences: Part 1

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 4.3-3

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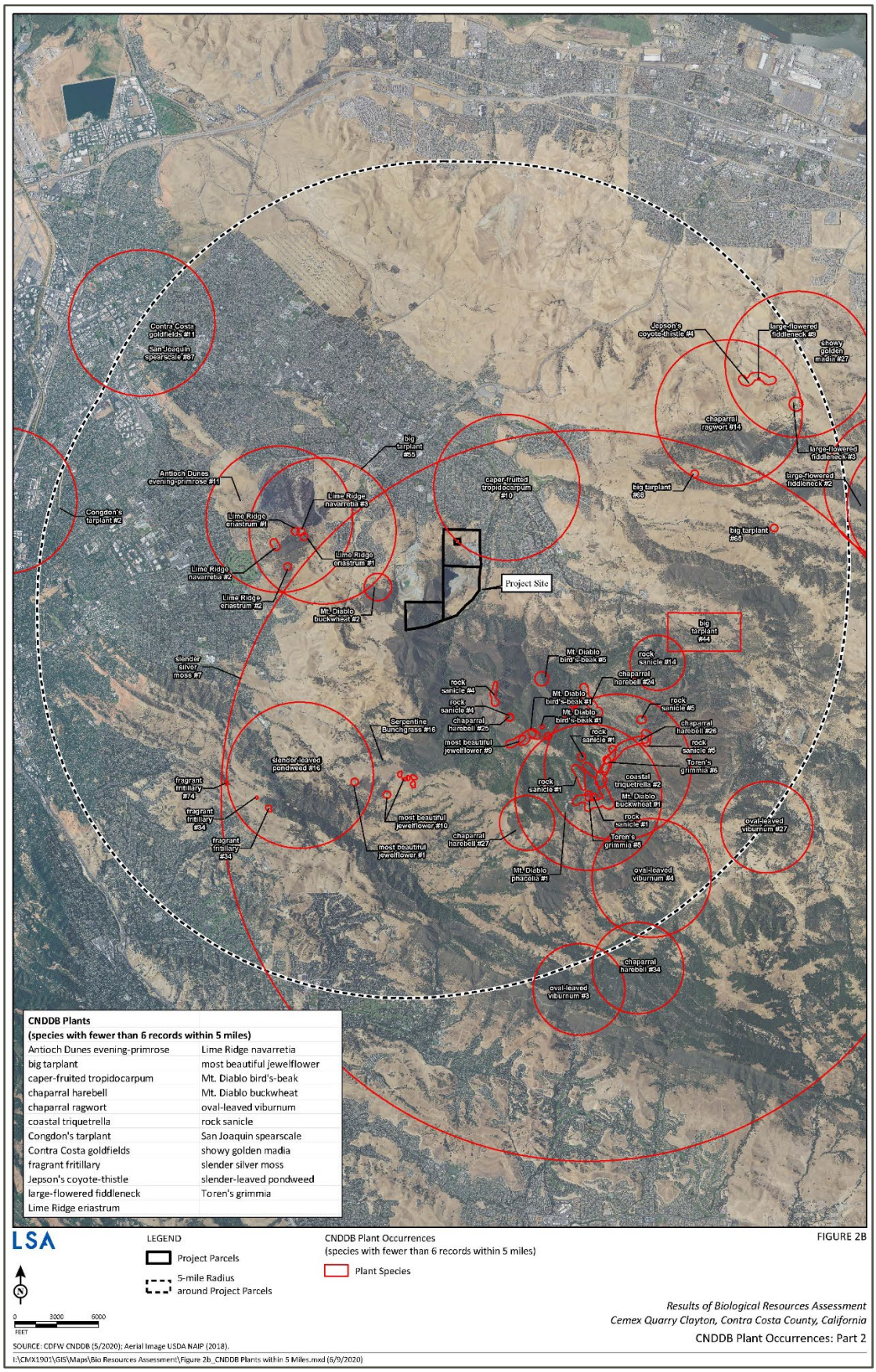

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

CNDDB Plant Occurrences: Part 2

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 4.3-4

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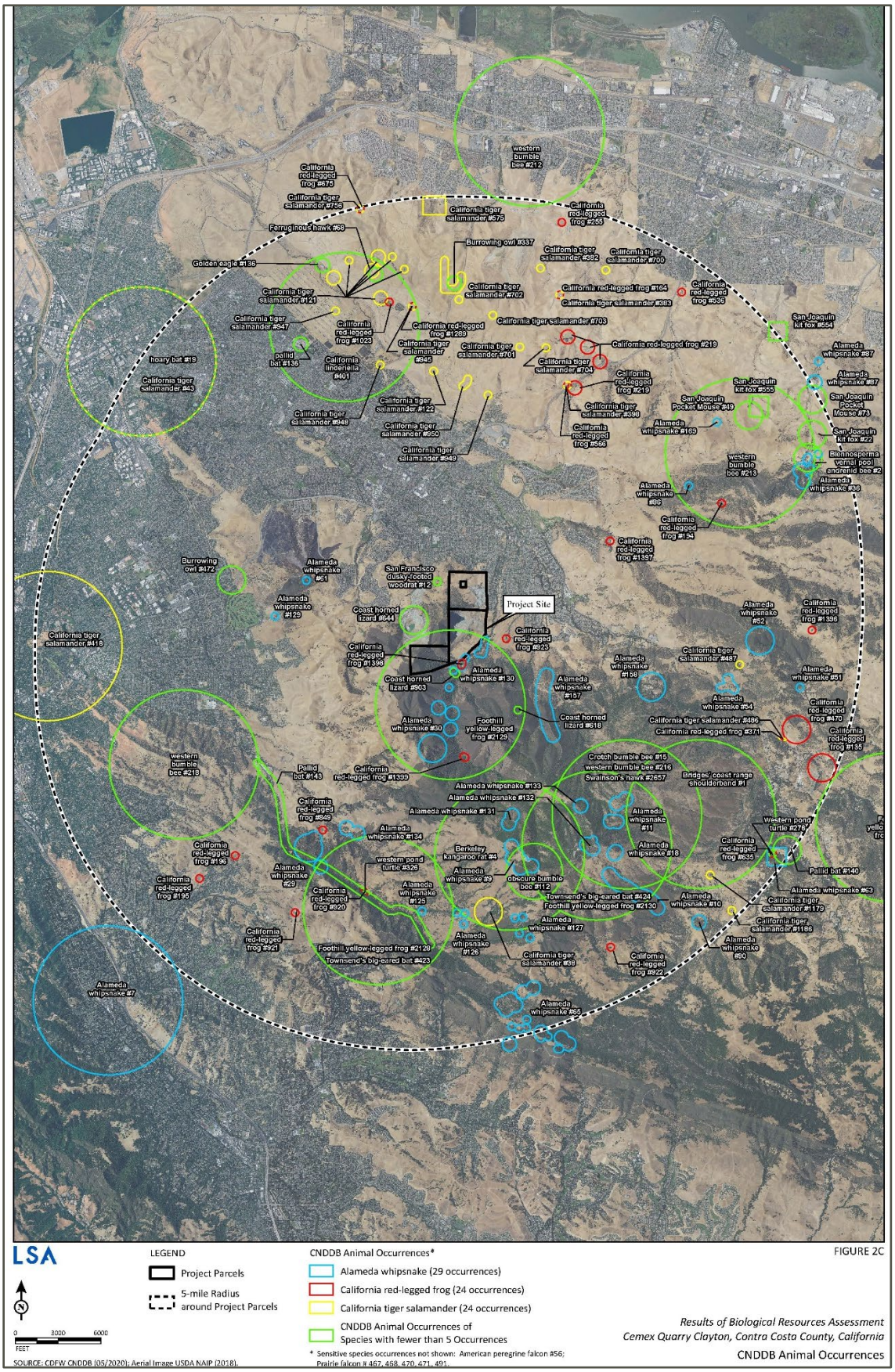

SOURCE: LSA Associates, Inc. 2020; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

CNDDB Wildlife Occurrences

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

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Figure 4.3-5

BENCHMARK RESOURCES

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TABLE 4.3-2
SPECIAL-STATUS WILDLIFE SPECIES POTENTIALLY OCCURRING ON THE PROJECT SITE

Species	Status*	Habitat Requirements	Suitable Habitat Present On-Site
FISH			
Oncorhynchus mykiss Steelhead Population: Northern California DPS (Central California Coast Steelhead)	FT;--	Found in coastal streams in central California, including the drainages of San Francisco, San Pablo, and Suisun Bays. Individuals within this DPS spawn during the winter only, mature in the ocean, and return to freshwater streams during late fall and winter. Requires cool, swift moving streams with clean, unsilted gravel beds for spawning and egg deposition.	**None.** There are no CNDDB records within 5 miles of the project area. Other sources have recorded observations of trout in Mitchell Creek, a tributary of Mount Diablo Creek. Mitchell Creek is a seasonal stream. There is no suitable aquatic habitat on the site**.**
AMPHIBIANS/REPTILES			
Ambystoma californiense (California tiger salamander)	FT; CT	Adults spend most of their life in underground burrows. Breeds in vernal pools and ponds, including cattle stock ponds. Breeds after the first rains in late fall and early winter, when the wet season allows the salamander to migrate to the nearest pond, a journey that may be as far as 1 mile and take several days. Lays eggs in small clusters or singly, which hatch after 14 to 21 days.	**None**. The nearest CNDDB occurrence is over 2 miles north of the site and is separated from the site by extensive residential development.
Rana draytonii (California red-legged frog)	FT; CSC	Inhabits permanent and temporary pools, streams, freshwater seeps, and marshes in lowlands and foothills. Uses adjacent upland habitat for foraging and refuge. Breeds during the wet season from December through March in slow parts of streams, lakes, reservoirs, ponds, and other waters with emergent vegetation. Lays 300 to 4,000 eggs in a large cluster, which is attached to plants near the water surface. Requires water for 4 to 7 months for tadpoles to complete metamorphosis. The frogs may disperse over 1 mile from their natal ponds.	**Moderate**. California red-legged frog have been observed in Mitchell Creek and Bruce Lee Reservoir. They could disperse through portions of the project site within one mile of Mitchell Creek and Bruce Lee Reservoir, including the north and south overburden fill areas, on rainy nights.
Rana boylii (Foothill yellow-legged frog)	--; CCT; CSC	Rarely leaves riparian corridors. Breed and deposit eggs shortly after streams reach peak flow in the spring after the winter rains end. Egg masses are typically attached to the downstream side or boulders or cobble, in a sunny, shallow section of lowgradient stream. Breeding rarely occurs in well-shaded (>90 percent closed canopy) sites.	**None.** There are four CNDDB occurrences within 5 miles of the project site. The closest occurrence is based on an observation made in Mitchell Creek in 1912. This occurrence is considered extirpated, and the CNDDB lists the other three occurrences as "possibly extirpated". The species has not been detected at any of these localities since 1953. The ephemeral stream on the site is not suitable for the species.

Species	Status*	Habitat Requirements	Suitable Habitat Present On-Site
Actinemys (=Emys) marmorata (Western pond turtle)	--; CSC	Permanent or nearly permanent water (fresh to brackish) in a wide variety of habitat types. Requires basking sites and upland areas for egg laying.	**None**. The ponds and seasonal drainages on the site are not suitable for turtles.
Coluber lateralis euryxanthus (Alameda striped racer)	FT;CT	Lives primarily in scrub and chaparral communities, but has also been observed in nearby grasslands and woodlands. Feeds primarily on lizards. Most active in the spring and fall. Retreats from hot temperatures in the summer and cold temperatures in the winter into burrows or other underground refuges.	**High**. There are numerous CNDDB occurrences within 1 mile of the site. The site is contiguous with large expanses of suitable habitat, and suitable habitat is present on-site. No observations on-site.
Phrynosoma blainvillii (Coast horned lizard)	--; CSC	Found in a variety of vegetation communities including annual grasslands, woodlands, and chaparral. Feeds primarily on ants but eats other small insects as well.	**High/Present.** One coast horned lizard was observed on APN 122- 010-016.
BIRDS			
Athene cunicularia (Burrowing owl)	--;CSC	Nearly or quite level grassland, prairie, and desert floor with short or sparse vegetation. Subterranean nester that generally uses existing mammal burrows (especially of ground squirrels), but will also excavate its own burrows.	**Low**. Few suitable burrows observed on site. The vegetation is too tall in most of grasslands on the site, and most of the site has steeper slopes than burrowing owls prefer.
Buteo swainsoni (Swainson's hawk)	--; CT	Nests in riparian areas. Forages in open areas, including agricultural fields.	**None**. There is only one Swainson's hawk CNDDB occurrence within 5 miles of the site. It is based on a specimen collected in 1898, and the location of the collection was recorded only as "Mt. Diablo." No Swainson's hawk nesting has been observed by LSA biologists over many years of work on the site. All recent records are from the plains along the San Joaquin Valley side of Mt. Diablo.
Aquila chrysaetos (Golden eagle)	--; --;CFP	Hunts in rolling foothills and mountain areas. Usually nests in trees but will also use cliffs and electrical transmission towers in open areas.	**Moderate**. LSA biologists often see golden eagles in the area, but these birds have established territories and use the same nest year after year. No nests have been observed on site.
Falco peregrinus (American peregrine falcon)	FD;CD;CFP	A variety of open habitats including coastlines, mountains, marshes, bay shorelines, and urban areas. Nest on cliffs, bridges, and tall buildings. Feeds almost exclusively on birds.	**Moderate.** Known to nest on the Castle Rocks, approximately 3.25 miles southwest of the project site. The cliffs on the site may provide potential nesting habitat where there are small ledges on vertical faces. LSA biologists often see the species flying in the area but no nesting has occurred on the site.

Species	Status*	Habitat Requirements	Suitable Habitat Present On-Site
Elanus leucurus (White-tailed kite)	--; --; CFP	Open grasslands, meadows, or marshes; require dense-topped trees or shrubs for nesting and perching. Tolerates human activity and is known to nest in residential neighborhoods in the Bay Area.	**Moderate.** Suitable nesting and foraging habitat present. Grasslands on the site support a large prey base of small mammals. No kites have been observed on-site.
MAMMALS			
Vulpes macrotis mutica (San Joaquin kit fox)	FE; CT	Found primarily in areas with short vegetation in the southern San Joaquin Valley. Feeds on kangaroo rats and other small rodent species, but will also consume insects, hares, mice, and lizards. Lives in dens that it either excavates itself or moves into atypical dens including human structures.	**None**. There are no nearby records within the last 20 years. No suitably sized burrows were seen in the site.
Bassariscus astutus (Ring-tailed cat)	--; --; CFP	Widely distributed but rarely seen due to its nocturnal and secretive habits. Found from Oregon to Mexico in a range of habitats, from sea level to over 9,000 feet elevation. Broad diet that includes rodents and other small animals, fruits, nuts, and vegetation.	**Low**. This species is not tracked by the CNDDB and there is little evidence on its current distribution.
Neotoma fuscipes annectens (San Francisco dusky-footed Woodrat)	--; CSC	Primarily found along riparian areas within chaparral and woodlands. Feeds mainly on woody plants but also eats acorns, grasses, and fungi. Builds conspicuous stick houses in trees and on the ground.	**Moderate**. Suitable habitat is present. May occur in wooded areas.
Corynorhinus townsendii (Townsend's big-eared bat)	--; CSC	This species distribution is limited by suitable roosting sites, which include caves, mines, tunnels, buildings, and other human-made structures. Feeds primarily upon moths.	**Low**. The CNDDB contains two occurrences within 5 miles of the site.
Antrozous pallidus (Pallid bat)	--; CSC	Roost in caves, tunnels, and occasionally buildings and hollow trees. Forages over a variety of habitats.	**Low**. May roost in structures associated with the quarry.
INVERTEBRATES			
Bombus crotchii (Crotch's bumble bee)	--; CCE	Open grassland and scrub habitats. Primarily nests underground. Occurs primarily in California, from coastal California east to the Sierra-Cascade crest and south into Mexico.	**Low**. There is only one CNDDB occurrence within 5 miles of the site, and it is based on a collection of bumble bees on Mt. Diablo in 1951.

Species	Status*	Habitat Requirements	Suitable Habitat Present On-Site
Bombus occidentalis (Western bumble bee)	--; CCE	Feeds upon nectar and pollen from a variety of plants species, but is most adapted to native plant species. Nests in abandoned rodent burrows and bird nests. The flight period in California is from early February to late November, peaking in late June and late September. The flight period for workers and males is from early April to early November. The species is currently restricted to high elevation sites in the Sierra Nevada and scattered coastal areas.	**Low**. Undisturbed portions of the quarry may support suitable habitat in the form of native plants, nesting extirpated from Contra Costa County. There are four CNDDB occurrences within 5 miles of the site, but the most recent sighting was in 1974.

Source: Appendix E-1.
Notes: This table is based on Table B of the BRA (see Appendix E-1).
***Status:**
FD = Federal delisted
FE=Federal endangered
FT = Federal threatened
CD=California delisted
CE = California state endangered
CFP = California Fully Protected
CSC = California Species of Special Concern
CCT = California state candidate threatened
CCE = California candidate endangered

Burrowing Owl

The burrowing owl is considered a Species of Special Concern by CDFW. Burrowing owls live in underground burrows within grassland habitats and are tolerant of human activity. Few burrows suitable for use by burrowing owl were observed on the property during the site visits, and no evidence of burrowing owl use (pellets, feathers) was detected. Most of the grasslands are not suitable for burrowing owls because the vegetation is too tall. Burrowing owls are present in Contra Costa County and they could forage in the grasslands and sparsely vegetated areas on the site.

Golden Eagle

The golden eagle is Fully Protected by CDFW. It is also protected by the federal Bald and Golden Eagle Protection Act, which was enacted in 1940. In California, the golden eagle is a year-round resident inhabiting primarily hilly and mountainous terrain in open areas, including Contra Costa County. Hilly terrain is preferred over flat areas because updrafts support takeoff and soaring. Golden eagles nest primarily in large trees in California, but also utilize cliffs and transmission towers. Prey items include medium to large sized mammals and birds. Preferred habitat for golden eagles generally includes suitable nest sites and sufficient prey availability.

LSA observed golden eagles flying over the site. The closest known nest site is approximately two miles southwest of the quarry (Kolar and Wiens 2020, cited in Appendix E-1). The benches on the quarry walls and large trees nearby are suitable nesting habitat.

American Peregrine Falcon

The American peregrine falcon is Fully Protected by CDFW. It was formerly listed under both the California and federal Endangered Species Acts, but was delisted from both in 1999 after recoveries in population size. The falcons nest on cliffs as well as structures like building ledges and bridges. Sometimes they use abandoned nests built by common ravens or raptors. They feed almost exclusively on birds, which they often catch in flight.

LSA observed American peregrine falcons flying over the site, and they nest at Castle Rock approximately 3.25 miles to the southwest (Bell 2020, cited in Appendix E-1). If on-site nesting had happened in recent years it would have been detected by biologists. The quarry walls are potentially suitable nesting habitat where potholes/ledges are present.

White-Tailed Kite

The white-tailed kite is Fully Protected by CDFW. The species could nest in the trees and large shrubs on or adjacent to the site. The white-tailed kite is commonly seen hovering over grasslands, where it hunts for small mammals and reptiles that form the bulk of its diet. A LSA biologist saw the species in Mitchell Canyon immediately southeast of the site.

Crotch's Bumble Bee

On June 12, 2019, the California Fish and Game Commission (Commission) voted to accept a petition from the Xerces Society (2018) to consider listing four subspecies of bumble bee, including Crotch's bumble bee, under CESA. As a result of this decision, Crotch's bumble bee is a state candidate endangered species; as such, it is temporarily afforded the same protection as state-listed threatened or endangered species.

The range of Crotch's bumble bee historically extended throughout the southern two-thirds of California, from coastal California east to the Sierra-Cascade crest and south into Mexico, but recent

data indicates that this species is absent from the center of its historical range due to extensive agricultural intensification and urbanization (Xerces Society 2018).

In California, Crotch's bumble bees inhabit open grassland and scrub habitats. Suitable habitat is based on the availability of flowers on which to forage throughout the duration of the colony (spring through fall), colony nest sites, and overwintering sites for the queens. Bumble bees are generalist foragers (i.e., they do not depend on any one flower type). Crotch's bumble bees, like most bumble bee species, nest underground (e.g., in abandoned rodent holes). The flight period for Crotch's bumble bee queens is from late February to late October, peaking in early April and again in July. The flight period for workers and males extends between late March and September (Xerces Society 2018).

Although it is unlikely to occur on the project site, this species cannot be entirely discounted without additional survey work.

Western Bumble Bee

The western bumble bee is also one of the four bumble bee species which is now being considered for listing. The western bumble bee feeds upon nectar and pollen from a variety of plants species, but is most adapted to native plant species. It nests in abandoned rodent burrows and bird nests. The flight period in California is from early February to late November, peaking in late June and late September. The flight period for workers and males is from early April to early November. Little is known about sites where queens overwinter, but it is likely in underground areas protected from temperature extremes and flooding during winter rains. The species is currently restricted to high elevation sites in the Sierra Nevada and scattered coastal areas (Williams et. al. 2014, cited in Appendix E-1). Although it is unlikely to occur on the project site, this species cannot be entirely discounted without additional survey work.

Pallid Bat

The pallid bat is considered a Species of Special Concern by CDFW. It is common throughout lowlands in most of California, especially in open areas with rock outcroppings for roosting. Pallid bats also roost in tree cavities and man-made structures such as mine tunnels, buildings, and the underside of bridges. These bats feed primarily on insects and arachnids, which they catch both in the air and on the ground. The CNDDB contains three occurrences of the species within 5 miles of the site. The closest of these records was mapped to 2.27 miles from the site boundary. This observation was made in 1917 and the original collection information said the specimen came from "Pine Canyon, near Mt. Diablo". The most recent of these observations was made in 1942. Pallid bats are cryptic, and rarely observed. They have more recently been reported from Curry Canyon on the east side of Mt. Diablo. No sign of bats (guano and staining) on the buildings or trees on the site was detected during site surveys.

San Francisco Dusky-Footed Woodrat

This is a subspecies that is classified as a State Species of Special Concern. These woodrats build conspicuous large stick houses. The woodrat is one of the few animals that can feed on oak leaves, despite their high tannin content. They also feed on a variety of fruits, nuts, seeds, and foliage. Woodrats are considered a keystone species, because their houses also provide shelter for a variety of other small animal species. Woodrats are a prey item for owls, snakes, and carnivorous mammals. San Francisco dusky-footed woodrats could be present on parcels 122-020-007 and 122-010-016.

Ring-Tailed Cat

The ring-tailed cat is a CDFW Fully Protected species. The species is not listed under either the California or federal Endangered Species Acts and it is not a State Species of Special Concern. Ring-tailed cats are not tracked by the CNDDB. Ring-tailed cats are nocturnal and arboreal and therefore are rarely seen by people. Favored habitat consists of areas with many rock outcroppings or cliffs and large trees that have cavities. Ring-tailed cats are adept climbers and avoid moving through open grasslands where they would have difficulty escaping predators. During the day, ring-tailed cats sleep in dens such as tree hollows, rock crevices, and abandoned burrows created by other animals. A single ring-tailed cat will use several dens, and move between them regularly.

Although there are no recent confirmed sightings of a ring-tailed cat in the region, there is potential that they occur in the undeveloped portions of the site on parcels 122-020-007 and 122-010-016, where they could den in hollow logs or in burrows.

Townsend's Big-Eared Bat

The Townsend's big-eared bat is classified as a State Species of Special Concern. It lives throughout all of California, with the exception of the highest elevations of the Sierra Nevada. It prefers to roost in caves or man-made structures that offer similar protection, such as mines, buildings, and bridges. The roosts may be in a wide variety of vegetation communities, including coastal redwood forests, oak woodlands, inland deserts, and mixed coniferous/deciduous forests. The CNDDB contains three occurrences of the species within 5 miles of the site. The closest of these occurrences is mapped to 2.06 miles from the site boundary and is based on four specimens that were collected in 1938. The exact location of where the specimens were collected is unknown, so the observation was mapped generally to the location of Mt. Diablo. No sign of bats (guano and staining) on the buildings or trees on the site was detected during the site surveys.

Alameda Striped Racer

The Alameda striped racer (formerly Alameda whipsnake) is a State- and federally listed threatened species that primarily occurs in areas that support scrub communities, including mixed chaparral, chamise-redshank chaparral, and coastal scrub. This species also occurs in annual grassland and oak woodlands that lie adjacent to scrub communities. Within these plant communities, specific habitat features needed by Alameda striped racers include, but are not limited to, small mammal burrows, rock outcrops, talus, and cover types that provide temperature regulation, shelter from predators, egg-laying sites, and winter hibernation refuges. Many of these same elements are important in maintaining prey species (e.g., western fence lizards).

Numerous Alameda striped racer observations have been documented near the site, including from the vicinity of the Mitchell Canyon entrance to the State Park. However, none have been identified on the project site nor on the CEMEX property. The CNDDB records for this species are shown on Figure 4.3-4. Alameda striped racers are most likely to be found in association with the chaparral and rock outcroppings on the site. They are less likely to be found in the non-native annual grasslands and developed areas of the site.

Coast Horned Lizard

The coast horned lizard is classified as a State Species of Special Concern. One coast horned lizard was observed on APN 122-010-016 in an area of chaparral vegetation, as shown in Figure 4.3-2g (Photograph 13). This species is unlikely to be found in densely vegetated non-native annual grasslands. It is likely present on-site in openings in or along the margins of chaparral.

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 FESA, 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]).

4.3.2.2 State

California Endangered Species Act

Similar to the FESA, 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 must formally consult with CDFW. CDFW can issue incidental take permits (ITPs) 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.

CDFW Species of Concern

In addition to species formally listed under the FESA 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 San Francisco Bay RWQCB jurisdiction.

In California, 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.

In addition to implementing the NPDES permitting program, the Porter-Cologne Act authorizes the regional water boards to issue Waste Discharge Requirements (WDRs). WDRs are established and implemented to achieve the water quality objectives for receiving waters as established in the Basin Plans. The WDR process begins when an applicant submits a Report of Waste Discharge to the local regional water board. The regional water board staff can then issue WDRs and monitoring requirements. The NPDES stormwater program requires preparation and implementation of a site-specific SWPPP. A SWPPP

identifies all potential pollutants and their sources, and includes a list of best management practices to reduce the discharge of potential stormwater pollutants.

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 (State Wetland 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 State Wetland Procedures became effective May 28, 2020. The Sacramento Superior Court issued a ruling on January 26, 2021, in the case *San Joaquin Tributaries Authority v. California State Water Resources Control Board*, determining that the State Water Board does not have authority to adopt water quality control plans for waters of the state pursuant to Water Code Section 13170. However, on April 6, 2021, the State Water Board approved application of the State Wetland Procedures as a water quality control policy. Applicants proposing to discharge dredged or fill material into waters of the state are required to comply with the State Wetland Procedures unless an exclusion applies, or the discharge qualifies for coverage under a General Order.

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, if feasible, 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 Regional

Regional Water Quality Control Board

Pursuant to Section 401 of the Clean Water Act, projects that require a permit from the USACOE under Section 404 must also obtain water quality certification from the local RWQCB. This certification ensures that the project will uphold state water quality standards. The local RWQCB may require mitigation for any loss of jurisdictional area. For state waters that are not otherwise regulated by the USACOE under Section 404, the local RWQCB issues WDRs, or waivers thereof, consistent with the Porter-Cologne Water Quality Control Act.

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 (the HCP/NCCP) 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.

East Contra Costa County Habitat Conservation Plan

The project site falls within the boundaries of the HCP/NCCP. The HCP/NCCP is intended to provide an effective framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. The HCP/NCCP allows for the County to implement the plan to control endangered species permitting for activities and projects in the region that they perform or approve while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species in northern California. To that end, the HCP/NCCP describes how to avoid, minimize, and mitigate, to the maximum extent practicable, impacts on covered species and their habitats and wetlands while allowing for the growth of selected regions of the County and the cities of Pittsburg, Clayton, Oakley, and Brentwood. Although the project site is within the area covered by the HCP/NCCP, mining is not a covered activity under the HCP/NCCP (Conservation Plan Association 2006).

4.3.2.4 Local

Contra Costa County General Plan

The goals and policies in the *Contra Costa 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 goals and policies contained within the *Contra Costa County General Plan* Public Facilities and Services Element and Conservation Element pertain to biological resources for the proposed project:

Public Facilities and Services Element

Goal 7-O: To protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare.

Goal 7-P: To protect creeks and riparian zones identified as valuable from damage caused by nearby development activity**.**

Conservation Element

Goal 8-C: To achieve a balance of uses of the County's natural and developed resources to meet the social and economic needs of the County's residents.

Policy 8-3: Watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Policy 8-6: Significant trees, natural vegetation, and wildlife populations generally shall be preserved.

Policy 8-10: Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.

Policy 8-14: Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.

Policy 8-21: The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.

Policy 8-28: Efforts shall be made to identify and protect the County's mature native oak, bay, and buckeye trees.

Open Space

Goal 9-A: To preserve and protect the ecological, scenic, cultural/historic, and recreational resource lands of the county.

Policy 9-2: Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Contra Costa County Surface Mining Ordinance

The Contra Costa County Surface Mining Ordinance (2000-18) was enacted to ensure the continued availability of important mineral resources, while regulating surface mining operations as required by the Surface Mining and Reclamation Act (SMARA), Public Resources Code (PRC) Section 2207, and state regulations for surface mining and reclamation practice (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.

Contra Costa County Tree Protection and Preservation Ordinance

The Contra Costa County Tree Protection and Preservation Ordinance, Chapter 816-6 of Title 8 Zoning Code, provides for the preservation of certain protected trees in the unincorporated area of this county. In addition, this chapter provides for the protection of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development.

The ordinance defines a protected tree as a tree that is adjacent to or part of a riparian, foothill woodland, or oak savanna area, or part of four or more trees, that measures twenty (20) inches or larger in circumference (6.4 inches in diameter) at breast height (measured 4.5 feet above natural grade). Subject trees include any California buckeye (*Aesculus californica*), California juniper (*Juniperus californica*), coast live oak (*Quercus agrifolia*), blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), or native blue or red elderberry (*Sambucus nigra subsp. caerulea* or *S. racemosa* var. *racemosa*). Heritage trees are also protected trees by this definition.

This ordinance requires the following three tree preservation standards, except where otherwise provided by the involved development's conditions of approval or approved permit application.

- Prior to the start of any clearing, stockpiling, trenching, grading, compaction, paving or change in ground elevation on a site with trees to be preserved, the applicant shall install fencing at the

dripline or other area as determined by an arborist report of all trees adjacent to or in the area to be altered. Prior to grading or issuance of any permits, the fences may be inspected and the location thereof approved by appropriate county staff.

- No grading, compaction, stockpiling, trenching, paving or change in ground elevation shall be permitted within the dripline unless indicated on the grading plans approved by the county and addressed in any required report prepared by an arborist. If grading or construction is approved within the dripline, an arborist may be required to be present during grading operations. The arborist shall have the authority to require protective measures to protect the roots. Upon completion of grading and construction, an involved arborist shall prepare a report outlining further methods required for tree protection if any are required. All arborist expense shall be borne by the developer and applicant unless otherwise provided by the development's conditions of approval.
- No parking or storing vehicles, equipment, machinery or construction materials, construction trailers and no dumping of oils or chemicals shall be permitted within the dripline of any tree to be saved.

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.

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 approximate 47-year life span of the proposed reclamation activities 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 in terms of determining the significance of project impacts.

When impacts are deemed significant, mitigation measures are identified, when feasible, 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 proposed project would be required to comply with a number of environmental laws and regulations including those administered by USACE, USFWS, CDFW, and the San Francisco Bay RWQCB, as described in Section 4.3.2, "Regulatory Setting." Approvals issued by these agencies may include measures to offset potential impacts associated with the proposed project consistent with or in addition to those identified herein.

4.3.4 Project Impacts and Mitigation Measures

Impact 4.3-1: Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species Due to Ground Surface Disturbance and Vegetation Removal

As stated in Section 4.3.1.2, "Vegetation Cover Types and Associated Wildlife Species," above, the undeveloped portions of the project site support vegetation types characteristic of Mt. Diablo, including non-native grassland, chaparral, oak woodland, and ruderal/disturbed. Several proposed activities under the Revised Reclamation Plan would require direct removal of existing vegetation, trees, and soil, including the development of the proposed south overburden fill area, of drainage facilities (i.e., rock-lined ditches and culverts) along the quarry rim haul road, and of a drainage pipeline that would convey flows from the quarry pit lake. These activities would result in the disturbance and/or loss of grassland, chaparral, and oak woodland habitat, and could result in adverse effects on special-status plant species with the potential to occur on the project site that are located within these habitats. This is a potentially significant impact.

Nineteen special-status wildlife species are known to be present or have some potential to occur in the vicinity of the project (see Table 4.3-2). The BRA concludes that conditions on the site are suitable for 13 of these species: California red-legged frog (*Rana draytonii*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), American peregrine falcon (*Falco peregrinus*), white-tailed kite (*Elanus leucurus*), Alameda striped racer (*Coluber constrictor lateralis*), coast horned lizard (*Phrynosoma blainvillii*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), ring-tailed cat (*Bassariscus astutus*), pallid bat (*Antrozous pallidus*), Townsend's bigeared bat (*Corynorhinus townsendii*), Crotch's bumble bee (*Bombus crotchii*), and western bumble bee (*Bombus occidentalis*) (see Appendix E-1).

Most of the wildlife living near the quarry are expected to be acclimated to the ongoing quarry operations. However, proposed activities could potentially disrupt active bird nests on or adjacent to the site if any are present when the activities occur. Nests could be destroyed or abandoned. This is a potentially significant impact.

Furthermore, proposed vegetation removal and new ground disturbance in the grasslands, chaparral, or wooded areas could result in the injury or death of individuals of special-status species if they are present when activities occur, including the Alameda striped racer, coast horned lizard, California red-legged frog, and San Francisco dusky-footed woodrat. This is also a potentially significant impact.

In November 2020, the Superior Court in Sacramento, California removed protection for Crotch's or and western bumble bee. This decision was challenged in a suit in February 2021 by several environmental groups. Although no longer covered under CESA, Crotch's bumble bee is listed as an invertebrate of conservation priority under the California Terrestrial and Vernal Pool Invertebrates of Conservation Priority (CDFW 2017). Crotch's bumble bee has a State ranking of S1/S2. This means that the Crotch's bumble bee is considered critically imperiled or imperiled and is extremely rare (often 5

or fewer populations). Also, Crotch's bumble bee has a very restricted range and steep population declines make the species vulnerable to extirpation from the State (Xerces Society 2018). Accordingly, Crotch's bumble bee meets the definition of rare, threatened, or endangered species for the purposes of CEQA (CEQA Guidelines, § 15380).

No documented observations of Crotch's or western bumble bee occur within the project site. However, the proposed project could constitute a potentially significant impact on Crotch's or western bumble bees because no focused surveys have been conducted to date, the site is within the range for these species, and the annual grassland areas with small mammal burrows provide potentially suitable underground nesting habitat. Furthermore, the chaparral and woodland areas could potentially provide floral resources/foraging habitat for Crotch's and western bumble bee. Should Crotch's or western bumble bee colonies or overwintering queens be present in underground nests in work areas, work activities related to the proposed project could adversely affect this species and its habitat. Therefore, this is a potentially significant impact.

Mitigation Measures 4.3-1a through 4.3-1l, below, are provided to reduce impacts to special-status species and nesting birds to a less than significant level. The measures require conducting surveys to identify any species on site prior to implementing project activities and avoiding take or harm to any species identified. These measures provide protection for specific species needs and require compliance with any measures required by discretionary permits. Therefore, impacts to special-status species would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.3-1a: *Conduct Botanical Surveys*

To avoid and minimize potential impacts to special status plants, the following shall apply:

1. *Prior to the commencement of reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) in previously undisturbed 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 species. The survey shall occur within 30 days prior to commencement of ground-disturbing activity. If a special-status species is detected, the applicant shall avoid activity in the area if doing so is feasible in conjunction with meeting project objectives.*
2. *If rare plant species are found and avoidance is not feasible, and the plant is listed under CESA, then the applicant shall mitigate on a 1:1 ratio and obtain and comply with necessary permits from CDFW.*

Mitigation Measure 4.3-1b: *Conduct Special-status Vertebrates Surveys, Personnel Training, and Avoidance*

To avoid and minimize impacts to special status vertebrates, 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 overburden fill areas, tree screen, diversion outlet structure, or other areas, a qualified biologist shall conduct a pre-construction survey of suitable habitat in the project reclamation area.*

2. *The biologist shall supply a brief written report (including date, time of survey, survey method, name of surveyor, and survey results) to the Department of Conservation and Development 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 vertebrate species and their habitat.*
4. *If a special-status species is detected, all work will be halted until the animal has left the work area or, if necessary, has been relocated by a qualified biologist with applicable authorizations.*

Mitigation Measure 4.3-1c: *Conduct Bat Surveys, Avoidance, and Employ Approved Eviction When Necessary*

To avoid and minimize potential impacts to special status bats, the following shall apply:

1. *If reclamation-related ground disturbing activity (which includes clearing, grubbing, or grading) is to commence within 50 feet of suitable bat habitat, including structures and trees with large cavities, during the winter hibernaculum season (e.g., November 1 through March 31), then a qualified biologist shall conduct a pre-construction survey within 50 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 Department of Conservation and Development 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 50-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 50-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 within 50 feet until the hibernaculum is vacated, or, if necessary, safely evicted using methods acceptable to CDFW.*

Mitigation Measure 4.3-1d: *Wildlife Exclusion Fence*

A temporary wildlife exclusion fence shall be installed around the perimeter of any previously undisturbed area prior to the initiation of new ground-disturbing activities to discourage small wildlife from entering the site. The fence shall have escape funnels pointing outwards to allow small wildlife to exit the work area.

Mitigation Measure 4.3-1e: *Biologist Presence*

A qualified biologist shall be present for all initial reclamation-related ground-disturbing activities in areas that have not been previously disturbed.

Mitigation Measure 4.3-1f: *No Monofilament Plastics*

To prevent the entrapment of Alameda striped racers and other wildlife, monofilament plastics shall not be used for erosion control.

Mitigation Measure 4.3-1g: *Conduct Nesting Bird Surveys and Avoidance*

To avoid and minimize impacts to nesting birds, the following shall apply:

1. *If reclamation-related ground disturbing activity 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 5 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 Department of Conservation and Development 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 centered on the nest and of a size determined by a qualified biologist shall be established and maintained around the nest to prevent nest failure. Active nests shall be monitored weekly to ensure that the exclusion zones are intact and that the young are developing. All construction activities shall be avoided within this buffer area until a qualified biologist determines that nestlings have fledged and are foraging independently as determined by a qualified biologist, unless otherwise approved by the Conservation and Development Department and CDFW.*

Mitigation Measure 4.3-1h: *Burrowing Owl Protection*

To avoid and minimize potential impacts to western burrowing owl, the following shall apply:

1. *If reclamation-related ground disturbing activity is to commence in previously undisturbed areas 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 proposed 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 Conservation and Development 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 Division 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 Division 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 Division 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 Streambed Alteration Agreement (Agreement), if any, 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 4.3-1i:** Bumblebee Protection*

To minimize the take of Crotch's and western bumblebee species, a qualified entomologist shall conduct a take avoidance survey for active bumblebee colony nesting sites in any previously undisturbed area prior to each phase of reclamation-related construction, if the work will occur during the flying season. Survey results, including negative findings, shall be submitted to CDFW prior to implementing reclamation-related ground-disturbing activities. Surveys shall take place during flying season when the species is most likely to be detected above ground, between March 1 and September 1. The surveys shall occur when temperatures are above 60 degrees Fahrenheit (°F), on sunny days with wind speeds below 8 miles per hour, and at least 2 hours after sunrise and 3 hours before sunset. Surveyors shall conduct transect surveys focusing on detection of foraging bumble bees and underground nests using visual aids such as binoculars. At minimum, a survey report should provide the following: If no Crotch's or western bumble bees or potential Crotch's or western bumble bees are detected, no further mitigation is required. If potential Crotch's or western bumble bees are seen but cannot be identified, the applicant shall obtain authorization from CDFW to use nonlethal netting methods to capture bumble bees to identify them to species. If protected bumble bee nests are found, a plan to protect bumble bee nests and individuals to ensure no take of Crotch's and western bumblebee species shall be developed by a qualified entomologist in consultation with the Conservation and Development Department. The Conservation and Development Department shall approve the plan prior to implementation.

***Mitigation Measure 4.3-1j:** Take Coverage for Federally Listed Species*

If required by the USFWS for certain previously undisturbed areas to support reclamation-related construction activity, the applicant shall obtain take coverage for federally listed species (Alameda striped racer and California red-legged frog). This may be from a Section 7 Consultation resulting in a Biological Opinion (BO) or a Section 10 consultation resulting in a Habitat Conservation Plan (HCP). All avoidance, minimization, and mitigation measures in the BO or HCP shall be implemented as a condition for operating in that area.

Mitigation Measure 4.3-1k: *Trapping Federally Listed Species*

If necessary, a qualified biologist approved under an active BO or HCP will be contracted to trap and move federally listed species (Alameda striped racer and California red-legged frog) to nearby suitable habitat.

Mitigation Measure 4.3-1l: *Take Permit for State Listed Species*

If required by CDFW, the applicant shall obtain a California Endangered Species Act Section 2081 Incidental Take Permit (ITP) for the Alameda striped racer associated with new reclamation-related disturbances in previously undisturbed areas. If further future information warrants their inclusion, the permit shall cover Crotch's and/or western bumble bee as well. All avoidance, minimization, and mitigation measures in the ITP shall be implemented as a condition for operating in that area.

Level of Significance After Mitigation: Less than significant.

Impact 4.3-2: Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species Due to Exposure to Quarry Pit Lake Water

As described under Impact 4.6-1 of the Section 4.6, "Hydrology and Water Quality," once mining is complete, a quarry pit lake would form as the former mining excavation fills with water over time. The primary source of water into the quarry pit lake would be local rainfall, including rain that falls on the quarry pit and runoff that occurs from the surrounding watershed and the exposed quarry walls. It is estimated that it would take approximately 158 years for the quarry-lake water surface to rise to the proposed pit outlet elevation of 735 feet msl. Once the quarry pit lake reaches the outlet elevation, the quarry pit lake would have a surface area of approximately 32 acres and would hold over 8,500 acre-feet of water. The watershed around the quarry pit lake would consist of 17 acres of undisturbed vegetated land, 41 acres of diabase high walls, and 8 acres of Knoxville formation slopes. The undisturbed vegetated land is underlain by diabase, therefore, about 88 percent of the 66-acre watershed area would consist of diabase.

Leaching tests were conducted on samples of diabase and Knoxville formation to evaluate the potential for minerals within the rocks to leach into rain water that runs off of reclaimed surfaces and enters the quarry. The concentrations of constituents detected in the leachate samples collected were below the primary and secondary MCLs with the exception of concentrations of six constituents (i.e., arsenic, manganese, pH, conductivity, total dissolved solids, sulfate). A Quarry Lake Water Quality Analysis (see Appendix G-4) was completed to evaluate changes in concentrations of the constituents of concern identified in the Adaptive Management Program (see Appendix G-3) and of the metals detected in at least one sample that could harm wildlife, including special status species, that visit or reside in the lake. The standards used to evaluate whether or not water quality objectives protective of wildlife may be exceeded were the primary and secondary drinking water MCLs (SWRCB 2018a and 2018b), the water quality objectives listed in Chapter 3 of the Basin Plan (RWQCB 2017), and the EPA's Aquatic Life Criteria Table (EPA 2021).

Based on the results of the analysis, summarized in Table 4.6-6, "Estimated Incremental Constituent Concentrations Over Time," none of the constituents analyzed would exceed existing water quality standards. Once the water level reaches an elevation of 735 feet msl, then any excess water would be discharged from the quarry lake in a controlled manner. At that point, the volume of water entering the lake and the volume of water leaving the lake would be the same so that the constituent concentrations would remain constant from that time forward. Because the concentrations of

constituents of concern would not exceed existing MCLs or aquatic life criteria, the potential for the water quality in the quarry pit lake to result in a substantial adverse effects to special status-species that could come into contact with water in the lake would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.3-3: Have an Adverse Effect on Riparian Habitat or Other Sensitive Natural Communities

The 300-foot long ephemeral stream on the project site would be filled with overburden material, which would disrupt existing riparian habitat. The stream flows into a constructed debris basin that lacks any evidence of ponding and does not support a wetland plant community (see Figure 4.3-6, "Potential Waters of the United States," and Appendix E-3).

Special-status plants that are known to be present or that have some potential to occur in these areas are shown on Table 4.3-1. As stated in Impact 4.3-1 above, the proposed project's construction activities would result in direct removal of 79 trees primarily in the proposed south overburden fill area (shown on Figure 4.3-1) and vegetation in the proposed south overburden fill area and along the quarry rim. Potential impacts to trees are addressed and mitigated under Impact 4.3-6 below.

Mitigation Measures 4.3-1a through 4.3-1l, above, and 4.3-3, below, are provided to reduce impacts to riparian habitat and other sensitive natural communities to a less than significant level. Additional measures, including compensatory mitigation, may be required by a USFWS BO, HCP, and/or CDFW ITP or 1602 permit. Impacts to riparian habitat and other sensitive natural communities as a result of the proposed project would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation: Significant.

Mitigation Measures:

Mitigation Measures: *Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1j, 4.3-1k, and 4.3-1l (see Impact 4.3-1) and Mitigation Measures 4.3-6a through 4.3-6i (see Impact 4.3-6).*

Mitigation Measure 4.3-3: *Acquire Necessary Permits for Jurisdictional Features*

The applicant shall mitigate these impacts at an approved ratio and shall obtain required permits to impact the jurisdictional ephemeral stream from the relevant regulatory agencies, including the USACOE, CDFW, and RWQCB, as applicable. These permits will include conditions and Best Management Practices (BMPs) that the quarry shall implement during construction. These permits may also specify mitigation, which the quarry shall provide as specified by the agencies. All terms of the permits shall be implemented as a condition of the project. If permits require mitigation at a higher ratio than 1:1, that requirement will be met.

Level of Significance After Mitigation: Less than significant

Impact 4.3-4: Have an Adverse Effect on Protected Wetlands

LSA conducted a jurisdictional delineation in 2015 and reported the only potentially jurisdictional watercourse or wetland on the project site was the 300-foot long and 4 to 7-foot wide ephemeral stream

(see Figure 4.3-6 and Appendix E-3). The existing conditions of the stream are provided in Section 4.3.1.4, "Wetlands and Waters of the United States," above.

The proposed project would permanently fill the stream with mining overburden spoils. As discussed in Section 4.3.1.4, USACOE provided a preliminary jurisdictional determination for this feature on January 26, 2016. However, the jurisdictional status of the stream may evolve depending on the outcome of several lawsuits relating to the NWPR and on the recent U.S. District Court for Arizona ruling that vacated the NWPR. Other features that are likely subject to the jurisdiction of the USACOE or RWQCB located outside of the footprint of proposed mining activities and which will not be disturbed were also observed on the site, but were not delineated.

The project would be required to obtain discretionary permits before conducting reclamation activities within jurisdictional features on site. These permits will include conditions and best management practices that would be implemented during reclamation activity. The permits and their associated conditions comprise Mitigation Measure 4.3-3, "Acquire Necessary Permits for Jurisdictional Features," and would reduce this impact to a less than significant level. Therefore, project impacts on protected wetlands would be less than significant with mitigation incorporated.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measure 4.3-3 (see Impact 4.3-3).

Level of Significance After Mitigation: Less than significant.

Impact 4.3-5: Interfere with Native Resident or Migratory Fish or Wildlife Species Movement, Corridors, or Nursery Sites

The site is not within a recognized major wildlife migratory corridor. However, the site is contiguous with large expanses of suitable habitat for Alameda striped racer, and suitable habitat is also present in the undisturbed areas of the project site (see Figure 4.3-4 and Table 4.3-2). The site is also within the potential dispersal range of California red-legged frog. The reclamation of the mine may therefore interfere with the movement of Alameda striped racer and California red-legged frog.

In addition, bird nests could be considered nursery sites. Reclamation activities, including the removal of trees in the south overburden fill area, have the potential to significantly impact nesting birds. The proposed project would not interfere substantially with the movement of any other wildlife species or migratory fish.

Mitigation Measures 4.3-1b, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-1j, 4.3-1k, and 4.3-1l described under Impact 4.3-1 above, would require a biologist on site and protections for Alameda striped racer, California red-legged frog and nesting birds. These measures would reduce impacts to a less than significant level. Therefore, the proposed project would have a less than significant impact on wildlife movement, corridors, and nursery site with mitigation incorporated.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measures 4.3-1b, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-1j, 4.3-1k, and 4.3-1l (see Impact 4.3-1).

Level of Significance After Mitigation: Less than significant.

LSA

LEGEND

Delineation Study Area

Erosional Gully, non-jurisdictional

WATERS OF THE UNITED STATES

Other Waters

Stream Segment

N

0 50 100

FEET

SOURCE: USGS Orthoimagery (04/2011).

I:\CMX1501\GIS\Maps\Delineation\Figure 3_Potential Waters of the US.mxd (7/6/2015)

SOURCE: LSA Associates, Inc. 2015; modified by Benchmark Resources in 2021

NOTES: Figure is not to scale.

Potential Waters of the United States

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 4.3-6

BENCHMARK RESOURCES

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Impact 4.3-6: Conflict with Local Policies or Ordinances Protecting Biological Resources

Contra Costa County Tree Protection Ordinance

Contra Costa County has a tree protection ordinance. The Clayton Quarry Arborist Report (Appendix E-2) includes an inventory of the trees within the project site and describes the potential impacts to protected trees from the proposed project (see Appendix E-2). A total of 123 trees were surveyed on the site, with 6 species represented. Table 4.3-3 "Summary of Trees Impacted by Proposed Project," below, describes the number of each species that would be removed or retained as a result of the proposed project. The locations of the trees are shown on Figure 4.3-1. A total of 120 of the surveyed trees are considered "protected" trees as defined by the Ordinance and 3 are non-protected, as defined in Section 4.3.2, "Regulatory Setting," above.

TABLE 4.3-3
SUMMARY OF TREES IMPACTED BY PROPOSED PROJECT

Species	Trees on Project Site*	Remove	Retain
CALIFORNIA BUCKEYE (*Aesculus californica*)			
Heritage	6	6	-
Protected	2	2	-
CALIFORNIA JUNIPER (*Juniperus californica*)			
Protected	1	-	1
COAST LIVE OAK (*Quercus agrifolia*)			
Heritage	3	2	1
BLUE OAK (*Quercus douglasii*)			
Heritage	69	40	29
Not Protected	3	2	1
Protected	30	23	7
VALLEY OAK (*Quercus lobata*)			
Heritage	7	3	4
Protected	1	-	1
BLUE ELDERBERRY (*Sambucus nigra subsp. Caerulea*)			
Heritage	1	1	-
Total	123	79	44

Source: Appendix E-2.
Notes: Tree locations are shown on Figure 4.3-1.
A heritage tree is any tree 72 inches or greater in circumference (22.9 inches in diameter) measured 4.5 feet above the natural grade, and a protected tree is any locally native tree that measures 20 inches or larger in circumference (6.4 inches in diameter) at breast height (measured 4.5 feet above natural grade). Heritage trees are also considered protected trees

The report concludes that 77 protected trees would be removed from implementation of the proposed project and that 52 of these trees are also considered heritage by County Ordinance. Protected trees proposed for removal consist of eight California buckeye (six heritage, two protected), two coast live oak (two heritage), 63 blue oak (40 heritage, 23 protected), three valley oak (heritage), and one blue elderberry (heritage). The proposed project would also remove two non-protected blue oak trees, resulting in the removal of 79 trees total. All removed trees are located in and adjacent to the proposed north overburden fill area.

A total of 44 trees (43 protected trees and one non-protected tree) identified within the project area would not be impacted by the project. Trees that would be retained include one California juniper (protected), one coast live oak (heritage), 37 blue oak (29 heritage, seven protected, and one non-protected), and five valley oak (four heritage, one protected).

Because trees would be removed, the quarry will need to obtain a tree removal permit from the County and comply with the terms therein for impacts or removal of protected trees. Therefore, the proposed project would not conflict with the ordinance.

Contra Costa County General Plan Conservation Element

Goal 8-6 and 8-28 of the Conservation Element, listed in Section 4.3.2.3, "Local,", require the identification and preservation of significant trees, natural vegetation, and wildlife populations. The BRA and Arborist Report have identified sensitive and significant biological features that would be impacted on the project site, including protected trees as outlined in Table 4.3-3, above. Per the project biologist, pine trees, which would be situated in a single line along the Quarry east rim, are more suitable for the replacements in the context of project site conditions. Therefore, the revised reclamation plan proposes 400 foothill pine replacement trees in lieu of in-kind species for the following specific reasons (also see Chapter 6, "Alternatives"):

1) Foothill pines grow more quickly than oak trees, which would comprise the majority of compliant replacement trees if foothill pines were not used. Foothill pines take about 20 to 25 years to mature, while blue oaks and valley oaks take 50 to 65 year and 15 to 35 years to mature, respectively (Urban Forest Ecosystem Institute 2021a, 2021b, and 2021c). Therefore, pine trees would establish a more effective tree screen at an earlier date as compared to the planting of oak trees.
2) Foothill pines can grow up to 30 feet taller than blue oaks and valley oaks respectively (Urban Forest Ecosystem Institute 2021a, 2021b, and 2021c). Therefore, pine trees would obscure more of the quarry pit rock face than would oaks (see Section 4.1, "Aesthetics and Visual Resources").
3) Pines take up less horizontal space than oaks, allowing for more trees total and for all trees to be aligned at the top of the quarry pit east rim. This arrangement would increase the density of the tree screen.
4) For the same reasons stated in item 3 above, pines positioned in a linear fashion at the top of the quarry rim would not increase fire risk in the area compared to existing conditions (see Appendix A-4, "Initial Study" for Wildfire impact analysis and Chapter 6). Very High Fire Hazard Severity Zones (VHFHSZ) are located adjacent to the project site to the north and south. By replacing removed protected trees with pines, which have narrower canopies and may be more densely positioned, all trees can be aligned in a single horizontal line at the top of the east rim of the future quarry lake. This tree alignment and species choice would create a low hazard risk buffer between the two adjacent VHFHSZs and would not exacerbate wildfire risk relative to existing conditions.

For these reasons, the project proposes the planting of replacement pines. Mitigation Measures 4.3-6a through 4.3-6i are provided to meet the requirements of the Tree Protection Ordinance and Conservation Element to the extent feasible. These measures include requirements to protect trees from damage during reclamation activities and to develop a plan to identify locations on the project site where replacement protected trees can be planted without exacerbating wildfire risk on the site. With implementation of Mitigation Measures 4.3-6a through 4.3-6i, the potential of the proposed project to conflict with local policies or ordinances protecting biological resources would be less than significant.

Level of Significance Before Mitigation: Significant.

Mitigation Measures:

Mitigation Measure 4.3-6a: *Tree Avoidance*

The project reclamation plan shall avoid as many protected trees as feasible. The project plan shall incorporate placement of tree protection fencing outside of the avoided trees' drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12. Preserved trees on the project site shall be avoided during construction by following best management practices as outlined in the following measures.

Mitigation Measure 4.3-6b: *Tree Maintenance During Construction, Root Zones*

Tree roots often extend far beyond the canopy drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12. Excavation work within the drip line of avoided trees shall not be allowed.

Mitigation Measure 4.3-6c: *Tree Protection Fencing*

Prior to the start of fill disposal, Tree Protection Fencing (TPF) shall be installed. The TPF shall be maintained during the entire fill disposal process to prevent direct damage to trees and their growing environment. The TPF shall consist of blaze orange barrier fencing supported by metal "Trail" fence posts, unless wildlife exclusion fencing is in place. The TPF shall be placed at a distance that is at or outside of the drip lines, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12, of avoided trees. The TPF shall be installed as part of the site preparation before fill disposal or tree removal/trimming begins and shall be installed under the supervision of a qualified arborist. The TPF shall not be altered in any way that would increase the encroachment on the avoided trees during fill activities.

Mitigation Measure 4.3-6d: *Use of Heavy Equipment*

Heavy machinery shall not be allowed to operate (excavation, grading, drainage and leveling) or park within the drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12, of avoided trees unless approved by a qualified arborist.

Mitigation Measure 4.3-6e: *Storage of Construction Materials and Debris*

Fill materials shall not be placed against the trunks of avoided trees. Disposal or depositing of oil, gasoline, chemicals or other harmful materials within the drip line, which shall be determined by the diameter of each tree trunk in inches at breast height and multiplied by 12, is prohibited.

Mitigation Measure 4.3-6f: *Incidental Damage to Protected Trees*

The attachment of wires, signs, and ropes to any protected tree is strictly prohibited. Workers may be allowed to rest under trees, but they must not injure trees by any means. The County shall be notified if any damage occurs to a retained tree during fill disposal so that proper treatment may be administered.

Mitigation Measure 4.3-6g: *Trimming*

All pruning of protected trees shall be performed by a licensed contractor familiar with International Society of Arboriculture pruning guidelines and shall comply with the guidelines established by the International Society of Arboriculture, Best Management Practices, Tree Pruning, and any special conditions as determined by a certified arborist or the County's Director. A certified arborist shall coordinate all activities involving protected trees near the construction zone that are not permitted for removal.

Mitigation Measure 4.3-6h: *Tree Planting Monitoring and Establishment*

Tree planting shall be monitored according to the methods outlined in Section 2.9.6 of the Reclamation Plan for successful establishment of installed trees. Establishment will be considered successful if 50 percent of the number of plantings required by the County have become established with no significant intervention for at least two years.

Mitigation Measure 4.3-6i*: Oak Tree Plan*

The operator of the Clayton Quarry shall consult with an arborist to develop a plan that identifies where oak trees can be planted within the project site upon the completion of mining without substantially exacerbating wildfire risk on the site. The oak tree plan shall be provided to the Contra Costa County Fire Protection District and to the Planning Division for review and comment, to confirm that the additional oaks would not substantially exacerbate wildfire risk by connecting the two very high fire hazard severity zones on the project site. Oak trees shall be planted on the site during final reclamation activities as indicated in the final oak tree plan. Tree planting shall be monitored according to the methods outlined in Section 2.9.6 of the Reclamation Plan for the successful establishment of installed trees. The monitoring shall verify that the following performance standard is met: the planted trees must be healthy and must survive three years without intervention to be considered established. If the survival rate is less than 80 percent after three years, the trees that did not survive shall be replaced. The verification monitoring shall continue until the 80 percent survival rate of the trees planted under the oak tree plan has been achieved for three consecutive years.

Level of Significance After Mitigation: Less than significant.

Impact 4.3-7: Conflict with Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Local or Regional Plan 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," of Section 4.7, "Land Use and Planning." As noted in that table, the proposed project with mitigation incorporated would be consistent with all local policies protecting biological resources. In addition, the site is within the area covered by the HCP/NCCP, but mining is not a covered activity under the HCP/NCCP (Conservation Plan Association 2006). Because reclamation is a mining activity, the provisions of the HCP/NCCP do not apply. Therefore, the proposed project is consistent with local and regional policies, resulting in a less than significant impact regarding conflicts with local regulations to protect biological resources.

Level of Significance: Less than significant.

Mitigation Measures: None required.

4.4—GEOLOGY AND SOILS

This section of the Draft EIR 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 as relates to reclamation 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 an applicant-prepared study and publicly available sources. The applicant-prepared studies used is titled *Geotechnical Evaluations for Revised Reclamation Plan, Clayton Quarry, Clayton, California* prepared by Golder Associates, Inc. (Golder) (Geotechnical Evaluation) (see Appendix F, "Geotechnical Evaluations for Revised Reclamation Plan")

Darwin Myers Associates (Darwin Myers) was retained by the County to peer review two preliminary slope stability analysis reports prepared by Golder in 2015. Darwin Myers provided comments that were taken into consideration in preparation of the final Geotechnical Evaluation in 2017 (see Appendix F). Darwin Myers submitted initial comments on the Golder report, after which Golder submitted responses to their comments May 11, 2018. On March 8, 2019, Darwin Myers deemed the 2017 Golder report adequate. Benchmark Resources peer reviewed the reports in October 2020. The Geotechnical Evaluation was again determined to be adequate, and no changes were necessary.

4.4.1 Environmental Setting

The existing soil, geologic, and seismic conditions at the project site and vicinity are discussed below. Unless otherwise noted, the information presented in this subsection is based on the Geotechnical Evaluation (see Appendix F).

4.4.1.1 Geologic Conditions

Regional Geology

The project site is located within the Coast Ranges geomorphic province. A geomorphic province is a naturally defined geologic region that displays a distinct combination of features based on geology, faults, topography, and climate. Eleven geomorphic provinces are recognized in California. The Coast Ranges geomorphic province is a relatively geologically young and seismically active region (California Geological Survey [CGS] 2002). The Coast Ranges are mountain ranges (approximately 2,000 to 4,000, and in some areas 6,000 feet, in elevation above mean sea level [msl]) and valleys that trend northwest, approximately parallel to the San Andreas fault, from near the Oregon border to southern California. The only major break in the Coast Ranges is the depression containing the San Francisco Bay.

Regional and Local Topography

The project site is located within Clayton Quarry in Contra Costa County, California, approximately 3.5 miles north-northwest of Mount Diablo in central Contra Costa County, California on the east side of Mount Zion (as shown on Figure 1-2, "Site Location," in Chapter 1, "Introduction"). Mount Zion is approximately 1,635 feet high, with natural slope inclinations of approximately 20 to 35 degrees to the southeast in the area of the project site. The elevation of the project site ranges from approximately 560 feet msl at the Mitchell Canyon Road entrance to the project site, at the northeast corner of the site, to approximately 1,540 feet msl at the top of the high wall on the west side of the quarry, along the western edge of the site.

The area in the vicinity of the project site is drained by Mitchell Creek, an intermittent stream trending to the north-northeast, and draining the northwest-slopes of Mount Diablo and the east side of Mount Zion. At its nearest, Mitchell Creek is located approximately 400 feet east of the project site and approximately 1,300 feet east of the quarry pit.

Project Site Lithology

The geology of the site is shown on Figure 4.4-1, "Site Geology Map." The quarry is underlain by both diabase rock types of the Mount Diablo Ophiolite formation and by the Knoxville formation. Diabase is an igneous rock formed during the Jurassic Period in the ocean at a submarine spreading center. The Knoxville formation is a sedimentary rock consisting of shale with intermittent lenses of limestone and sandstone beds formed in the Late Jurassic and Early Cretaceous periods.

Diabase is located on the western portion of the quarry, and the Knoxville formation is located in the eastern portion of the quarry. The two formations are in contact at the southeastern portion of the quarry, as indicated on Figure 2-10, "Clayton Quarry Plan," in Chapter 2, "Project Description." A conceptual depiction of the Knoxville formation and diabase contact is shown on Figure 4.4-2, "Knoxville-Diabase Transition Concept." The contact between the Knoxville formation and the diabase dikes is characterized by altered rock-like materials derived from both the Knoxville formation and the diabase. It typically consists of a dense, highly fractured dark green to black aphanitic rock.

As shown on Figure 4.4-1, quaternary alluvium (Qoa and Qa) occurs along the eastern edge of the project site, in the areas outside of the quarry pit. The older quaternary alluvium (Qoa) consists of sand, silt, clay, and gravel. The younger quaternary alluvium (Qa) located at the northeast corner of the project site consists of sand, silt, and gravel.

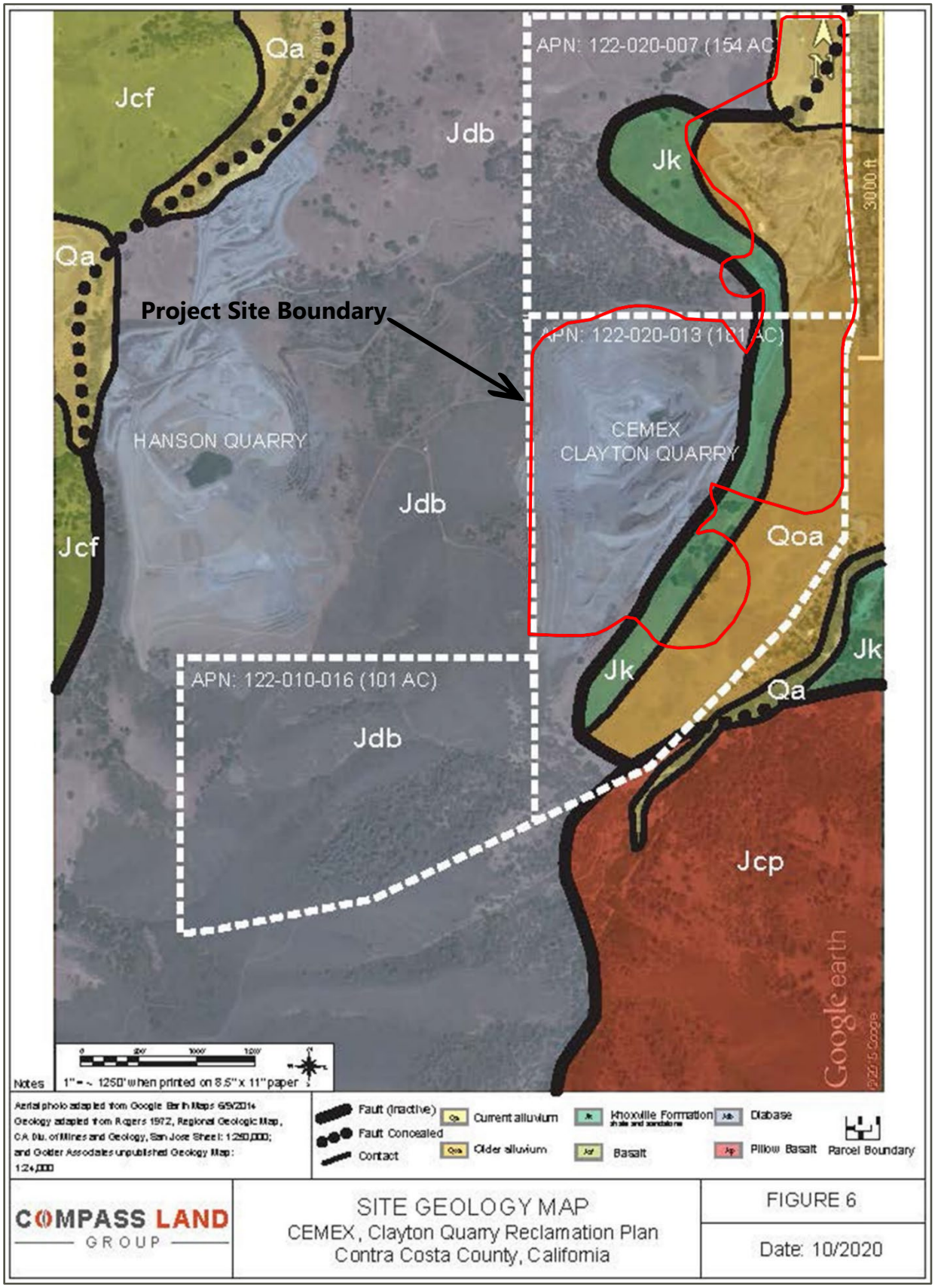
Quarry Topography

The project site contains an open-pit quarry with benches. The rim of the existing quarry varies from a minimum elevation of 755 feet msl, where the haul road enters the east side of the quarry, to approximately 1,540 feet msl at the top of the high wall on the west side of the quarry. As of May 2021, the elevation of the bottom of the quarry was about 530 feet msl.

The western quarry wall slope is approximately 0.5H:1V (63.4 degrees) and is made up of benches approximately 60 feet high and 30 feet wide. Above the current working level, the western quarry wall slope is a final slope, with no further changes planned. The eastern quarry wall slope is still being developed. As of April 2017, the overall slope of the eastern quarry wall was approximately 1.6H:1V to 1.4H:1V (32 to 35 degrees). To facilitate truck transport, a haul road exists in the quarry pit, and is continually developed toward the pit bottom as quarrying progresses.

Soils

Soil is generally defined as the unconsolidated mixture of mineral grains and organic material which mantles the land surfaces of the earth. Regional soil mapping indicates that the project site consists primarily of clay loam, clay, and gravelly loam soils, as summarized in Table 4.4-1, "Soils within the Project Site," and mapped on Figure 4.4-3, "Soils Map." The shrink-swell potential and hydrologic characteristics of the soil are also presented in Table 4.4-1.



SOURCE: Compass Land Group 2020; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Site Geology Map

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 4.4-1

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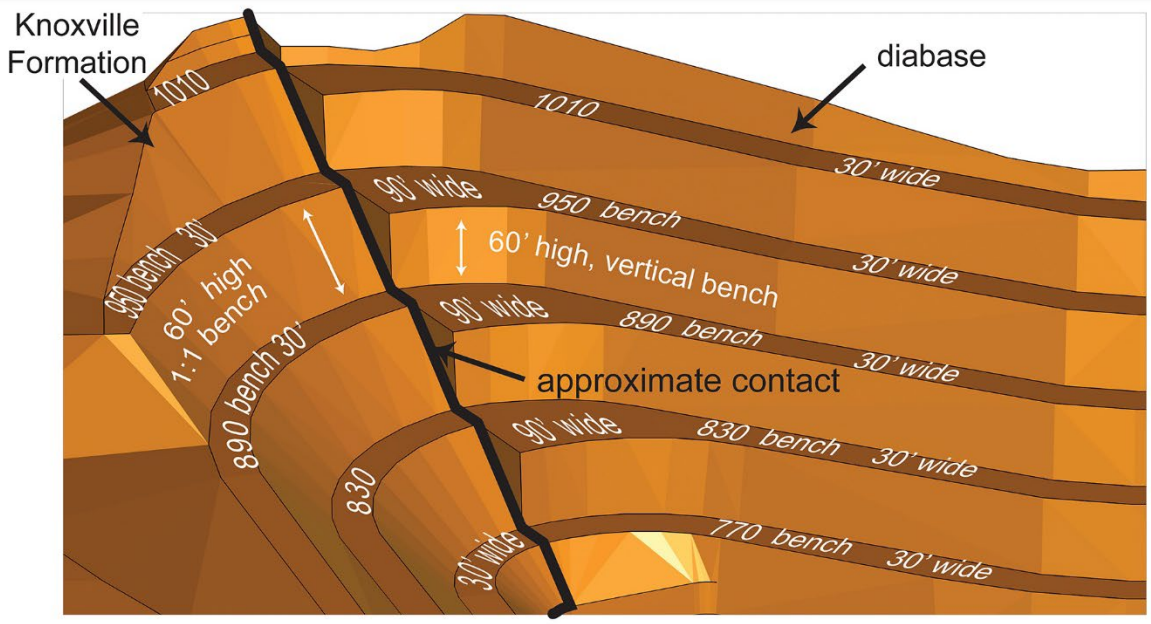

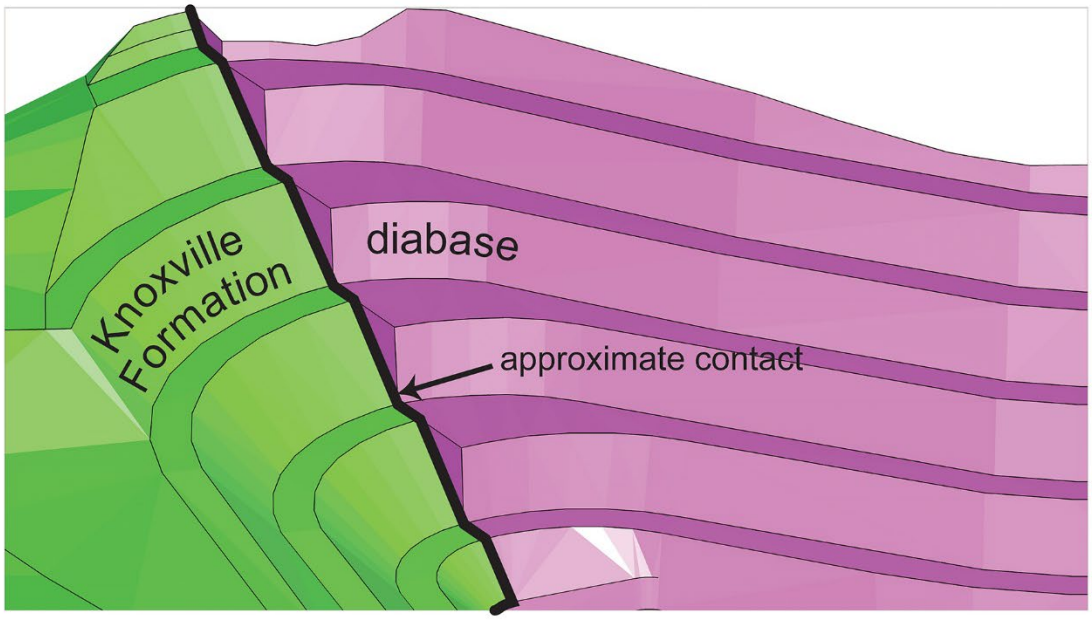

	Bench Face Slope	Bench Height	Bench width	Overall Inter-ramp slope
Knoxville Formation	1H:1V, 45 degrees	60 feet	30 feet	1.33H:1V, 37 degrees
Diabase	Vertical, 90 degrees	60 feet	30 feet	0.5H:1V, 63 degrees

Recommended slope geometry from Golder Associates Geotechnical Report

Notes

Pit design work from Spinardi Associates 2015 and JLGC 2015

COMPASS LAND GROUP

Knoxville-Diabase Transition Concept
CEMEX, Clayton Quarry Reclamation Plan
Contra Costa County, California

FIGURE 8

Date: 10/2020

SOURCE: Compass Land Group 2020; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

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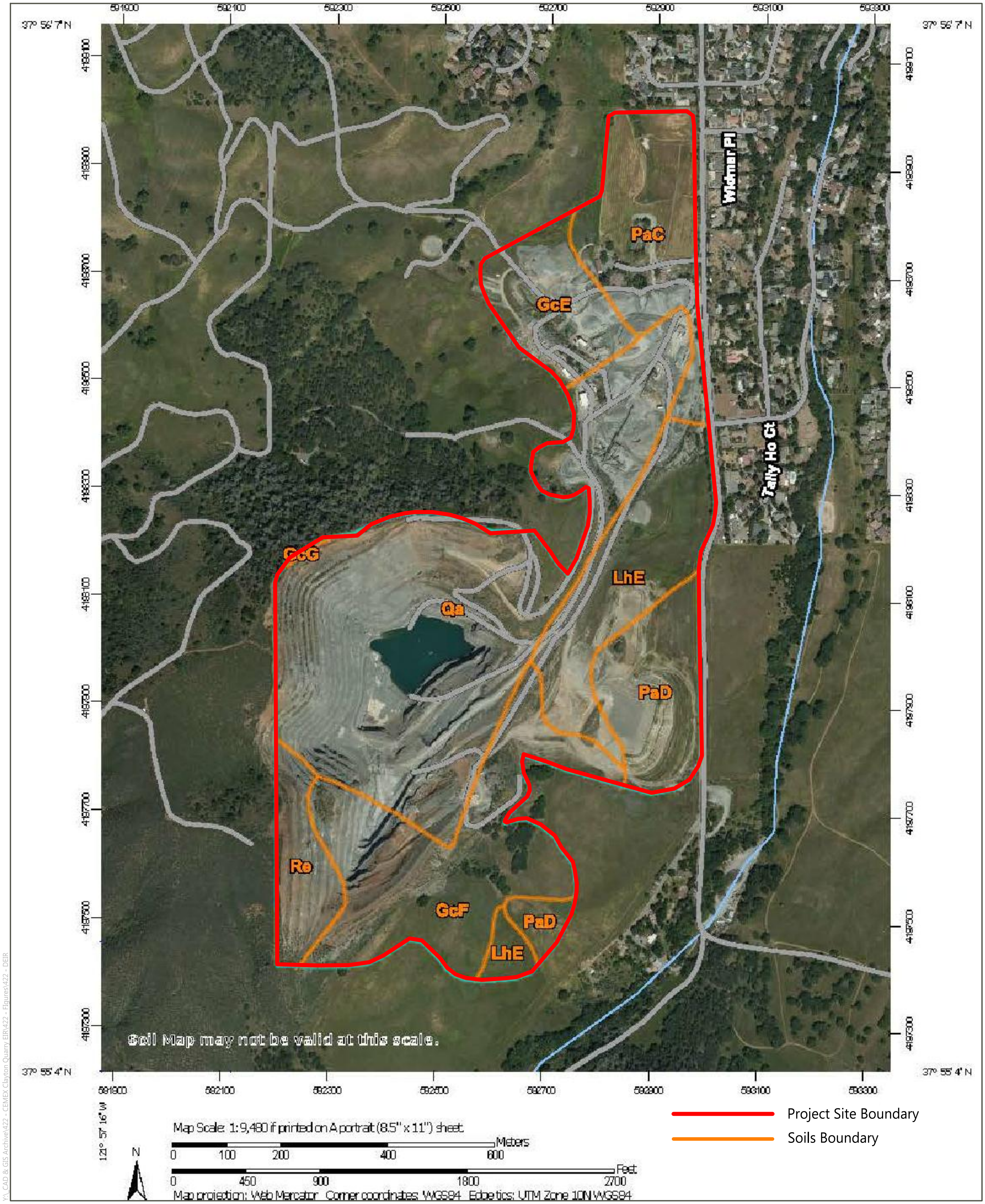

SOURCE: USDA NRCS, May 2020; modified by Benchmark Resources in 2021

NOTES: Figure is not to scale.

Soils Map

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 4.4-3

BENCHMARK RESOURCES

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TABLE 4.4-1
SOILS WITHIN THE PROJECT SITE

Soil Association/ Name	Approximate Acreage	Soil Profile Summary	Shrink-Swell Potential[a]	Hydrologic Soil Group[a,b]
Gilroy Clay Loam, 15 to 30 percent slopes	13	Clay loam (0 to 29 inches) Very gravelly loam (29 to 39 inches) Bedrock (39 to 44 inches)	Moderate Moderate NA	C
Gilroy Clay Loam, 30 to 50 percent slopes	35	Clay loam (0 to 21 inches) Bedrock (21 to 25 inches)	Moderate NA	C
Gilroy Clay Loam, 50 to 75 percent slopes	1	Clay loam (0 to 21 inches) Bedrock (21 to 25 inches)	Moderate NA	C
Los Osos Clay Loam, 15 to 30 percent slopes	24	Clay loam (0 to 10 inches) Clay (10 to 32 inches) Bedrock (32 to 42 inches)	High Very high Very high	D
Perkins gravelly loam, 2 to 9 percent slopes	20	Gravelly loam (0 to 19 inches) Gravelly clay loam (19 to 60 inches)	Moderate Moderate	C
Perkins Gravelly loam, 9 to 15 percent slopes	17	Gravelly loam (0 to 19 inches) Gravelly clay loam (19 to 60 inches)	Moderate Moderate	C
Quarry	73	NA	NA	NA
Rock outcrop-Xerorthents association	9	40 percent rock outcrop 30 percent Xerorthents and similar soils	NA	NA

Source: United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), 2021. Web Soil Survey website. Available at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm, accessed February 23, 2021.
Notes: NA = not applicable

[a] Shrink-swell potential of soils is determined by measuring the linear extensibility, which is the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. A moderate, high, or very high shrink-swell potential can cause significant changes in soil volume as moisture content changes, which can result in damage to overlying improvements and buildings.

[b] Hydrologic soil groups are based on estimates of runoff potential. Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. Group B soils have a moderate infiltration rate when thoroughly wet. Group C soils have a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. Group D soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material.

Site Hydrogeology

Hydrogeology is primarily addressed in Section 4.6, "Hydrology and Water Quality." The following discussion is a brief overview of hydrogeologic conditions at the site. The northeast portion of the project site that contains the plant site and north overburden fill area is underlain by the Clayton Valley groundwater basin. The south overburden fill area and the quarry pit are not underlain by a groundwater basin (California Department of Water Resources [DWR] 2021).

The Geotechnical Evaluation indicates that the quarry is unlikely to encounter significant groundwater or intersect a regional aquifer. The diabase in the quarry consists of dense igneous rock with very low porosity and hydraulic conductivity. Groundwater, where encountered in such rocks, occurs only in fractures and results from surface water seeping into fractures in the rock mass on the slopes of Mount Zion. Water that occurs in the diabase exposed in the quarry consists primarily of water derived from the surface infiltration of precipitation that has percolated into discontinuities within the rock mass (i.e., seeps along fractures). This water then daylights in the quarry pit slopes. The current base of the quarry contains a small pit formed

from seepage and runoff from existing quarry benches; however, the generally dry conditions and high rates of evaporation minimize the accumulation of water in the pit lake.

The final depth of the quarry would be 110 feet msl, approximately 400 feet below Mitchell Creek, but it is unlikely that Mitchell Creek would significantly contribute to groundwater flows in the quarry due to the distance between the creek and the quarry and the hydraulic nature of the intervening rock materials. The quarry is located approximately 1,300 feet to the west of Mitchell Creek, and Mitchell Creek is underlain by a different geologic unit (Alluvium). Geologic maps and site observations of the area indicate no faults or other geologic structures that might intercept surface water flowing in Mitchell Creek and act as conduit for groundwater flow into the quarry.

4.4.1.2 Seismic Conditions

The entire San Francisco Bay region is located within the San Andreas Fault Zone, a complex of active faults (i.e., faults that show evidence of rupture within the past 11,000 years). Numerous historic earthquakes have been generated in northern California by the San Andreas Fault Zone. This level of active seismicity results in relatively high seismic risk in the San Francisco Bay region. The Working Group on California Earthquake Probabilities and the United States Geological Survey (USGS) have predicted a 33 percent probability of a Moment Magnitude (M_W)[1] 6.7 or greater earthquake on the Hayward Fault between 2014 and 2043, a 22 percent chance on the San Andreas Fault, and a total probability of 72 percent that an earthquake of M_W 6.7 or greater will occur on one of the regional Bay Area faults during that time (USGS 2016).

4.4.1.3 Soils, Geologic, and Seismic Hazards

Surface Fault Rupture

The project site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone (California Department of Conservation, Division of Mines and Geology 1993). The nearest active faults to the project site are the Greenville fault, located about 1 mile east of the project site, and the Concord fault, located about 3 miles west of the project site (USGS and CGS 2021). An active fault is defined by the State of California has having surface displacement within the past 11,000 years.

The Knoxville formation deposits were thought to on-lap the Mount Diablo Ophiolite formation at the project site as a depositional contact, however, the contact may also have experienced uplift and faulting over geologic time. The Geotechnical Evaluation for the proposed project reviewed published literature, maps, and reports prepared by the USGS. The materials indicate that the contact on the east side of the quarry between the Knoxville Formation and the diabase rock to be a fault that dips east at about 60 degrees. Field mapping conducted as part of the Geotechnical Evaluation and site-specific drilling data evaluated provided by the project applicant indicate that the contact dips at approximately 61 degrees to the east in the east wall of the quarry, consistent with the USGS interpretation. This contact is not considered an active fault.

Liquefaction, Lateral Spreading, Seismically Induced Settlement, and Subsidence

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes transient loss of strength, which commonly causes ground displacement or ground failure to occur. Because saturated soils

[1] M_W, as opposed to Richter Magnitude, is now commonly used to characterize seismic events. MW is determined from the physical size (area) of the rupture of the fault plane, the amount of horizontal and/or vertical displacement along the fault plane, and the resistance to rupture of the rock type along the fault.

are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths. The potential for liquefaction-induced ground failure (e.g., loss of bearing strength, ground fissures, and sand boils) depends on the thickness of the liquefiable soil layer relative to the thickness of the overlying non-liquefiable material.

Lateral spreading is a form of horizontal displacement of soil toward an open channel or other "free" face, such as an excavation boundary. In a lateral spread failure, a layer of ground at the surface is carried on an underlying layer of liquefied material over a nearly flat surface toward a river channel or other bank. The lateral spreading hazard tends to mirror the liquefaction hazard for a site, assuming a free face is located nearby. Seismically induced settlement occurs when loose sandy soils become denser when subjected to shaking during an earthquake.

Potential impacts from liquefaction, lateral spreading, and seismically induced settlement include loss of bearing capacity, differential settlement, lateral movements, and surface manifestation such as sand boils. The majority of the project site, including the quarry, is underlain by the Mount Diablo Ophiolite formation and Knoxville formation, which consist of shallow soils over bedrock with groundwater that occurs only in fractures. Consequently, there is low potential for liquefaction, lateral spreading, or seismically induced settlement to occur in these areas. A portion of the easternmost edge of the project site underlying the north overburden fill area is mapped as having "moderate" liquefaction susceptibility (USGS and CSG 2006).

Subsidence

Subsidence is the lowering of the land-surface elevation. The mechanism for subsidence is generally related to groundwater pumping and subsequent consolidation of loose aquifer sediments. The primary hazards associated with subsidence are increased flooding hazards and damage to underground utilities as well as above-ground structures. Other effects of subsidence include changes in the gradients of stormwater and sanitary sewer drainage systems for which the flow is gravity driven.

Landslides

Slope failure can occur as either rapid movement of large masses of soil (landslide) or slow, continuous movement (creep) on slopes of varying steepness. Areas susceptible to landslides are characterized by steep slopes and downslope creep of surface materials. The project site is located along the slopes of Mount Zion, which, as described in the "Regional and Local Topography" section, has natural slope inclinations of approximately 20 to 35 degrees in the area of the project site. Mount Zion does not have a recent history of landslides as documented by the U.S. Landslide Inventory (USGS 2021) but does have moderate to high landslide susceptibility as mapped in the Contra Costa County Draft Hazard Mitigation Plan (Contra Costa County 2018). In addition, the Geotechnical Evaluation notes that the existing north overburden fill area experienced slope instability in March 2016 in response to heavy rainfall, and based on available records, likely represented a renewed failure of a landslide that occurred in 2000. As described in Section 2.5.6, "Fill Slopes and Compaction Standards," in Chapter 2, the existing north overburden fill area (shown on Figure 1-2) was improved in 2017 between the quarry haul road and Mitchell Canyon Road by a combination of removing and replacing the slide material with materials that have higher strength properties (shear key), coupled with adding weight to the toe of the slide to counteract the driving forces from the upper portion of the slide (gravity buttress fill), pursuant to Contra Costa County Grading Permit BLG16-011287. Additional work is underway to expand the shear key to improve stability of the north fill area and accomplish a more aesthetic profile for the buttress fill, pursuant to Contra Costa County Building Permit BLG20-003645. This work is anticipated to be completed in 2021.

Expansive Soils

Expansion and contraction of soil volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. Shrink-swell potential is influenced by the amount and type of clay minerals present and can be measured by the percent change of the soil volume. Shrink-swell potential is also influenced by the location of the soils; soils below the groundwater table maintain a steady moisture content and would therefore not be subject to shrink-swell effects.

As a consequence of volume changes due to expansive soils, structural damage to buildings and infrastructure can occur if potentially expansive soils are not considered in project design and during construction. The soils in the project site range from moderate to very high shrink-swell potential (i.e., low to very high linear extensibility) (Table 4.4-1). Moderate to very high shrink-swell potential soils are classified as expansive soils, which can pose geotechnical hazards to subsurface utilities and building foundations (USDA NRCS 2021).

4.4.1.4 Paleontological Resources

Paleontological resources include fossilized remains or traces of organisms, including plants, vertebrates (animals with backbones), invertebrates (e.g., starfish, clams, ammonites, and marine coral), and microscopic plants and animals (microfossils), including their imprints, from a previous geological period. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 years) (Society of Vertebrate Paleontology 2010). The majority of the project site is underlain by diabase rock types of the Mount Diablo Ophiolite formation. Igneous rocks are formed from the solidification of molten rock material and therefore have a low potential to contain paleontological resources. However, the remainder of the project site is underlain by the Knoxville formation sedimentary rocks and quaternary alluvium deposits, both of which have the potential to contain paleontological resources. In particular, a record search of the UC Berkeley Museum of Paleontology (UCMP) database identified 12 fossils in the Knoxville formation within Contra Costa County, and 264 fossils in the Knoxville formation throughout California (UCMP 2021).

4.4.2 Regulatory Setting

The following sections discuss federal, state, and local regulations pertaining to geology and soils.

4.4.2.1 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.

4.4.2.2 State

Alquist-Priolo Earthquake Fault Zone Act

The project site is not located within a State-designated Alquist-Priolo Earthquake Fault Zone (California Department of Conservation, Division of Mines and Geology 1993). 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.

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 western project site, including the existing quarry, 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". The eastern portion of the project site is classified as MRZ-3, which is defined as areas that contain mineral deposits whose significance cannot be evaluated from available data (Stinson et al. 1987).

Slope Stability

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 pseudo-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.

California Public Resources Code

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value and are afforded protection under state laws and regulations. Public Resources Code, Chapter 1.7, sections 5097.5 and 30244 regulate removal of paleontological resources from state lands, define unauthorized removal of fossil resources as a misdemeanor, and require mitigation of disturbed sites. Professional standards of practice, such as those adopted by the Society of Vertebrate Paleontology (2010), offer additional guidance for the control and remediation of adverse effects on significant paleontological resources.

4.4.2.3 Local

Contra Costa County General Plan

The following goals and policies are contained within the *Contra Costa County General Plan* and pertain to geology and soils (Contra Costa County 2014).

Conservation Element

Policy 9-11: High-quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damage, and damage to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.

Safety Element

Goal 10-E: To minimize the risk of loss of life or injury due to landslides, both ordinary and seismically-induced.

Policy 10-23: Slope stability shall be given careful scrutiny in the design of developments and structures, and in the adoption of conditions of approval and required mitigation measures.

Contra Costa County Code of Ordinances

The Contra Costa County Surface Mining and Reclamation Ordinance (Chapter 88-11) includes the following provisions related to geology and soils:

88-11.822—Final Slope Gradient:
Final slope gradients shall assure 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. They shall not exceed the critical gradient as determined by an engineering analysis of the slope stability. Additionally, they shall not:

1. Be incompatible with the alternate future uses anticipated for the site; or
2. Be hazardous to persons that may use the site under the alternate future uses anticipated for the site; or
3. Reduce the effectiveness of revegetation and erosion control measures where such are necessary.

88-11.824—Emplacement of Fill:
All fill shall be compacted to avoid excessive settlement and to the degree necessary to accommodate anticipated future uses. If future uses of the site include streets or structures for human occupancy, or if an engineered fill is necessary as a safety measure, fill emplacement shall conform to the requirements of Division 716 of this code. Material used as fill shall be of a quality suitable to prevent contamination and pollution of groundwater.

88-11.826—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.

88-11.828—Revegetation:
All lands permanently exposed by mining operations shall be revegetated, except as the director of community development determines this to be technically infeasible or detrimental. Revegetation methods and plant materials utilized shall be appropriate for the site's topographical, soil and climatic conditions, and native species shall be used wherever practicable.

The Contra Costa County Drainage Ordinance (Chapter 1010) includes the following provisions related to geology and soils:

1010-2.002—Purpose:
This division is adopted to provide for the implementation of drainage, recreation and riparian vegetation provisions of the general plan, protect watercourse riparian vegetation, permit control of projects that may change the hydraulic characteristics of watercourses and drainage facilities, control erosion and sedimentation, prevent the placement or discharge of polluting matter into watercourses, and require adequate watercourse drainage facilities.

1010-8.006—Exhibits and Conditions:
The applicant shall enclose with, include, attach or add to the application for a permit a map, plat, sketch, diagram or similar exhibit of a size and in such quantity as the enforcing officer may prescribe, on which exhibit shall be plainly shown any and all information of a technical or engineering nature necessary to locate, delineate, illustrate, identify, justify and substantiate the proposed act or work, and the right and necessity of the applicant to perform the act or work. The enforcing officer may require to be submitted such soil investigation, tests of materials,

environmental documents, engineering plans and investigations, technical reports and other permits, as the officer deems necessary and proper. If necessary, changes, corrections and notes may be made on any such exhibit and/or conditions inserted on the permit and these items shall become an integral part of the permit when attested to by the enforcing officer.

4.4.3 Significance Thresholds and Analysis Methodology

4.4.3.1 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-4, "Initial Study," the proposed project would not include supporting the use of septic tanks or changes to the existing wastewater disposal systems; therefore, this issue requires no further consideration.

4.4.3.2 Analysis Methodology

Evaluation of the geology and soils impacts in this section is based on information from the Geotechnical Evaluation (see Appendix F) and from maps, reports, and other documents that describe the geologic, seismic, and soil conditions of the project area. The analysis assumes that the project proponents will conform to all applicable regulatory requirements including the Contra Costa County Code of Ordinances, SMARA, and National Pollutant Discharge Elimination System (NPDES) requirements.

In preparation of the Geotechnical Evaluation, Golder performed four phases of work to address geotechnical issues relating to slope stability and placement of overburden at the project site. These study phases included:

- pit slope stability and rockfall hazards of the west side of the quarry (i.e., diabase rock type),

- pit slope stability on the east side of the quarry (i.e., Knoxville formation),
- geotechnical investigations and stability improvements related to the existing north overburden fill area and proposed south overburden fill area, and
- analysis of a potential seiche related to rockfall into a future pit lake.

SMARA (CCR Section 3704) requires that reclaimed quarry slopes and overburden piles have a minimum factor-of-safety that is suitable for their proposed end use. Because open space is the proposed end use of the project site, Golder identified that the minimum acceptable factors-of-safety for static loading is greater than or equal to 1.30 and for pseudo-static (seismic) loading is greater than or equal to 1.00. A pseudo-static (seismic) loading analysis assesses the level of stability of a slope subjected to ground accelerations likely to be experienced at the site during an earthquake.

The following is a summary of the methodology implemented in the Geotechnical Evaluation. Detailed methodology and findings of the site reconnaissance, subsurface explorations, and laboratory testing, geotechnical characterization, engineering analysis of the quarry pit slopes, and stability analysis of the overburden fill areas are located in Appendix F.

Summary of Geotechnical Characterization of Quarry

Based on the site reconnaissance, subsurface explorations, and laboratory testing, the geotechnical characterization found that the diabase on the west highwall can be characterized as "weathered" or "slightly weathered to fresh". The weathered diabase occurs to about 100 feet below the original ground surface. Weathered diabase rock has a lower intact rock strength intersected by joints with lower shear strength characteristics than the fresh to slightly weathered diabase. Intact rock strength is the strength of the unfractured blocks of rock between joints in a rock mass. Shear strength is the strength of a rock mass against the structural failure as a result of a shear load, which is a force that tends to produce a sliding failure on a rock mass along a plane that is parallel to the direction of the force.

The quarry rock mass on the east side of the quarry was characterized as three geotechnical units: (1) Knoxville formation, Knoxville formation/diabase contact materials, and diabase (slightly weathered to fresh).

Overall slope stability is also controlled by the shear strength of the rock mass. While shear through the rock mass is unlikely in strong, brittle rocks such as diabase, slopes composed of highly fractured rock like the Knoxville formation are more likely to become unstable due to shear through the rock mass. Once the kinematics (i.e., the paths that rocks take during deformation) of a rock mass are understood, the level of stability of a rock slope can be quantified by performing a limiting equilibrium slope stability analysis.

Stability Analysis of Quarry

Golder's engineering analyses performed on the slopes at the quarry were split into two studies: analyses of the eastern pit slopes, and analyses of the western pit slopes, as shown on Figure 4.4-4, "Geotechnical Evaluation Component Boundaries." These are considered to be the most critical slopes from a geologic perspective. Southern pit slopes at the quarry consist of similar geology to those of the eastern pit slopes. However, due to the bench geometry, depth of mining, and exposure of the weathered Knoxville formation, eastern pit slopes are considered more critical for stability analysis. Similarly, northern pit slopes consist of similar geology to those of the western pit slopes, but western pit slopes have the greatest slope height exposed due to mining. Therefore, the analysis of the eastern and western pit slopes encompasses the worst-case slope stability conditions that could be encountered along the southern and northern pit slopes, respectively.

The level of stability of the bedrock slopes composed of diabase in the western pit slopes of the quarry was quantified by performing stability analyses. The analyses completed consisted of:

- Kinematic analyses to evaluate the potential for development of bench and large-scale plane shear and wedge failures in the quarry walls that will be exposed after reclamation.
- Limit-equilibrium analyses to evaluate the level of slope stability under both static and seismic loading and the potential for deep-seated failures to occur due to shear through the rock mass.

Several iterations and types of engineering analyses were performed to evaluate the stability of the diabase rocks and Knoxville formation forming the eastern pit slopes of the quarry. The analyses completed consisted of:

- Kinematic analyses to evaluate the potential for overall slope instability to develop related to discontinuities (i.e., geologic structures) intersecting the east quarry slope.
- Limit-equilibrium analyses to evaluate a variety of cases for the overall stability of the eastern slopes.

Supplemental analyses were then performed to address the following specific issues:

- The long-term stability of the proposed Knoxville formation final reclamation slopes.
- The long-term stability of the Knoxville formation/diabase contact materials.

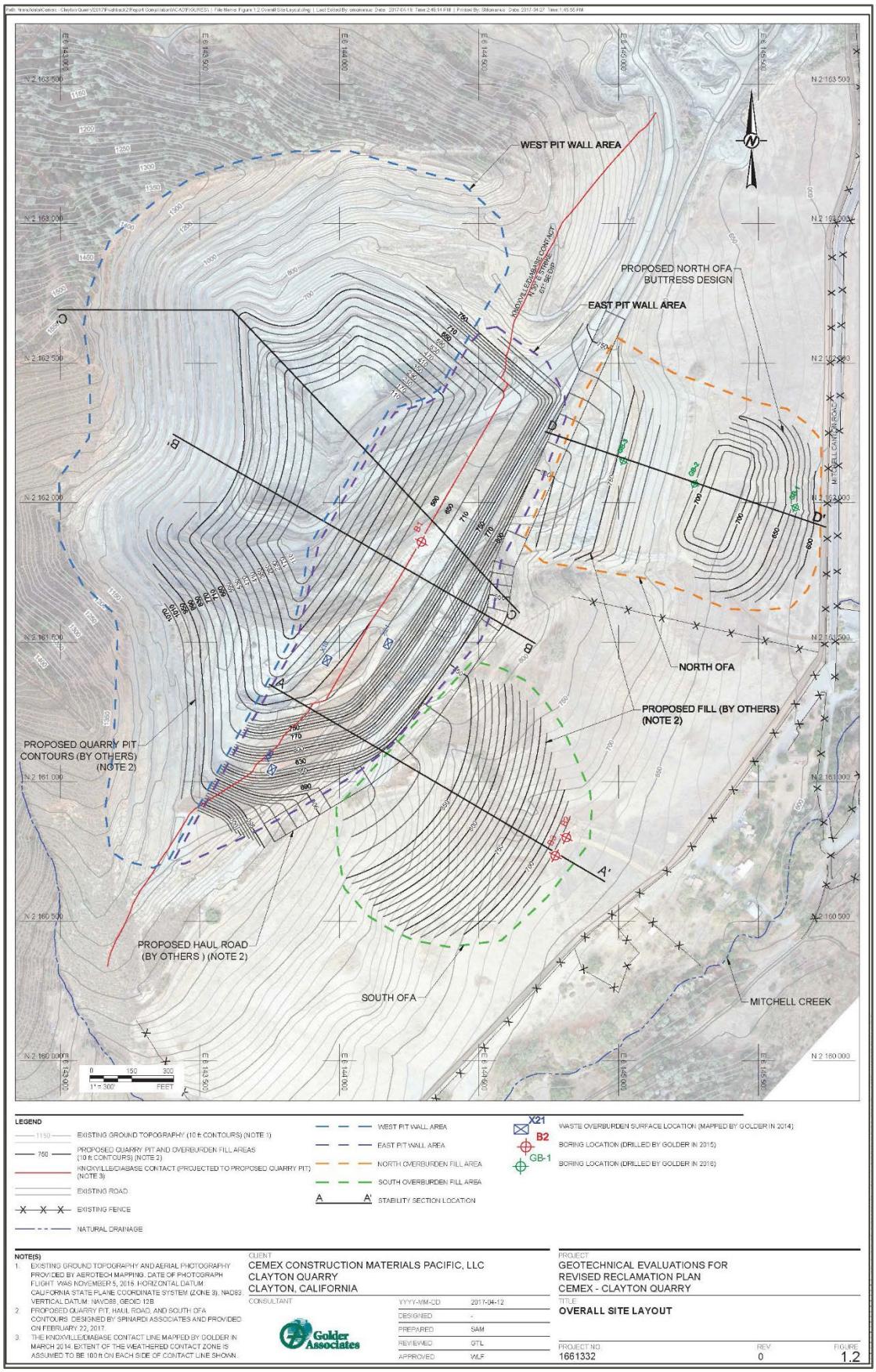
Stability Analysis of South Overburden Fill Area

For evaluating the stability of overburden fill, Golder estimated the soil shear strength based on the Mohr Coulomb strength criterion. This is the most widely used method of estimating soil shear strength for slope stability and is the standard of practice in the industry. Golder then performed an infinite slope analysis to assist in selecting an appropriate slope for design of the overburden fill. The infinite slope analysis provides an indication of the maximum slope of the fill where calculated factor-of-safety values begin to fall below the design factor-of-safety (i.e., factor-of-safety greater than or equal to 1.30 for static loading and greater than or equal to 1.00 for pseudo-static loading). The analysis evaluated both static and pseudo-static (seismic) loading.

To support the infinite slope analysis, a cross-section of the proposed south overburden fill area (cross-section A-A' on Figure 4.4-4) was evaluated to check the stability of the proposed south overburden fill area under both static and pseudo-static (seismic) loading for three cases: (1) overall stability of the overburden fill, (2) stability of the contact between the fill and the foundation, and (3) the stability of the foundation beneath the overburden fill.

Stability Analysis of North Overburden Fill Area

Golder used the two-dimensional limit-equilibrium stability model SLIDE 7.022 for stability analysis based on Mohr-Coulomb material properties. The analysis evaluated both static and pseudo-static (seismic) loading. Based on the analysis, the Geotechnical Evaluation recommended improvement measures that have been implemented pursuant to Contra Costa County Building Permits BLG16-011287 and BLG20-003645, as described in Chapter 2.



SOURCE: Golder Associates 2017; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Geotechnical Evaluation Component Boundaries

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

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Figure 4.4-4

BENCHMARK RESOURCES

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4.4.4 Project Impacts and Mitigation Measures

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 (California Department of Conservation, Division of Mines and Geology 1993). The Geotechnical Evaluation indicates that the Knoxville formation/diabase contact on the east side of the quarry is a fault that dips east at about 60 degrees. However, the fault is not active.

The Geotechnical Evaluation notes that regional geologic mapping in conjunction with site-specific mapping does not indicate the presence of large-scale faults or other geologic structures that might intersect the quarry slopes to form large structural plane shear or wedge failures. This was confirmed by observations of the inactive fault area conducted during the site reconnaissance. Based on regional and site-specific mapping and site observations, the Geotechnical Evaluation concludes that the quarry slopes are stable with respect to the potential presence of large-scale faults or other geologic structures that could result in large structural ground failure.

Therefore, the potential for the revised reclamation plan to result in the exposure of people or structures to potential substantial adverse effects as a result of rupture of a known fault would be less than significant.

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

The implementation of the proposed reclamation plan would not develop structures on the project site, with the exception of the stormwater drainage infrastructure that would be developed after the completion of mining. The stormwater drainage infrastructure would consist of a proposed 24-inch diameter drainage pipeline that would convey flows from the quarry pipeline to the 18-inch stormwater line located along Mitchell Canyon Road. In accordance with the Contra Costa County Drainage Ordinance (Chapter 1010), the quarry operator would be required to obtain a drainage permit prior to the construction of the drainage pipeline. As part of the permit process, the County would require the applicant to submit the materials necessary to ensure that the drainage pipeline design is structurally sound and appropriately designed based on site conditions. These materials could include soil investigation, tests of materials, environmental documents, engineering plans and investigations, technical reports and other permits, as the officer deems necessary and proper.

People on the project site would continue to be limited to workers conducting mining and reclamation activities. Upon completion of mining and reclamation, people on the project site would be limited to workers who periodically visit the site, as needed, for the maintenance of the property. The number of workers on the project site would not increase relative to existing conditions as a result of the revised reclamation plan.

In summary, the only infrastructure proposed would consist of a drainage pipeline that would be required to be developed in accordance with the requirements of a county drainage permit, which would ensure that the pipeline is structurally sound and appropriately designed based on site conditions, and therefore generally resistant to damage from disturbance such as ground shaking. The revised reclamation plan would not increase the number of people on the project site relative to existing conditions. For these reasons, the potential for seismic ground shaking on the project site to expose people or structures to substantial adverse effects would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-3: Exposure of People or Structures to Potential Substantial Adverse Effects, as Result of Seismically-Induced Liquefaction, Lateral Spreading, and Settlement

As described in Section 4.4.1.1, above, the majority of the project site, including the quarry, is underlain by the Mount Diablo Ophiolite formation and Knoxville formation, which consist of shallow soils over bedrock with groundwater that occurs only in fractures. Consequently, there is low potential for seismically-induced liquefaction, lateral spreading, or settlement to occur in these areas.

A portion of the easternmost edge of the project site underlying the north overburden fill area is mapped as having "moderate" liquefaction susceptibility (USGS and CSG 2006). However, as described under Section 4.4.3.2, above, the Geotechnical Evaluation conducted a stability analysis of the north overburden fill area that evaluated both static and pseudo-static (seismic) loading conditions. The recommendations of the Geotechnical Evaluation for the stabilization of the north overburden fill slope have been implemented pursuant to Contra Costa County Building Permits BLG16-011287 and BLG20-003645. Under the revised reclamation plan, overburden materials would no longer be added to the north overburden fill slope. Instead, the overburden fill area would be hydroseeded with California native chaparral seed mix. The revegetation of the area would further stabilize the slope.

Because the majority of the project site has low potential for liquefaction, lateral spreading, and seismically-induced settlement to occur, and because the only area with documented potential for liquefaction to occur is located at the north overburden fill area which is being currently stabilized and would be revegetated under the revised reclamation plan, the potential for the revised reclamation plan to expose people or structures to risk from seismically-induced liquefaction, lateral spreading, and settlement would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-4: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Rockfalls and Landslides within the Quarry

As described under Impact 4.4-2, the revised reclamation plan would not increase the number of workers on the site relative to existing conditions and the structures developed under the revised reclamation plan would be limited to drainage infrastructure. However, the existing elevation of the quarry pit is about 530 feet msl, and the final elevation of the quarry pit under the revised reclamation plan would be 110 feet msl. The depth of the final elevation of the quarry pit could result in increased

risk of rockfalls and landslides on the project site that in turn could result in injury and death to people on the site if the proposed quarry pit is not developed in accordance with appropriate seismic safety considerations.

In a study of landslides caused by earthquakes, Keefer (1984) noted that rockfalls (falls of boulders of disrupted masses of rock) and rockslides (masses of rock fragments that slide on discontinuities dipping out of the rock) are relatively common. Large deep-seated rock slumps and block slides and rock avalanches are less common. These failures typically require either conspicuous weak discontinuities dipping out of the slope (rock block slides) or intensely fractured rocks (rock avalanches and slumps).

Rockfalls

Performance of bench slopes is indicated by their ability to catch rockfall or raveling from benches at higher elevations. Bench performance can be evaluated based on the width of the bench remaining in the slope, and over time the ability of the bench to maintain adequate width to retain rockfall so it does not fall into the working areas of the quarry. Typical mining practice includes leaving wider catch benches as the pit slope is developed if upper benches become full and are inadequate to retain rockfall.

With regards to the west, north, and south walls of the quarry, based on the joint characteristic data Golder collected during the site visit, the wedges and plane shears in these walls are likely to be small and infrequent, and most of the failed material would be caught on the remaining intact benches. Based on field observations, these catch benches appear to be effective for control of rockfall during existing quarry operations. After reclamation is complete, the quarry pit would fill with water to form a lake, which would minimize the potential for rockfall hazards to occur or cause injuries.

Regarding the east wall of the quarry, based on the joint characteristic data Golder collected during the site visit, few joints have formed in the existing east wall of the quarry; and where they have occurred, they have been removed during mining and bench scaling operations. This practice would continue under the proposed project and would be effective to control rockfall during quarry operations. After reclamation is complete, the quarry pit would fill with water to form a lake, which would minimize the potential for rockfall hazards to occur or cause injuries. In addition, as shown on Figure 2-8, "Revised Reclamation Plan Detail," in Chapter 2, during final reclamation, fencing would be installed around the project site and along the more gently sloped areas surrounding the quarry pit; fencing would not be located along much of the northern and northeastern areas surrounding the quarry pit, but the slopes in these areas are steep and would be difficult for people to climb. Therefore, public access to the lake would be effectively restricted, and the public would not be exposed to risks from rockfalls.

Based on joint characteristic data of the diabase rocks and Knoxville formation that compose the quarry walls, the effectiveness of current practices to reduce rockfall hazards during mining and reclamation activities, the proposed conversion of the project site to open space with a quarry pit lake, and the addition of fencing around the site and quarry pit lake, the potential exposure of people or structures to substantial adverse effects as a result of rockfalls would be less than significant.

Landslides

The Geotechnical Evaluation quantified the Geologic Strength Index of the different rock types at the quarry, as summarized in Table 4.4-2, "Geologic Strength Index by Rock Type." The Geologic Strength Index provides an estimate of rock mass quality, which in turn is an indication of the condition of the rock that accounts for the intact strength of the rock; and the persistence, spacing, and condition of the

natural fractures in the rock mass. The Geologic Strength Index was used to estimate the rock mass shear strength properties used in slope stability analysis.

TABLE 4.4-2
GEOLOGIC STRENGTH INDEX BY ROCK TYPE

Rock Type	Structure	Discontinuity Surface Conditions	Geologic Strength Index
Diabase (Slightly Weathered to Fresh)	Very Blocky	Very Good to Good	55
Weathered Diabase	Very Blocky	Fair to Poor	35
Knoxville Formation/Diabase Contact	Blocky/Disturbed/Seamy	Poor to Very Poor	20
Knoxville Formation (Siltstone)	Blocky/Disturbed/Seamy	Poor to Very Poor	20

Source: Appendix F.

The diabase (slightly weathered to fresh) is classified as a strong, brittle rock mass containing three or more discontinuities. Due to the high shear strength of the rock mass, even high, steep slopes are likely to be stable. The shear strength of the weathered diabase, while lower than the diabase (slightly weathered to fresh), still forms a sufficiently strong rock mass such that deep-seated failures in the weathered portions of the slopes are not considered likely. While portions of the east quarry slope consisting of Knoxville Formation and Knoxville formation/diabase contact are composed of highly fractured rock with a lower Geologic Strength Index than diabase, the quarry slope is not particularly steep or high and so does not correspond to the conditions likely to produce large-scale, earthquake-induced landslides.

Golder completed a limit-equilibrium stability analysis to quantify the level of stability of the east and west quarry slopes. Golder selected two sections for the analysis of the quarry pit, which are shown on Figure 4.4-4: Section C-C' represents the critical section for the highest pit slopes in the western wall; and Section B-B' represents the critical section for the highest and steepest pit slopes in the eastern wall of the quarry. The analysis evaluated slope stability at the end of mining operations, when the quarry pit elevation would be excavated to a depth of about 110 feet msl, and also evaluated slope stability with the quarry pit filled with water at an elevation of 735 feet. The analysis considered both static and pseudo-static (seismic) loading conditions. As stated under Section 4.4.3.2, above, the minimum acceptable factors-of-safety for static loading is greater than or equal to 1.30 and for pseudo-static (seismic) loading is greater than or equal to 1.00.

The results of the analysis are presented in Table 4.4-3, "Results of Quarry Pit Slopes Stability Analysis." The lowest factor of safety under static loading was 1.79 during the end of mining operations (before the formation of the proposed quarry pit lake) at the toe of the surface in the Knoxville formation/diabase contact zone. The lowest factor of safety under pseudo-static (seismic) loading was 1.09 with the quarry pit filled with water at an elevation of 735 feet. This condition was found to occur at the toe of the surface in the Knoxville formation/diabase contact zone. This analysis shows that acceptable factors-of-safety would be achieved for both static and seismic loading for the eastern and western quarry slopes.

TABLE 4.4-3
RESULTS OF QUARRY PIT SLOPES STABILITY ANALYSIS

Quarry Wall	Cross-Section	Case	Stage of Operation	Factor-of-Safety	
				Static	*Pseudo-Static (Seismic)*
West	C-C′	Overall Slope	End of quarry operations, pit floor at 110 feet msl	2.40	1.84
		Overall Slope	Reclaimed pit with pit lake to 735 feet msl	2.45	1.75
East	B-B′	Overall Slope	End of quarry operations, pit floor at 110 feet msl	2.17	1.65
		Overall Slope	Reclaimed pit with pit lake to 735 feet msl	2.44	1.52
		Toe of Surface in Diabase	End of quarry operations, pit floor at 110 feet msl	2.05	1.51
		Toe of Surface in Diabase	Reclaimed pit with pit lake to 735 feet msl	2.25	1.46
		Toe of Surface in Contact Zone	End of quarry operations, pit floor at 110 feet msl	1.79	1.28
		Toe of Surface in Contact Zone	Reclaimed pit with pit lake to 735 feet msl	1.85	1.09
		Toe of Surface in Knoxville	End of quarry operations, pit floor at 110 feet msl	2.26	1.57
		Toe of Surface in Knoxville	Reclaimed pit with pit lake to 735 feet msl	2.23	1.54

Source: Appendix F.
Notes: Cross-sections are illustrated on Figure 4.4-4.
feet msl = feet above mean sea level

Supplemental Analyses of Knoxville Slopes (East Wall of Quarry)

As stated under Section 4.4.3.2, above, Golder completed a supplemental analysis of the long-term stability of the proposed Knoxville formation final reclamation slopes. The supplemental analysis consisted of the evaluation of slope stability under two different conservative scenarios:

1) An analysis of slope stability using reduced shear strength assumptions (i.e., the Knoxville formation rock was assumed to be less stable than indicated by geologic field data), but assuming the design slope configuration proposed under the revised reclamation plan; and
2) An analysis of slope stability using the shear strength assumptions indicated by geologic field data, but assuming a design slope configuration steeper than what is proposed under the revised reclamation plan.

For the analysis using reduced shear strength assumptions, the strength parameter was reduced to 1,200 pounds per square inch, which is a typical for poorly indurated shale and claystone, but not the more indurated siltstone/sandstone that forms the Knoxville formation as characterized by drilling conducted as part of the Geotechnical Evaluation. The results of this analysis are presented in Table 4.4-4, "Results of Slope Stability Analyses with Reduced Shear Strength in Knoxville Formation," and indicate that even with reduced strength assumptions, the slopes proposed for the east quarry slope would provide acceptable factors-of-safety (i.e., factors-of-safety greater than greater than or equal to 1.30 for static loading and greater than or equal to 1.00 for pseudo-static [seismic] loading).

TABLE 4.4-4
RESULTS OF SLOPE STABILITY ANALYSES WITH REDUCED SHEAR STRENGTH IN KNOXVILLE FORMATION

Quarry Wall	Cross-Section	Case	Condition	Factor-of-Safety	
				Static	*Pseudo-Static (Seismic)*
East Wall	B-B′	Overall Slope	End of quarry operations, pit floor at el. 110 ft	1.70	1.19
		Overall Slope	Reclaimed pit with pit lake to el. 735 ft	1.67	1.16
		Single Bench Failure	End of quarry operations, pit floor at el. 110 ft	1.78	1.30
		Single Bench Failure	Reclaimed pit with pit lake to el. 735 ft	2.07	1.25

Source: Appendix F.
Notes: Cross-sections are illustrated on Figure 4.4-4. This analysis assumed reduced shear strength assumptions for the Knoxville formation (i.e., the Knoxville formation rock was assumed to be less stable than indicated by geologic field data).

For the analysis of a design slope configuration steeper than what is proposed under the revised reclamation plan, the results indicate that it would be possible to cut slopes in the Knoxville formation at steeper angles than those proposed under revised reclamation plan and still provide acceptable factors-of-safety. The results are presented in Table 4.4-5, "Results of Slope Stability Analysis for Steeper Knoxville Formation Slopes." Therefore, the proposed slopes are relatively conservative and it is reasonably foreseeable that they will perform adequately.

TABLE 4.4-5
RESULTS OF SLOPE STABILITY ANALYSIS FOR STEEPER KNOXVILLE FORMATION SLOPES

Quarry Wall	Cross-Section	Bench Face Angle (degrees)	Inter- ramp Angle (degrees)	Bench Height (feet)	Bench Width (feet)	Factor-of-Safety	
						Static	*Pseudo-Static (Seismic)*
East	B-B′	86.5	61	60	30	1.09	-
		72	50	60	30	-	1.03

Source: Appendix F.
Notes: Cross-Sections are illustrated on Figure 4.4-4. The bench face angle and inter-ramp angle of this analysis are steeper than those proposed under the revised reclamation plan.

Supplemental Analysis of Stability of Submerged Knoxville Formation and Knoxville Formation/Diabase Contact

As stated under Section 4.4.3.2, above, Golder completed a supplemental analysis of the long-term stability of the proposed submerged Knoxville formation and Knoxville formation/diabase contact with the quarry pit lake assumed to be present at an elevation of 735 feet msl. This analysis consisted of observations of existing excavated slopes, jar slake tests conducted as part of the field testing, and additional slope stability analyses that evaluated conditions under both the standard shear strength assumptions and under reduced shear strength assumptions (i.e., the Knoxville formation rock was assumed to be less stable than indicated by geologic field data). The slope stability analysis is summarized in Table 4.4-6, "Results of Slope Stability Analyses of Submerged Knoxville and Contact Zone."

TABLE 4.4-6
RESULTS OF SLOPE STABILITY ANALYSES OF SUBMERGED KNOXVILLE AND CONTACT ZONE

Quarry Wall	Strength	Case	Condition	Factor-of-Safety	
				Static	*Pseudo-Static (Seismic)*
East	Assumes best estimate of shear strengths based on geologic field data	Toe of Surface in Knoxville	Reclaimed pit with pit lake to el. 735 ft	2.37	1.62
		Toe of Surface in Knoxville/diabase Contact Zone	Reclaimed pit with pit lake to el. 735 ft	2.49	1.68
	Assumes reduced shear strength in Knoxville formation	Toe of Surface in Knoxville	Reclaimed pit with pit lake to el. 735 ft	1.65	1.11
		Toe of Surface in Knoxville/diabase Contact Zone	Reclaimed pit with pit lake to el. 735 ft	1.57	1.00

Source: Appendix F.

Slaking is the process in which earth materials disintegrate and crumble when exposed to moisture. Based on Golder's site observations and slake tests, the materials do not appear to slake upon immersion in water. Even if the benches recede from near vertical to a shallower slope (about 60 degrees) from small scale failures, the slope stability analyses indicate that the slope will retain adequate factors-of-safety with respect to global stability. This remains the case even when reduced shear strengths are assumed for the Knoxville formation.

Conclusions

Based on site observations, field testing, and slope stability analysis completed by Golder as part of the Geotechnical Evaluation of the revised reclamation plan (see Appendix F), the development of the quarry with the proposed slopes would achieve the required factors-of-safety for slope stability under both static and seismic loading.

However, the Geotechnical Evaluation notes that differences between the geotechnical characterization and geologic models described in this report and the actual geotechnical and geologic conditions encountered as the east side of the quarry pit is mined should be anticipated. Geologic risks include:

- Unidentified faults, geologic contacts, or changes in the orientation of bedding planes in the Knoxville formation or persistence and orientation of dike contacts in the diabase.
- Distribution of more highly fractured zones that could affect the ability to develop steep bench and stable bench faces and the ability to implement effective controlled blasting methods (pre-split and trim blasting).

The implementation of Mitigation Measure 4.4-4 would require periodic inspection of the east quarry slopes by a qualified engineering geologist or geotechnical engineer. The engineering geologist or geotechnical engineer would provide recommendations to mitigate potential slope instability that was not feasible to assess in the Geotechnical Evaluation (see Appendix F). Implementation of Mitigation Measure 4.4-4 would reduce the potential risks of slope instability due to currently unknown conditions within the quarry to less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measure 4.4-4: Slope Stability Monitoring

The operator of the Clayton Quarry (Operator) shall retain a County-approved qualified engineering geologist or geotechnical engineer experienced in evaluating the stability of slopes within the Knoxville formation at the diabase/Knoxville contact. These slopes shall be inspected every 5 years, or at an alternative frequency, if recommended by the engineering geologist or geotechnical engineer and approved by the County. The results of the inspection and any recommendations by the engineering geologist or geotechnical engineer shall be documented and submitted to the County within 30 days following the inspection. The report shall be accompanied with the Board of Supervisor's approved fee for review by the County Geologist. Inspections shall summarize the rock types observed, provide detailed rock mass descriptions and measured discontinuity orientations, observed seepage conditions, and compare the observed conditions relative to those identified in the project geotechnical evaluation completed for the revised reclamation plan by Golder Associates Inc. [Golder] in 2017 ("Geotechnical Evaluations for Revised Reclamation Plan, Clayton Quarry, Clayton, California"). The geotechnical evaluation shall be appended to the Mitigation Monitoring and Reporting Program and shall be incorporated into the conditions of approval for the project. If the conditions vary from the geotechnical evaluation document characterization, the engineering geologist or geotechnical engineer shall evaluate whether the changes have an adverse impact on slope stability, and, if so, provide feasible recommendations to mitigate the slope stability concerns to achieve a minimum static factor of safety of 1.3 and a pseudo-static factor of safety greater than 1.0. Recommendations shall be implemented within 6 months by the Operator, if feasible, otherwise as soon as practicable thereafter, upon approval by the County.

Level of Significance After Mitigation: Less than significant.

Impact 4.4-5: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Overburden Fill Areas

As described under Section 4.4.3.2, above, the Geotechnical Evaluation conducted a stability analysis of the north overburden fill area that evaluated both static and pseudo-static (seismic) loading conditions. The recommendations of the Geotechnical Evaluation for the stabilization of the north overburden fill slope have been implemented pursuant to Contra Costa County Building Permits BLG16-011287 and BLG20-003645. Under the revised reclamation plan, overburden materials would no longer be added to the north overburden fill slope. Instead, the north overburden fill area would be hydroseeded with California native chaparral seed mix. The revegetation of the area would further stabilize the slope.

As described under Section 4.4.3.2, above, both an infinite slope analysis and a slope stability analysis were conducted to evaluate the stability of the proposed south overburden fill area. The results are summarized in Table 4.4-7, "Results of Infinite Slope Analyses for South Overburden Fill Area," and Table 4.4-8, "Results of Proposed South Overburden Fill Area Slope Stability Analysis." Based on the infinite slope analysis, a slope of 2.3H:1V (23.5 degrees) would provide acceptable factors-of-safety (i.e., factors-of-safety greater than or equal to 1.30 for static loading and greater than or equal to 1.00 for pseudo-static [seismic] loading) under both static and pseudo-static (seismic) loading. The revised reclamation plan proposes a flatter slope of 2.5H:1V (21.8 degrees) for this area. The analysis of a cross-section of the south overburden fill area (cross-section A-A' on Figure 4.4-4) confirms that the proposed

south overburden fill area design would provide acceptable factors-of-safety under both static and pseudo-static (seismic) loading.

TABLE 4.4-7
RESULTS OF INFINITE SLOPE ANALYSES FOR SOUTH OVERBURDEN FILL AREA

Slope Angle (degrees)	Factor-of-Safety	
	Static	*Pseudo-Static (Seismic)*
21.8 (2.5H:1V)	1.69	1.08
23.5 (2.3H:1V)	1.55	1.01
26.6 (2.0H:1V)	1.35	0.90
33.7 (1.5H:1V)	1.01	0.70

Source: Appendix F.

TABLE 4.4-8
RESULTS OF PROPOSED SOUTH OVERBURDEN FILL AREA SLOPE STABILITY ANALYSIS

Cross-Section	Case	Factor-of-Safety	
		Static	*Pseudo-Static (Seismic)*
A-A′	Overall Slope Stability in Fill	1.72	1.10
A-A′	Fill-Foundation Contact Stability	1.56	1.01
A-A′	Foundation Stability	1.56	1.00

Source: Appendix F.

Notes: Cross-sections are illustrated on Figure 4.4-4.

The design of the proposed south overburden fill area provides acceptable factors of safety under both static and pseudo-static (seismic) conditions, and the north overburden fill area is currently being stabilized and would be revegetated under the revised reclamation plan, which would provide further stability. For these reasons, the potential of the revised reclamation plan to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, as a result of slope instability within the overburden fill areas would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-6: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Plant Site Area

The revised reclamation plan would not bring additional employees to the project site and therefore would not increase the risks to people on the plant site as a result of landslides. The proposed plant site is relatively gently sloped, ranging in elevation of approximately 640 to 560 feet msl across an approximately one-quarter mile distance from north to south, as shown on Figure 2-1, "Revised Reclamation Plan Overview," in Chapter 2. The areas south of the plant site consist of the slopes of Mount Zion, which has moderate to high landslide susceptibility as mapped in the Contra Costa County Draft Hazard Mitigation Plan (Contra Costa County 2018). However, the slopes are vegetated

and do not have a recent history of landslides (USGS 2021). Furthermore, the infrastructure developed would be limited to one underground drainage pipeline that would convey flows from the proposed quarry pit lake to a stormwater pipeline in Mitchell Canyon Road. Because the revised reclamation plan would not bring additional employees to the project site, the plant site area is relatively gently sloped, the steeper slopes of Mount Zion are vegetated and do not have a recent history of landslides, and the proposed drainage pipeline would be located underground, the potential of the revised reclamation plan to result in substantial adverse effects to people or structures as a result of landslides would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-7: Result in Substantial Soil Erosion or the Loss of Topsoil

Erosion

Potential impacts from soil erosion are analyzed in Section 4.6. The analysis indicates that runoff from the project site would decrease. This is because the removal of existing structures on the project site during final reclamation would decrease impervious surfaces. Additionally, during the first 158-year period after mining is complete, a significant amount of runoff that currently drains via overland flow to Mitchell Creek would be collected in the quarry pit until water levels reach 735 feet msl. Once at the 735-foot level, water would flow through a pipe that is designed to decrease vulnerability to erosion before discharging to the storm drain system that drains to Mitchell Creek. Consequently, the potential for the proposed project to result in off-site erosion would be less than significant.

Additionally, the implementation of Mitigation Measures 4.6-4a and 4.6-4b would require the incorporation of all erosion control measures recommended in the Geotechnical Evaluation (see Appendix F) and the analysis of runoff from the east rim haul road (see Appendix G-6, "Quarry Road Runoff Management"). Measures would include, but are not limited to, diverting runoff away from exposed surfaces of the Knoxville formation; the installation of drainage control such as cross slopes and rock-lined ditches along the east rim haul road; the placement of rip-rap along the quarry pit lake shore; the development of overburden fill areas consistent with the slope and compaction standards of the Geotechnical Evaluation report; and revegetation of exposed surfaces. Therefore, with implementation of Mitigation Measure 4.6-4a and 4.6-4b, the potential for substantial on-site erosion to occur under the revised reclamation plan would be less than significant.

Refer to Section 4.6, for a detailed analysis.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measure 4.6-4a and 4.6-4b (see Impact 4.6-4).

Level of Significance After Mitigation: Less than significant.

Loss of Topsoil

Topsoil within and surrounding the quarry pit and processing plant site has been previously removed as part of existing mining activities. Similarly, the topsoil within the north overburden fill area has already been disturbed as part of existing use of the north overburden fill area. Therefore, the implementation of the revised reclamation plan would not result in the loss of topsoil in the quarry, plant site area, or north overburden fill area.

As described in Chapter 2, topsoil preservation in the south overburden fill area would be conducted as follows:

- The fill area would be divided into sub-areas measuring approximately one-quarter to one-half acre in size.
- Prior to the use of a particular sub-compartment, the topsoil would be salvaged up to a depth of eighteen inches and used as cover for reclamation of a previously disturbed sub-compartment.
- If salvaged topsoil cannot be used immediately, then the topsoil will be stockpiled separately and not disturbed until needed for reclamation.

Because topsoil within the quarry, processing plant site, and north overburden fill area has already been disturbed under existing mining operations, and because the proposed project would salvage and reuse topsoil in the south overburden fill area, the potential loss of topsoil as a result of implementation of the revised reclamation plan would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-8: 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

As described under Impact 4.4-3, the project site would not require groundwater pumping in loose aquifer sediments and therefore would not have any impact related to subsidence. The majority of the project site consists of shallow soils over bedrock (as indicated in Table 4.4-1) and therefore is not vulnerable to liquefaction, lateral spreading, or settlement. As described under Impact 4.4-4, the slope stability analysis completed of the south overburden fill area indicates that the proposed design provides acceptable factors-of-safety under both static and pseudo-static (seismic) conditions. A portion of the north overburden fill area is mapped over soils with moderate liquefaction potential and has experienced recent landslides. However, this area has been stabilized in accordance with the recommendations of the Geotechnical Evaluation pursuant to Contra Costa County Building Permits BLG16-011287 and BLG20-003645. Under the revised reclamation plan, overburden materials would no longer be added to the north overburden fill slope. Instead, the overburden fill area would be hydroseeded with California native chaparral seed mix. The revegetation of the area would further stabilize the slope.

As described under Impact 4.4-4, the proposed plant site is relatively gently sloped, ranging in elevation of approximately 640 to 560 feet msl across an approximately one-quarter mile distance from north to south, as shown on Figure 2-1. The plant site is not located in an area with a potentially unstable geologic or soil unit. Under the proposed reclamation plan, the plant site would be converted to open space and revegetated under the completion of mining activities. This proposed land use does not have the potential to cause unstable soils or geologic conditions.

As described under Impact 4.4-4, the design of the east and west quarry wall benches is adequate to capture the anticipated rockfalls that could occur during mining and after the completion of reclamation. Furthermore, the slope stability analyses completed of the east and west quarry walls and of the Knoxville formation/diabase contact indicate that the proposed design of the quarry provides

acceptable factors-of-safety for slope stability under both static and pseudo-static (seismic) conditions. These analyses evaluated conditions that would occur when the quarry pit is excavated to a depth of 110 feet msl, and when the quarry pit is excavated and filled with water to a depth of 735 feet msl. However, the Geotechnical Evaluation notes that differences between the geotechnical characterization and geologic models described in this report and the actual geotechnical and geologic conditions encountered as the east side of the quarry pit is mined should be anticipated. The implementation of Mitigation Measure 4.4-4 would require periodic inspection of the quarry slopes by a qualified engineering geologist or geotechnical engineer. The engineering geologist or geotechnical engineer would provide recommendations to mitigate slope instability concerns that are not addressed by the most recent geotechnical investigation (see Appendix F). This would reduce the potential risks of slope instability within the quarry to less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measure 4.4-4 (see Impact 4.4-4).

Level of Significance After Mitigation: Less than significant.

Impact 4.4-9: 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

As described in Table 4.4-1, the project site consists of a total of 80 acres of quarry area and rock outcrops that do not contain soils and therefore do not have the potential to cause impacts related to expansive soils. The remaining soils on the project site contain soils with moderate to high shrink-swell potential. The proposed project would not develop buildings that could be damaged by potentially expansive soils. However, the development of the proposed 24-inch diameter drainage pipeline that would convey flows from the quarry pipeline to the 18-inch stormwater line located along Mitchell Canyon Road would cross Los Osos clay loam soil (as shown on Figure 4.4-3). This soil has a high to very high shrink-swell potential (Table 4.4-1). Therefore, if not properly installed, the drainage pipeline could experience damage over time.

As described under Impact 4.4-2, in accordance with the Contra Costa County Drainage Ordinance (Chapter 1010), the quarry operator would be required to obtain a drainage permit prior to the construction of the drainage pipeline. As part of the permit process, the County would require the applicant to submit the materials necessary to ensure that the drainage pipeline design is structurally sound and appropriately designed based on site conditions. Compliance with the requirements of the drainage permit would ensure that the pipeline is structurally sound and designed in a manner that takes into consideration site conditions such the presence of expansive soils. Therefore, the potential of the proposed project to result in substantial risks to life or property due to expansive soils would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.4-10: Directly or indirectly Destroy a Unique Geological Feature

Unique geological features include attractive or interesting rock formations, erosional features, and/or landforms that represent a public attraction due to their unusual appearance, exemplary characteristics, and/or educational value. Examples of unique geological features in the greater San

Francisco Bay Area include the caves and rock outcrops of Rock City in Mount Diablo State Park; unusual scarps created along the San Andreas Fault within the Midpeninsula Regional Open Space District; the coastal rock forms within Natural Bridges State Park along the Pacific Coastline; and the prominent and unusual volcanic features atop Round Top Mountain in the East Bay Regional Park District. The ridgeline and landform along the slopes of Mount Zion where the project site is located do not have geological characteristics that differ from hillside and mountain slopes surrounding Mount Zion and Mount Diablo, and therefore do not represent a unique geological feature. Thus, the proposed project would have no impact on unique geological features. Note that the contribution of ridgelines and landforms in the project area with respect to the visual character and quality within and surrounding the project area is discussed in Section 4.1, "Aesthetics and Visual Resources."

Level of Significance: No impact.

Mitigation Measures: None required.

Impact 4.4-11: Directly or indirectly Destroy a Unique Paleontological Resource

As discussed in Section 4.4.1.4, above, the majority of the project site is underlain by igneous diabase rock types with low potential to contain paleontological resources. However, the remainder of the project site is underlain by the Knoxville formation sedimentary rocks and quaternary alluvium deposits, both of which have the potential to contain paleontological resources. Numerous fossils have been documented in the Knoxville formation in Contra Costa County and throughout the State. Quaternary alluvium along the eastern portion of the site may also have some potential to contain paleontological resources.

Quaternary alluvium is located in the areas underlying the proposed north and south overburden fill areas. The overburden fill areas would be used for the placement of overburden and would not be excavated with the exception of the salvaging of topsoil. Topsoil does not contain paleontological resources. Consequently, development of the overburden fill areas would not have the potential to directly or indirectly destroy a paleontological resource.

The reclamation of the plant site would remove existing equipment from already disturbed areas. If determined necessary by a soil scientist, the area would be resoiled prior to revegetation. Because these areas are disturbed and because any additional ground disturbance would be limited to surficial soils, the potential for the reclamation of the plant site to destroy a unique paleontological resource would be less than significant.

The existing elevation of the quarry pit is about 530 feet msl, and the final elevation of the quarry pit under the revised reclamation plan would be 110 feet msl. The mining of diabase aggregate materials would have low potential to destroy paleontological resources. Mining of aggregate material from the Knoxville formation pit would have the potential to result in the destruction of paleontological resources. However, mining in the quarry pit is part of vested mining activity and not the proposed project.

The proposed 24-inch diameter drainage pipeline that would convey flows from the quarry pipeline to the 18-inch stormwater line located along Mitchell Canyon Road would cross the Knoxville formation and quaternary alluvium. Although the proposed pipeline would disturb a relatively narrow corridor within the project site, it is possible that paleontological resources could be encountered during the development of the 1,700-foot cut and cover segment of the pipeline (it would not be possible to

identify paleontological resources during the development the 300-foot jack and bore segment of the pipeline because these methods do not allow the observation of the materials encountered by the drilling equipment). Therefore, the development of the drainage pipeline would have the potential to result in the destruction of paleontological resources.

The implementation of Mitigation Measure 4.4-11, which requires that excavation activities associated with reclamation be halted should a paleontological resource be encountered, and the curation of any substantial find, would reduce this impact to less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measure 4.4-11: Paleontological Resources

The operator of the Clayton Quarry (Operator) shall inform its employees and contractors involved in ground disturbing activities associated with reclamation of the sensitivity of the project area for paleontological resources and shall include the following directive in employee and contractor training materials:

> *"The subsurface of the quarry may be sensitive for paleontological resources in the Knoxville formation (the east side of the quarry pit) and in the alluvium (east side of the Clayton Quarry property). If paleontological resources are encountered during subsurface disturbance, all ground disturbing activities within 100 feet of the find shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. Employees and contractors shall not collect or move any paleontological materials. Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as animal tracks. Employee/contractor acknowledges and understands that excavation or removal of paleontological material is prohibited by law and constitutes a misdemeanor under California Public Resources Code, Section 5097.5."*

A copy of the training materials and documentation of completed training shall be provided to the County for review upon request.

If a paleontological resource is encountered during implementation of the revised reclamation plan, the Operator shall notify the County and all activity within 100 feet of the find shall halt until it can be evaluated by a qualified paleontologist. The paleontologist shall evaluate the resource and determine its significance. If significant, the paleontologist shall notify the County and the Operator, in consultation with the County and the paleontologist, shall prepare a treatment plan such that the fossil would be recovered and scientific information preserved. The paleontologist shall implement the treatment plan in consultation with the County and Operator prior to allowing work in the 100-foot radius to resume.

Level of Significance After Mitigation: Less than significant.

4.5—GREENHOUSE GAS EMISSIONS

This section of the Draft EIR) 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 peer reviewed applicant-prepared studies and publicly available sources. The applicant-prepared study used is:

- *Air and Greenhouse Gas Emissions Study* prepared by Compass Land Group (Appendix D-1, "Air and Greenhouse Gas Emissions Study")

The *Air and Greenhouse Gas Emissions Study* was peer reviewed by the County-retained Rincon Consultants, Inc. in February of 2020. The peer review letter report is on file with the County. The applicant revised the *Air and Greenhouse Gas Emissions Study* based on peer review comments; the revised report is located in Appendix D-1. The revised *Air and Greenhouse Gas Emissions Study*, dated July 2020, adequately addressed the peer reviewer's comments and questions.

4.5.1 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 (National Academy of Sciences [NAS] 2005).

4.5.1.1 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), ozone (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 (United States Environmental Protection Agency [EPA] 2021a).

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).

4.5.1.2 Contributions to Greenhouse Gas Emissions

Global

Anthropogenic GHG emissions worldwide in 2018 totaled approximately 48,940 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (CAIT 2021). 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, Indonesia, and Brazil—and the European Union accounted for approximately 60 percent of the total global emissions, approximately 29,296 $MMTCO_2e$ (CAIT 2021).

United States

In 2019, the United States produced 6,558 million metric tons (MMT) of CO_2e (EPA 2021a). 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 2021a).

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%
Industrial Uses	21.1%

Source	Percent of Total[a]
Recycling and Waste	2.1%
Residential Uses	6.1%
Transportation	40.1%
High GWP Substances	4.7%
TOTAL	**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.

4.5.1.3 Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources through 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 *Safeguarding California Plan: 2018 Update* 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 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 2018 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.

4.5.2 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.

4.5.2.1 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 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, the 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_2 equivalent (CO_2e) per year are required to report GHG emissions data to the EPA annually. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to the EPA in 2011. This program covers approximately 85 percent of the nation's GHG emissions and apply to roughly 10,000 facilities. The EPA'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 will also allow 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, the 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 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 2021).

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 (CAFE) 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 (Congressional Research Service 2021). 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.

The EPA withdrew the waiver granted to California 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. In addition, pursuant to Executive Order 13990, the EPA and NHTSA are reconsidering the SAFE program.

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 Renewable Fuel Standard (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."

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 (CEQ 2019). 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 did not issue final guidance, various NEPA documents incorporated the approach recommended in the draft guidance (CEQ 2019). Pursuant to Executive Order 13990 (January 20, 2021), the CEQ rescinded its 2019 draft guidance for NEPA consideration of GHGs. The CEQ will consider any appropriate revisions and updates to its 2016 GHG guidance (86 FR 10252).

4.5.2.2 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 (2016) and Executive Order B-30-15 (2015) require the state to reduce emissions by 40 percent below 1990 levels by 2030.

On December 11, 2008, CARB adopted the initial *Climate Change Scoping Plan* to achieve the goals of AB 32 (CARB 2008). 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, 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 Climate Change Scoping Plan* (The First Update). 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 CARB on May 22, 2014 (CARB 2014).

The second update to the scoping plan, the *California's 2017 Climate Change Scoping Plan* update (CARB 2017), was adopted by CARB in December 2017. The primary objective for *California's 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, *California's 2017 Climate Change Scoping Plan* 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 *California's 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-Related Sources

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, 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 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 went into effect known as the Sustainable Communities and Climate Protection Act. 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 Assembly Bill (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 4.5.2.3, "Local").

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 [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 our 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 the SAFE Program is currently under reconsideration.

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 GHG 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 related to GHG 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 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 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 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 was anticipated to reduce GHG emissions from passenger vehicles by 30 percent in 2016. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent 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 Emissions Factor (EMFAC) model and associated post processors.

4.5.2.3 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 Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) adopted its previous plan, Plan Bay Area, in July 2013 (MTC and ABAG 2017). 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.

Contra Costa County

Climate Action Plan

In December 2015, Contra Costa County Board of Supervisors approved the final draft of the Contra Costa County Climate Action Plan (CAP), which would apply to all unincorporated areas of Contra Costa County (Contra Costa County 2015). Incorporated cities are responsible for preparing and implementing their own climate action plans. 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 CAP also lays the groundwork for achieving long-term state GHG reduction goals for 2035. The following implementation measures and actions in the CAP apply to the proposed project:

Healthy Community Measure 4: Adaptation Integration. Consider potential climate change impacts in local planning documents and processes.

Healthy Community Action 4.1: During the development review process, consider possible impacts of climate change on the project or plan area.

Healthy Community Action 7.4: As healthy community strategies are implemented, consider prioritizing projects and programs that conserve and/or construct green spaces.

4.5.3 Analysis Methodology and Significance Criteria

The following sections discuss the methods for evaluating project emissions of greenhouse gasses.

4.5.3.1 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 an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

4.5.3.2 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. The proposed project does not propose any stationary sources as the existing plant on the site is not part of the project. The project's annual emissions inventory (i.e., excluding stationary source emissions) was compared against the 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 percent 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 consultant's 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 D-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

The air consultant used CalEEMod (version 2016.3.2) to quantify emissions for Project reclamation activities. CalEEMod is a widely accepted modeling tool maintained by the California Air Pollution Control Officers Association (CAPCOA). CalEEMod incorporates state and locally approved emission factors and methodologies for estimating both the daily maximum and annual average emissions levels for criteria pollutants and greenhouse gas emissions associated with land development projects, including mining.

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.

Simplified 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 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.

CalEEMod GHG emission modeling assumptions, which include site-specifics, equipment, duration, and crew size, are described in detail in Appendix A-1 of the Air and Greenhouse Gases Study (see Appendix D-1).

4.5.4 Project Impacts and Mitigation Measures

Impact 4.5-1: Gas Emissions Generated By Reclamation Activities Could Have a Significant impact on Global Climate Change

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	492.8
BAAQMD CEQA Significance Threshold[3]	1,100
Exceeds Threshold (Yes/No)?	**No**

Source: Appendix D-1.
Notes:
1. MT= metric tons. CO_2e = carbon dioxide equivalent.
2. Proposed Project emissions are reported for model year 2049 (representing final reclamation activities anticipated to occur in the year 2068), which is the highest emitting model year for CO_2e. See Appendix A-2 of the *Air and Greenhouse Gas Emissions Study* (see Appendix D-1) for detail.
3. BAAQMD thresholds from Table 4.2-2 of Section 4.2, "Air Quality," for operational emissions.

A complete summary of project emissions and detailed modeling inputs and outputs are included Appendix D-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.

Given that modeled GHG emissions are at only about 45 percent of the operational threshold, the proposed project is not expected to generate a cumulatively considerable contribution of GHG emissions. However, 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 impact 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 CCR Title 13, Section 2485). Clear signage shall be provided for construction workers at all access points. [Measure applies to idling times for all equipment other than diesel-powered 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: *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.

Level of 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 CAP is the *Contra Costa County 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."

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. 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 the Draft environmental Impact Report (Draft EIR) 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 potential impacts related to flooding, surface water drainage, groundwater flow, groundwater supply, and water quality.

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:

- *Hydrology and Water Quality Evaluation Report, CEMEX Clayton Quarry* (Hydrology and Water Quality Evaluation) prepared by EMKO Environmental, Inc. (EMKO) (Appendix G-1, "Hydrology and Water Quality Evaluation Report")
- *CEMEX Clayton Quarry Drainage Plan* (Drainage Plan) prepared by Spinardi Associates (Appendix G-2, "Drainage Plan")
- *Adaptive Management Program to Evaluate Water Quality Conditions After Reclamation of the CEMEX Clayton Quarry* (Adaptive Management Program) prepared by EMKO (Appendix G-3, "Adaptive Management Program")
- *Quarry Lake Water Quality and Aquatic Life Criteria* (Quarry Lake Water Quality Analysis) prepared by EMKO (Appendix G-4, "Quarry Lake Water Quality Analysis")
- *Evaluation of Runoff from Mitchell Canyon Road to DA71A Storm Drains* prepared by EMKO (Appendix G-5, "DA71A Drainage Area Runoff Estimates")
- *Runoff from East Rim Access and Upper Quarry Haul Roads, CEMEX Clayton Quarry* prepared by EMKO (Appendix G-6, "Quarry Road Runoff Management")
- *Geotechnical Evaluations for Revised Reclamation Plan, Clayton Quarry, Clayton, California* prepared by Golder Associates, Inc (Golder) (Geotechnical Evaluation) (Appendix F, "Geotechnical Evaluations for Revised Reclamation Plan")

The Hydrology and Water Quality Evaluation (Appendix G-1) and Drainage Plan (Appendix G-2) were peer reviewed by the County-retained Brown and Caldwell in March 2020 and revised in response to the comments received in May 2020. The Adaptive Management Program (Appendix G-3) was peer reviewed by the County-retained Brown and Caldwell in February 2021 and revised in response to the comments received in March 2021. The remaining studies (Appendices G-4, G-5, and G-6) were peer reviewed by Benchmark Resources and the Contra Costa County Public Works Department. The peer review letters are on file with the County. The peer review of the Geotechnical Evaluation (see Appendix F) is described in Section 4.4, "Geology and Soils."

4.6.1 Environmental Setting

The existing hydrology and water quality conditions at the project site and vicinity are discussed below. Unless otherwise noted, the information presented in this subsection is based on the Hydrology and Water Quality Evaluation and the Drainage Plan (see Appendices G-1 and G-2) and on the Geotechnical Evaluation (Appendix F)

4.6.1.1 Climate and Precipitation

The general climate of the region is classified as Mediterranean, with warm dry summers and cool wet winters. Precipitation is confined mainly to the "wet" season, which lasts from late fall (late October) to early spring (early April). The average annual rainfall in the vicinity of the project is approximately 19 inches (Contra Costa County Flood Control & Water Conservation District [Flood Control District] 1977).

4.6.1.2 Topography and Drainage

The project site is located within Clayton Quarry in Contra Costa County, California, approximately 3.5 miles north-northwest of Mount Diablo in central Contra Costa County, California on the east side of Mount Zion (shown on Figure 1-2, "Site Location," in Chapter 1, "Introduction"). Mount Zion is approximately 1,635 feet high, with natural slope inclinations of approximately 20 to 35 degrees to the southeast in the area of the project site. The elevation of the project site ranges from approximately 560 feet msl at the Mitchell Canyon Road entrance to the project site, at the northeast corner of the site, to approximately 1,540 feet msl at the top of the high wall on the west side of the quarry, along the western edge of the site.

The area in the vicinity of the project site is drained by Mitchell Creek, an intermittent stream trending to the north-northeast, and draining the northwest-slopes of Mount Diablo and the east side of Mount Zion. At its nearest, Mitchell Creek is located approximately 400 feet east of the project site and approximately 1,300 feet east of the quarry pit. Mitchell Creek flows to Mount Diablo Creek, which in turn flows to Hastings Slough, and ultimately to Suisun Bay.

There is ephemeral stream on parcel APN-122-020-013. The stream is 300 feet long and varies in width from 4 to 7 feet. The stream flows into a constructed debris basin on-site. There is no scour or further evidence of surface flow after the channel reaches the basin.

County Drainage Areas

For the purpose of managing stormwater drainage, Contra Costa County is divided into numerous Drainage Areas (DAs) managed by the Contra Costa County Flood Control & Water Conservation District (Flood Control District). The quarry pit and south overburden fill area and southern portion of the north overburden fill area are located in DA71. The northern portion of the north overburden fill area and the neighborhood immediately to the east of the quarry entrance is within a small subdivision of DA71 designated as DA71A. Both DA71 and DA71A drain to Mitchell Creek. The north side of Mt. Zion, processing plant site, and the open field north of the processing plant site are located within DA96, which drains to Mount Diablo Creek. The DA boundaries are shown on Figure 4.6-1, "County Drainage Area Boundaries."

Runoff from areas along Mitchell Canyon Road is directed to DA71A through a series of drop inlets into a 15-inch reinforced concrete pipe that connects to an 18-inch reinforced concrete pipe that drains to Mitchell Creek, as shown on Figure 4.6-2, "DA 71A Storm Drains East of CEMEX Site." Based on slopes identified by EMKO and roughness coefficients defined in Flood Control District documents, the capacity of the 15-inch reinforced concrete pipe storm drain is approximately 18 cubic feet per second (cfs).

SOURCE: Flood Control District, 2015; modified by Benchmark Resources in 2021
NOTES: Figure is not to scale.

County Drainage Area Boundaries
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.6-1

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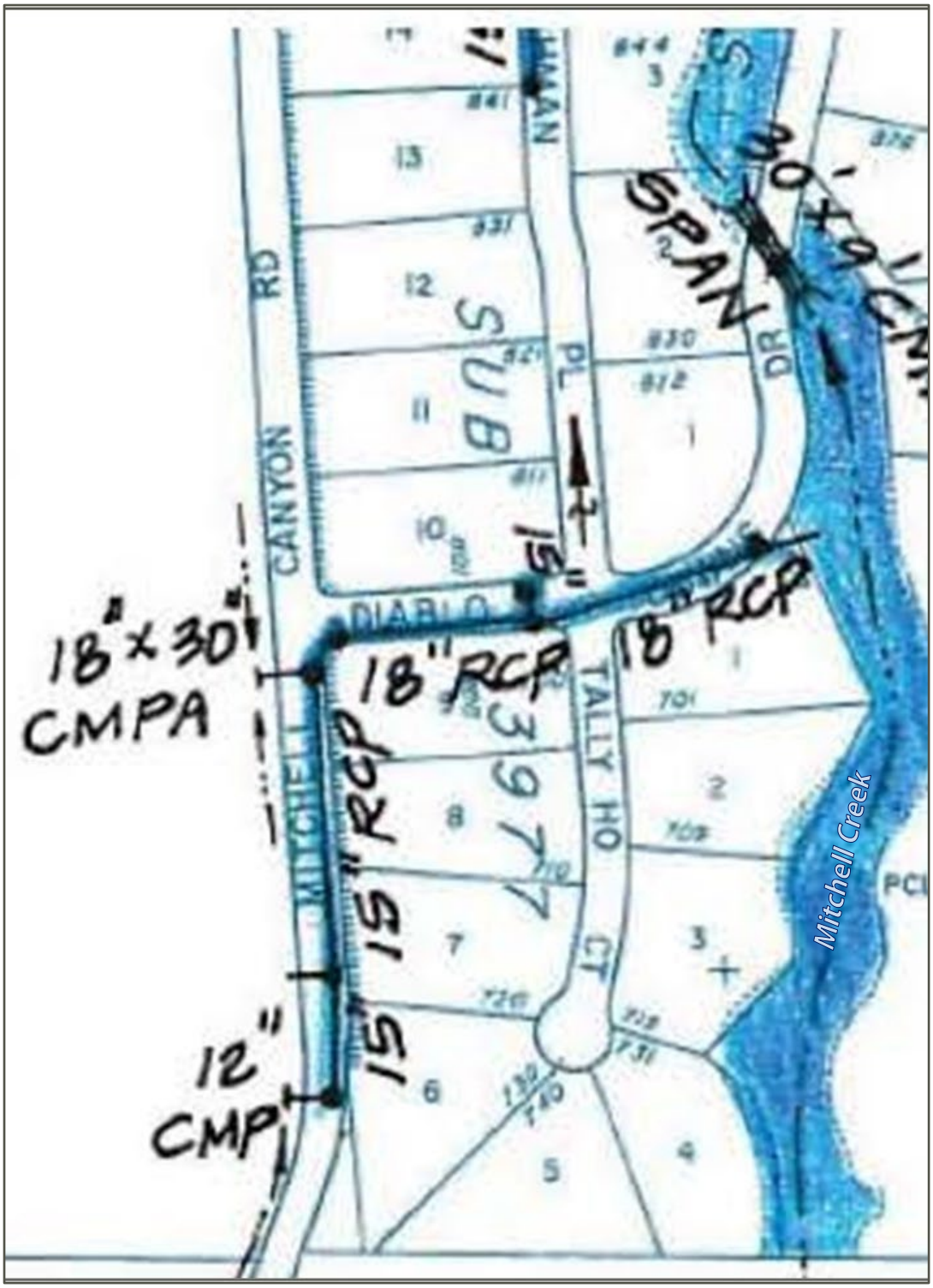

SOURCE: EMKO Environmental, Inc. 2020; Project Description and Application Supplement; modified by Benchmark Resources in 2021

NOTES:

1. Figure is not to scale.
2. "RCP" = reinforced concrete pipe.
3. "CMP" = corrugated metal pipe.
4. "CMPA" = corrugated metal pipe arch

DA 71A Storm Drains East of CEMEX Site
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.6-2

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On-Site Drainage

The existing drainage within the project site consists of multiple watershed areas, as shown on Figure 4.6-3, "Existing and Proposed Site Drainage." The quarry watershed areas (labeled P1, P2, and P3 on Figure 4.6-3) drain into the existing quarry and do not enter any of the waterbodies surrounding the project site (i.e., Mitchell Creek and Mount Diablo Creek). The current quarry is within a 90-acre closed watershed. Approximately 19 acres of undisturbed watershed to the west and topographically above the quarry drains into the 71-acre quarry. On Figure 4.6-3, the quarry is designated as watershed P1, the exposed highwalls are designated as watershed P2, and the undisturbed, vegetated area to the west is designated as watershed P3.

The Mitchell Creek watershed areas (labeled "M1 and M2" on Figure 4.6-3) drain the north and south overburden fill areas towards Mitchell Creek. Watershed area M1 is approximately 81 acres and drains to Mitchell Creek via local natural drainages. Watershed area M2 is approximately 11 acres and drains to Mitchell Creek via the DA71A storm drain system near and along Diablo Downs Drive (see Figure 4.6-2).

Runoff from transitional watershed area (labeled "T" on Figure 4.6-3) drains towards watershed area M1; however, as described under Section 4.6.3.2, "Analysis Methodology," below, drainage area T would drain to the quarry (watershed P2) for detention in the quarry lake under the revised reclamation plan. The transitional water area is approximately 8 acres.

Runoff from the areas north of the quarry watersheds area, Mitchell Creek watersheds area, and transitional watershed area drain northward to the DA96 storm drain system in the City of Concord. This area is referred to as the "northern watershed" and it contains the existing processing plant site. The processing plant site contains a stormwater conveyance and containment system designed to increase the capacity of onsite stormwater storage and minimize the frequency and volume of stormwater discharges. The system is designed to hold up to 225,000 gallons of stormwater a day (CEMEX 2019). Under existing conditions, storm water runoff from the plant site is generally conveyed to the following features (as shown on Figure 2-5, "Existing Facilities," in Chapter 2, "Project Description"):

1. On-site retention pond system where runoff is contained and used for dust control.
2. Containment pond at the north end of the plant site that outfalls to an existing stormwater detention pond in the open field to the north of the plant site.
3. The stormwater detention pond can hold up to 225,000 gallons of water and currently does not discharge flows from the project site. However, it is designed to feed an existing drainage swale across the open field that conveys runoff to existing and man-made drainage courses in the City of Concord (CEMEX 2019).

Under existing conditions, storm water that commingles with process waters is directed to onsite settling ponds or containment basins (used for recycling process water) through contour paving, drainage swales, berms, curbing and/or other similar controls. Storm water from the haul road area (between the quarry and plant site) is allowed to sheet flow into constructed swales that convey water to a retention pond system at the plant site where runoff is contained and used for dust control. Storm water from all other areas of the site is directed to designated storm water discharge points that are identified in the facility Storm Water Pollution Prevention Plan (SWPPP).

4.6.1.3 Local Geologic Conditions

The geology of the project site is primarily addressed in Section 4.4. The geology of the site is shown on Figure 4.4-1, "Site Geology Map," of Section 4.4. The western portion of the project site is underlain by both

diabase rock types of the Mount Diablo Ophiolite formation. Diabase is an igneous rock formed during the Jurassic Period in the ocean at a submarine spreading center. The eastern portion of the project site is primarily underlain by the Knoxville formation. The Knoxville formation is a sedimentary rock consisting of shale with intermittent lenses of limestone and sandstone beds formed in the Late Jurassic and Early Cretaceous periods.

As shown on Figure 4.4-1, quaternary alluvium (Qoa and Qa) occurs along the easternmost edge of the project site. The older quaternary alluvium (Qoa) consists of sand, silt, clay, and gravel. The younger quaternary alluvium (Qa) located at the northeast corner of the project site consists of sand, silt, and gravel.

4.6.1.4 Local Groundwater Conditions

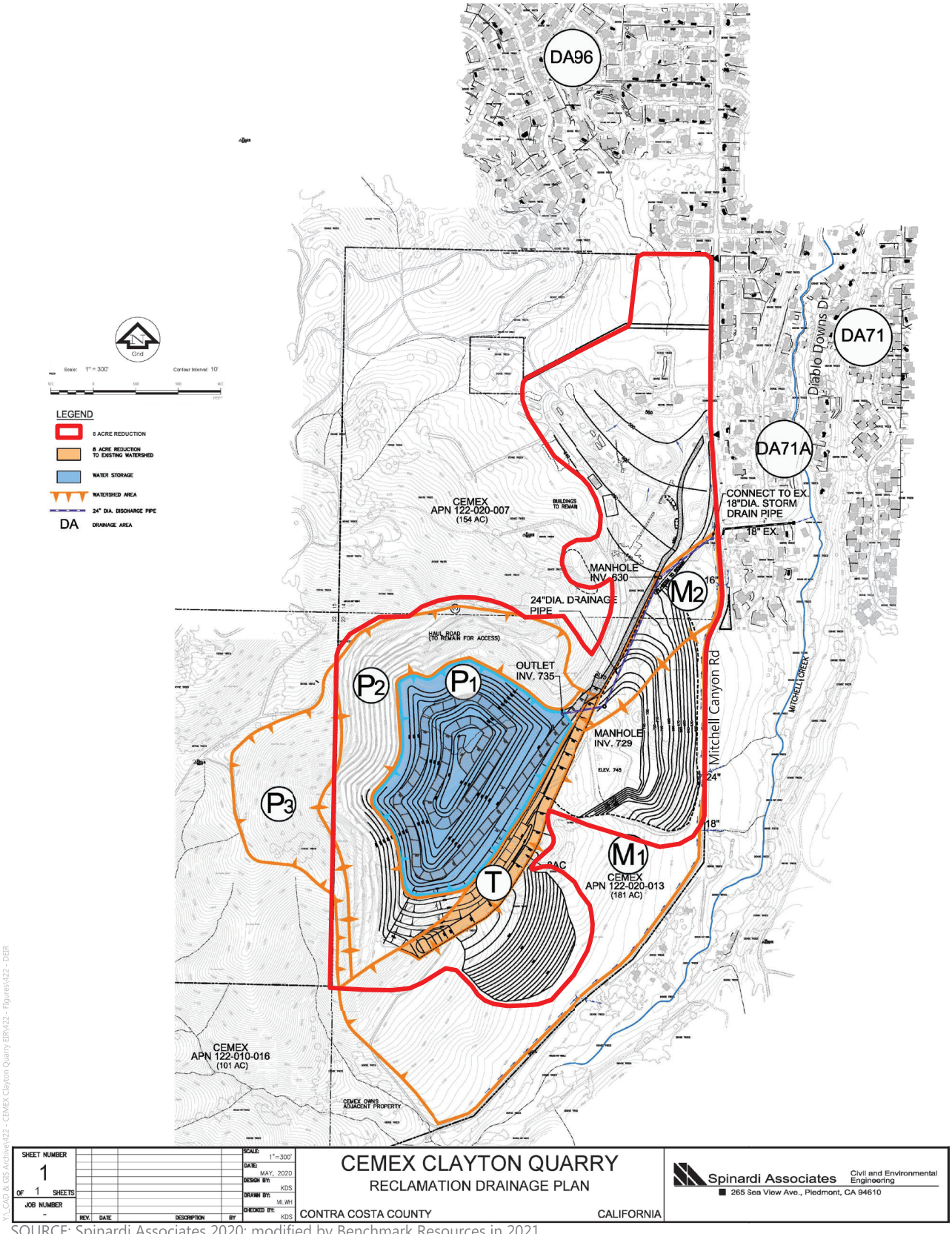
The northeast portion of the project site that consists of quaternary alluvium is underlain by the Clayton Valley groundwater basin. The quarry pit, which is located on the southwest portion of the project site, is not underlain by a groundwater basin (California Department of Water Resources [DWR] 2021a). The Geotechnical Evaluation (see Appendix F) indicates that the quarry is unlikely to encounter significant groundwater or intersect a regional aquifer. The diabase in the quarry consists of dense igneous rock with very low porosity and hydraulic conductivity. Groundwater, where encountered in such rocks, occurs only in fractures and results from surface water seeping into fractures in the rock mass on the slopes of Mount Zion. Water that occurs in the diabase exposed in the quarry consists primarily of water derived from the surface infiltration of precipitation that has percolated into discontinuities within the rock mass (i.e., seeps along fractures). This water then daylights in the quarry pit slopes. The current base of the quarry contains a small pit lake formed from seepage and runoff from existing quarry benches; however, the generally dry conditions and high rates of evaporation minimize the accumulation of water in the pit lake. Geologic maps of the area indicate no faults or other geologic structures that might intercept surface water flowing in Mitchell Creek and act as conduit for groundwater flow into the quarry.

Similar to the Geotechnical Evaluation, the quarry Hydrology and Water Quality Evaluation (see Appendix G-1) noted that the entire quarry watershed area is located topographically higher than the surrounding land. Because there is no upslope area outside of the quarry watershed that could act as a recharge source for the springs, it is likely that the water discharging from the springs is sourced from percolation of local rainfall into the fractured bedrock within the quarry watershed area. Some portion of the percolation that reaches fractures that intersect the bottom of the quarry will, therefore, discharge into the existing quarry. The spring flows do not represent water entering the quarry from outside of the watershed. The springs are just an additional mechanism by which local rainfall enters the current dewatered quarry.

The Clayton Valley Groundwater Basin is classified as a very low priority basin, according to the Sustainable Groundwater Management Act (SGMA) Basin Prioritization Dashboard (DWR 2021b). As such, this basin is not required to form a groundwater sustainability agency or adopt a groundwater sustainability plan.

4.6.1.5 Flood Hazards

Flood hazards may occur in Contra Costa County from flooding caused by precipitation, levee failure, and dam failure. The Federal Emergency Management Agency (FEMA) has prepared Flood Insurance Rate Maps (FIRMs) for most of Contra Costa County. These maps delineate the areas of known special flood hazards and associated applicable risks to the community. According to FEMA Flood Map #06013C0312F, effective on June 16, 2009, the project site is located within Zone X, Area of Minimal Flood Hazard (FEMA 2009).



SOURCE: Spinardi Associates 2020; modified by Benchmark Resources in 2021
NOTES: Figure is not to scale.

Existing and Proposed Site Drainage
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.6-3

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Zone X is considered to be an area outside of a Special Flood Hazard Area and higher than the elevation of the 0.2% annual (500-year) chance flood (FEMA 2020). As such, the potential for on-site flooding is low.

The project site elevation is greater than 500 feet msl, and therefore the project site is not subject to coastal hazards such as tsunami and sea level rise. The project site is not located within or near a mapped dam failure inundation zone (DWR Division of Dam Safety [DSoD] 2021). There are no lakes on or near the project site that could cause flooding on-site due to seiche.

4.6.1.6 Surface Water Quality

The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses within the watershed and the composition of geologic materials in the vicinity. The State Water Resources Control Board (SWRCB) and nine regional water quality control boards (regional water boards) regulate the quality of surface water and groundwater bodies throughout California. In the Bay Area, including the project site, the San Francisco Bay Regional Water Quality Control Board (RWQCB) is responsible for implementing the *San Francisco Bay Basin (Region 2) Water Quality Control Plan* (Basin Plan) (RWQCB 2017). The Basin Plan establishes beneficial water uses for waterways and water bodies within the region and is a master policy document for managing water quality in the region. The existing and proposed beneficial uses of the waterbodies to which the project site drains is shown in Table 4.6-1, "Beneficial Uses."

4.6.1.7 Surface Water Quality Impairment and Total Maximum Daily Loads

Water quality impairment, as defined in the Clean Water Act (CWA) Section 303(d), for the waterbodies to which the project site drains are identified in Table 4.6-2, "Water Quality Impairments." These impaired bodies are listed as Category 5 in the SWRCB Integrated Report (2020), which includes waters where at least one beneficial use is not supported, and a Total Maximum Daily Load (TMDL) is required. On a broad level, the TMDL process leads to a "pollution budget" designed to restore the health of a polluted body of water. The TMDL process provides a quantitative assessment of the sources of pollution contributing to a violation of the water quality standards and identifies the pollutant load reductions or control actions needed to restore and protect the beneficial uses of the impaired waterbody.

4.6.2 Regulatory Setting

A discussion of the key laws, regulations, and programs pertaining to hydrology and water quality is provided in the following sections.

4.6.2.1 Federal

Federal Clean Water Act of 1972

The Federal Clean Water Act of 1972 is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It is administered by the U.S. Environmental Protection Agency (EPA). The Clean Water Act operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit. The EPA has delegated its authority to implement and enforce most of the applicable water quality provisions of this law to the individual states. In California, the provisions are enforced by nine regional water boards under the auspices of the SWRCB. The project site is located within the jurisdiction of the San Francisco Bay RWQCB.

TABLE 4.6-1
BENEFICIAL USES

Surface Water Bodies	COMM *Commercial and Sport Fishing*	PROC *Industrial Process Supply*	IND *Industrial Service Supply*	EST *Estuarine Habitat*	REC-1 *Water Contact Recreation*	REC-2 *Non-Contact Water Recreation*	WARM *Warm Freshwater Habitat*	COLD *Cold Freshwater Habitat*	MIGR *Fish Migration*	RARE *Preservation or Rare and Endangered Species*	SPWN *Fish Spawning*	WILD *Wildlife Habitat*	NAV *Navigation*
Mitchell Creek	--	--	--	--	E	E	E	E	E	E	E	E	--
Mount Diablo Creek	--	--	--	--	E	E	E	E	E	E	E	E	--
Hastings Slough	--	--	--	E	E	E	--	--	--	E	--	E	--
Suisun Bay	E	E	E	E	E	E	--	--	E	E	E	E	E

Source: RWQCB 2017.
Notes: E = existing beneficial use. -- = not a beneficial use.

TABLE 4.6-2
WATER QUALITY IMPAIRMENTS

Water Body	2018 303(d) List of Water Quality Impairments (Included under SWRCB Integrated Report Category 5)	TMDL Status
Mitchell Creek	No impairments identified	NA
Mount Diablo Creek	Diazinon and Toxicity (identified as impairing the beneficial use of Cold Freshwater Habitat)	TMDL approved for Diazinon
Hastings Slough	No impairments identified	NA
Suisun Bay	Pesticides (Chlordane, DDT, Dieldrin), PCBs, and Selenium (identified as impairing the beneficial uses of Commercial and Sport Fishing and Estuarine Habitat) Dioxins, Furan Compounds, Mercury, and Dioxin-Like PCBs (identified as impairing the beneficial use of Commercial and Sport Fishing) Invasive Exotic Species (identified as impairing the beneficial use of Estuarine Habitat)	TMDLs approved for Mercury, PCBs, Dioxin-Like PCBs, and Selenium

Source: SWRCB 2020.
Notes: PCBs = Polychlorinated biphenyl; DDT = Dichlorodiphenyltrichloroethane; NA = Not applicable.

Section 303 of the Clean Water Act (Beneficial Use and Water Quality Objectives)

The San Francisco Bay RWQCB is responsible for the protection of the beneficial uses of waters within the San Francisco Bay Basin including the project site. The RWQCB uses its planning, permitting, and enforcement authority to implement plans, policies, and provisions for water quality management established in the Basin Plan.

In accordance with state policy for water quality control, the RWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan for the San Francisco Bay Basin has identified existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction.

Under CWA Section 303(d), the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. Once a water body has been listed as impaired on the 303(d) list, a TMDL for the constituent of concern (pollutant) must be developed for that water body. The beneficial uses and TMDLs for the water bodies downstream of the project site are listed in Tables 4.6-1 and 4.6-2, respectively.

Section 402 of the Clean Water Act (National Pollutant Discharge Elimination System)

Under Section 402 of the Clean Water Act, the discharge of pollutants through a point source into waters of the United States is prohibited unless the discharge is in compliance with an NPDES permit. The NPDES program regulates the discharge of pollutants from municipal and industrial wastewater treatment plants and sewer collection systems, as well as stormwater discharges from industrial facilities, municipalities, and construction sites. In California, implementation and enforcement of the NPDES program is conducted through the SWRCB and the nine regional water boards. The regional water boards set standard conditions for each permittee in their region, which includes effluent limitations and monitoring programs.

4.6.2.2 State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (codified in the California Water Code Section 13000 et seq.) is the primary water quality control law for California. This statute established enforcement and implementation measures for the SWRCB and the nine regional water boards, which are charged with implementing this law. Porter-Cologne establishes a comprehensive program for the protection of water quality and the beneficial uses of water. It applies to surface waters, wetlands, and groundwater, and to both point- and nonpoint-sources. Porter-Cologne also incorporates many provisions of the CWA, such as delegating the NPDES permitting program to the SWRCB and the regional water boards. Whereas the CWA applies to all waters of the United States, the Porter-Cologne Act applies to waters of the state, which includes isolated wetlands and groundwater in addition to federal waters. In addition to other regulatory responsibilities, the regional water boards have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the state could cause pollution or nuisance, including impacts to public health and the environment.

In addition to implementing the NPDES permitting program, the Porter-Cologne Act authorizes the regional water boards to issue Waste Discharge Requirements (WDRs). WDRs are established and implemented to achieve the water quality objectives for receiving waters as established in the Basin Plans. The WDR process begins when an applicant submits a Report of Waste Discharge to the local regional water board. The regional water board staff can then issue WDRs and monitoring requirements. The

NPDES stormwater program requires preparation and implementation of a site-specific SWPPP. A SWPPP identifies all potential pollutants and their sources, and includes a list of best management practices to reduce the discharge of potential stormwater pollutants.

NPDES Construction General Permit

Construction projects disturbing more than 1 acre of land during construction are required to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, NPDES No. CAS000002 (Construction General Permit). The proposed Project would disturb more than 1 acre of land during reclamation-related construction (e.g., installation of the quarry lake drainage pipe) and would be subject to the requirements of the Construction General Permit.

To obtain coverage under the Construction General Permit, the discharger must provide via electronic submittal, a Notice of Intent, a SWPPP, and other documents required by Attachment B of the Construction General Permit. Activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as grubbing or excavation. The permit also covers linear underground and overhead projects, such as pipeline installations. Construction General Permit activities are regulated at a local level by the RWQCB.

The Construction General Permit uses a risk-based permitting approach and mandates certain requirements based on the project risk level (i.e., Level 1, Level 2, or Level 3). The project risk level is based on the risk of sediment discharge and the receiving water risk. The sediment discharge risk depends on the project location and timing (i.e., wet season versus dry season activities). The receiving water risk depends on whether the project would discharge to a sediment-sensitive receiving water. The determination of the project risk level would be made by the project applicant when the Notice of Intent is filed (and more details of the timing of the construction activity are known).

The performance standard in the Construction General Permit is that dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and BMPs that achieve Best Available Technology for treatment of toxic and non-conventional pollutants and Best Conventional Technology for treatment of conventional pollutants. A SWPPP must be prepared by a Qualified SWPPP Developer that meets the certification requirements in the Construction General Permit. The purpose of the SWPPP is (1) to identify the sources of sediment and other pollutants that could affect the quality of stormwater discharges; and (2) to describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in stormwater as well as non-stormwater discharges resulting from construction activity. Operation of BMPs must be overseen by a Qualified SWPPP Practitioner that meets the requirements outlined in the permit.

The SWPPP must also include a construction site monitoring program. Depending on the project risk level, the monitoring program may include visual observations of site discharges, water quality monitoring of site discharges (pH, turbidity, and non-visible pollutants, if applicable), and receiving water monitoring (pH, turbidity, suspended sediment concentration, and bioassessment).

NPDES Industrial General Permit

The Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ, NPDES No. CAS000001 (Industrial General Permit) regulates industrial storm water discharges and authorized non-storm water discharges from industrial facilities in California. Industrial facilities such as manufacturers, landfills, mining, steam generating electricity, hazardous waste facilities,

transportation with vehicle maintenance, larger sewage and wastewater plants, recycling facilities, and oil and gas facilities are typically required to obtain Industrial General Permit coverage. Facilities subject to the Industrial General permit must comply with the provisions of the Industrial General Permit by eliminating unauthorized non-storm water discharges, developing and implementing an Industrial SWPPP, and monitoring storm water discharges and authorized non-storm water discharges in accordance with a Monitoring Implementation Plan. The purpose of the Industrial SWPPP is to:

1. Demonstrate compliance with the Industrial General Permit;
2. Identify pollutant sources potentially affecting the quality of storm water discharges;
3. Develop Best Management Practices (BMPs) to reduce or prevent storm water pollutants associated with industrial activities;
4. Measure the effectiveness of BMPs in preventing or reducing pollutants in storm water discharges and authorized non-storm water discharges;
5. Outline the Monitoring Implementation Plan;
6. Provide measurable goals for the implementation of the SWPPP; and
7. Ensure that practices at the facility to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges are evaluated and revised to meet changing facility conditions.

Clayton Quarry is subject to the Industrial General Permit through the following Standard Industrial Classification (SIC) codes: 1422—Construction Sand and Gravel and 1429—Crushed and Broken Stone. CEMEX has prepared and filed with the RWQCB an NOI and Industrial SWPPP for the facility, and periodically updates the SWPPP, most recently in 2019 (CEMEX 2019). The SWPPP is implemented in conjunction with a hazardous materials business plan and spill prevention control and countermeasures plan. Total suspended solids from the material storage yard and petroleum products and diesel handled near the shop building and at a site fueling station are identified in the SWPPP as the potential pollutants of concern. BMPs include sweeping and cleaning of all paved surfaces; the use of dust controls such as vegetative cover, mulch, rock filters, and dust suppressants; maintenance of berms, curbs, fiber rolls or waddles, rock filters, and other controls to minimize stormwater run on and runoff at materials storage areas; maintenance of a series of settling ponds to filter and clarify stormwater; storage of hazardous materials on impervious pads, covered areas, and/or secondary containment; use of drip pans and absorbents under leaky vehicles and equipment; and operation and maintenance of a 10,000-gallon underground stormwater containment tank for the settling of solids. The plan also requires the sampling of stormwater up to four times per year when overflow discharge from the holding pond outlet or sump pump outlet occurs.

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 that regulates 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 RWQCB or the SWRCB.

d) Surface runoff and drainage from surface mining activities shall be controlled by berms, silt fences, settling 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

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley)—collectively known as the Sustainable Groundwater Management Act (SGMA), which requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, sustainability should be achieved by 2040. For the remaining high- and medium-priority basins, 2042 is the deadline. Through SGMA, the California Department of Water Resources provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins sustainably and requires the preparation of groundwater sustainably plans for crucial (i.e., medium to high priority) groundwater basins in California. Adjudicated basins are exempt from developing a groundwater sustainability plan.

The project site is located within the Clayton Valley Groundwater Basin, which has been designated a very low priority basin and as such local agencies are not required to form a Groundwater Sustainability Agency or develop a groundwater sustainability plan.

4.6.2.3 Local

Contra Costa County Code of Ordinances

The Contra Costa County Surface Mining and Reclamation Ordinance (Chapter 88-11) includes the following provisions related to hydrology and water quality:

88-11.830—Water:
All bodies of water created by the reclamation plan are subject to approval.

88-11.818—Disposal of Overburden and Mining Waste:
(c) Overburden and mining waste placed below the existing or potential groundwater level shall not reduce water transmissivity or the area through which water may flow unless approved equivalent transmissivity or area has been provided elsewhere.

88-11.820—Drainage, Erosion and Sediment Control:
(a) Any temporary stream or watershed diversion shall be restored in final reclamation to its condition prior to surface mining operations, unless the planning agency determines restoration is unnecessary.

(b) Regrading and revegetation shall be designed and carried out to minimize erosion, to provide for drainage to natural outlets or interior basins designed for water storage, and to eliminate closed depressions and similar catchments that could serve as breeding areas for insects.

(c) Silt basins, which have outlet to lower ground and will or may store water during periods of surface runoff, shall be equipped with sediment control and removal facilities, and with protected spillways designed to minimize erosion.

(d) Final grading and drainage shall be designed to prevent discharge of sediment loads higher than before mining operations.

88-11.824—Emplacement of Fill:
All fill shall be compacted to avoid excessive settlement and to the degree necessary to accommodate anticipated future uses. If future uses of the site include streets or structures for human occupancy, or if an engineered fill is necessary as a safety measure, fill emplacement shall conform to the requirements of Division 716 of this code. Material used as fill shall be of a quality suitable to prevent contamination and pollution of groundwater.

88-11.834—Financial Assurances:
(b) Financial assurances will be required to ensure compliance with elements of the reclamation plan, including but not limited to, revegetation and landscaping requirements, restoration of aquatic or wildlife habitat, restoration of water bodies and water quality, slope stability and erosion and drainage control, disposal of hazardous materials, and other measures, if necessary.

The Contra Costa County Drainage Ordinance (Chapter 1010) includes the following provisions related to drainage infrastructure:

1010-2.002—Purpose:
This division is adopted to provide for the implementation of drainage, recreation and riparian vegetation provisions of the general plan, protect watercourse riparian vegetation, permit control of projects that may change the hydraulic characteristics of watercourses and drainage facilities, control erosion and sedimentation, prevent the placement or discharge of polluting matter into watercourses, and require adequate watercourse drainage facilities.

1010-8.006—Exhibits and Conditions:
The applicant shall enclose with, include, attach or add to the application for a permit a map, plat, sketch, diagram or similar exhibit of a size and in such quantity as the enforcing officer may prescribe, on which exhibit shall be plainly shown any and all information of a technical or

engineering nature necessary to locate, delineate, illustrate, identify, justify and substantiate the proposed act or work, and the right and necessity of the applicant to perform the act or work. The enforcing officer may require to be submitted such soil investigation, tests of materials, environmental documents, engineering plans and investigations, technical reports and other permits, as the officer deems necessary and proper. If necessary, changes, corrections and notes may be made on any such exhibit and/or conditions inserted on the permit and these items shall become an integral part of the permit when attested to by the enforcing officer.

1010-8.012—Term and Beginning Work:
The permittee shall begin the act or work authorized by a permit issued pursuant to this division within thirty calendar days from date of issuance, unless another date is specifically indicated in the permit. The permittee shall notify the enforcing officer at least two working days prior to beginning work.

Contra Costa County Zoning General Regulations Ordinance (Chapter 82-2)

The Contra Costa County Zoning General Regulations Ordinance, Section 82-2.014 requires the following provisions related to drainage requirements: Drainage facilities will be installed under a permit issued pursuant to this title, adequate to meet and comply with the drainage design standards and requirements set fourth in Division 914 of the County Code of Ordinances. A permit for the installation of drainage facilities will not be issued until applications, plans and exhibits for such facilities are submitted which comply with the requirements of this section and Divisions 82 and 84.

As stated above, the project is subject to all applicable provisions of Division 914 of the County Code of Ordinances. Division 914 of the County Code of Ordinances requires that all storm water entering and/or originating on the subject property to be collected and conveyed, without diversion and within an adequate storm drainage system, to an adequate natural watercourse having a definable bed and banks or to an existing adequate public storm drainage system which conveys the storm water to an adequate natural watercourse.

Contra Costa County General Plan

The *Contra Costa County General Plan* Conservation Element establishes the following goals and policies associated with hydrology and water quality that are relevant to the project (Contra Costa County 2014).

Conservation Element

Goal 8-T: To conserve, enhance, and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural use.

Goal 8-U: To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property.

Goal 8-W: To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible

Goal 8-X: To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels and other drainage system improvements.

Policy 8-74: Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.

Policy 8-77: Provide development standards in recharge areas to maintain and protect the quality of groundwater supplies.

Policy 8-85: Natural watercourses shall be integrated into new development in such a way that they are accessible and provide a positive visual element.

Policy 8-91: Grading, filling and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution

NPDES Municipal Regional Permit

Pursuant to Section 402 of the Clean Water Act and the Porter-Cologne Water Quality Control Act, municipal stormwater discharges in the Contra Costa County are regulated under RWQCB Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008, adopted October 14, 2009 (Municipal Regional Permit). The Municipal Regional Permit is overseen by the RWQCB. Contra Costa County participates in the Contra Costa County Clean Water Program, which provides guidance and assistance to municipalities in Contra Costa County to help them comply with requirements of the Municipal Regional Permit.

Municipal Regional Permit Provision C.3 addresses post-construction stormwater management requirements for regulated projects: new development and redevelopment projects that create or replace 10,000 square feet or more of impervious surface, and special land use categories that create or replace 5,000 square feet or more of impervious surface. The revised reclamation plan would not create or replace impervious surfaces. The proposed infrastructure would consist of underground drainage pipeline, and pervious rock-lined drainage ditches along an unpaved quarry road. The Municipal Regional permit post-construction stormwater management requirements are not applicable to the revised reclamation plan.

4.6.3 Significance Criteria and Analysis Methodology

4.6.3.1 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, land uses, and reclaimed conditions.

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 WDRs 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.

4.6.3.2 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 is predicated on the fact that the operator of the Clayton Quarry (Operator) must comply with the requirements of the *Contra Costa County General Plan*, the County Surface Mining and Reclamation 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, drainage plan, and technical evaluations describing existing and reclaimed hydrological and geological conditions on the project site and water quality in the quarry pit lake.

Watershed and Water Quality Analysis

The watershed analysis in the Hydrology and Water Quality Evaluation (see Appendix G-1) estimates the existing and runoff volumes and peak flow rates predicted to occur under the project's reclaimed condition within the on-site watersheds identified in in the Drainage Plan (see Appendix G-2) and shown on Figure 4.6-3 (watersheds M1, M2, P1, P2, P3, and T). Estimates were provided for 10-year and 100-year 24-hour storm events, consistent with the requirements of the Water District Detention Basin Guidelines. Runoff volumes for a 20-year, 1-hour storm event were also estimated consistent with the requirements of SMARA 14 CCR Section 3706(d). Additionally, the watershed analysis from the DA71A Drainage Area runoff estimates (see Appendix G-5) estimated the existing and predicted runoff volumes from off-site areas to the 15-inch reinforced concrete pipeline that is part of the DA71A Drainage Area. Estimates were provided for the 10-year, 24-hour storm event, which is the design storm on which the capacity of the system is determined based on the watershed area and Flood Control District (1991) guidance. The analyses used U.S. Department of Agriculture TR-55 methodology and the Flood Control District rational formula calculations.

Due to the relatively small individual watershed areas and steep slopes, the calculated time of concentration was very short for all areas, typically ranging from less than one to about eight minutes. To provide a consistent basis for comparison and to avoid extreme over-estimates of the hourly rainfall intensity for short times of concentration, a minimum time of concentration of 10 minutes was used throughout this analysis, consistent with US. Department of Agriculture TR-55 methodology.

The estimated rainfall depths used in the analysis are summarized in Table 4.6-3, "Estimated Rainfall Depths for Design Storm Events."

TABLE 4.6-3
ESTIMATED RAINFALL DEPTHS FOR DESIGN STORM EVENTS (INCHES)

Storm Frequency	24-hour Duration	1-hour Duration	Tc = 10 minutes
100-year	5.6	1.25	0.48
10-year	3.6	0.85	0.33
20-year, 1-hour	NA	0.92	0.37

Source: Appendix G-1
Notes: NA = Not Applicable Tc = Time of Concentration

To estimate the timeframe within which the quarry pit lake would rise to an elevation of 735 feet msl, a general water budget approach was used to compare the volume of water that would enter the quarry after mining is completed with the amount of water that would leave the quarry. Water would enter the quarry from direct rainfall on the quarry pit lake surface, runoff from the disturbed watershed area within the mining perimeter, runoff from the vegetated watershed area that would remain undisturbed, and spring flow. Water would leave the quarry by evaporation, percolation into fractures in the bedrock, and surface runoff once the water level of the quarry pit lake reaches the outlet structure elevation of 735 ft msl. Detailed methodology is provided in Appendix G-1.

An Adaptive Management Program (see Appendix G-3) was developed to evaluate water quality conditions in the proposed quarry pit lake. The Adaptive Management Program is based on the Chapter 9, "Sampling Plan," of the EPA SW-846 Compendium (EPA 2021a). The development of the Adaptive Management Program is based on the results of leaching tests that were conducted on samples collected at the Clayton Quarry on March 12, 2014 and October 14, 2020. The 2014 samples consisted of one sample of crushed diabase material from the product piles in the processing plant area and one sample of Knoxville formation from the east rim of the quarry. The 2020 samples consisted of four samples of unaltered diabase, four samples of mineralized diabase, and five samples of Knoxville formation. Mineralized diabase samples were specifically targeted during the 2020 sampling event because, following the 2014 sampling event, carbonate veining and minor sulfide mineralization were observed on weathered diabase surfaces within the quarry. The water quality of the existing quarry pit lake was not sampled because water quality conditions in this lake would not be representative of post-mining period water quality for two reasons: (1) the existing quarry pit lake is impacted by mining operations and uses; (2) the geologic materials to which the existing quarry pit lake is currently exposed are different from the materials that would be exposed to quarry pit lake water during the post-mining period.

The purpose of the leaching tests was to evaluate the potential for minerals within the diabase and the Knoxville formation to leach into rain water that runs off of reclaimed surfaces and enters the quarry. The samples were leached using deionized water following the Waste Extraction Test protocols (DI-WET test). The leachate samples generated from the DI-WET extraction of the diabase and the Knoxville formation were analyzed for metals, acid-base accounting and sulfur parameters (these parameters were analyzed in the 2020 samples only), and general mineral constituents. The constituent concentrations were compared to the regulatory thresholds. The regulatory thresholds considered in the analysis were the primary and secondary maximum contaminant levels (MCLs) for drinking water identified by the SWRCB (SWRCB 2018a and 2018b). Primary MCLs limit the levels of contaminants in drinking water that could be harmful to public health, while secondary MCLs regulate contaminants in drinking water that may cause cosmetic effects (such as tooth discoloration) or aesthetic effects (such as taste, odor, or color).

Concentrations of constituents detected in the DI-WET leachate samples collected in 2014 were below the primary and secondary MCLs with the exception of aluminum in the DI-WET leachate from diabase, which

slightly exceeded the secondary MCL of 200 micrograms per liter (µg/L). Aluminum, barium, iron, and zinc was detected in the DI-WET leachate from the Knoxville formation samples, but at levels below the primary and secondary MCLs. Detailed methodology and results of the 2014 samples are presented in the Hydrology and Water Quality Evaluation (see Appendix G-1)

The concentrations of constituents detected in the DI-WET leachate samples collected in 2020 were below the primary and secondary MCLs with the exception of concentrations of six constituents summarized as follows:

- Arsenic from one of the Knoxville Formation samples;
- Manganese from one of the mineralized diabase samples;
- pH from all four of the unaltered diabase samples;
- Conductivity from two of the mineralized diabase samples;
- Total dissolved solids (TDS) from three of the mineralized diabase samples; and
- Sulfate from three of the mineralized diabase samples.

Detailed methodology and results of the 2020 samples are presented in the Adaptive Management Program (see Appendix G-3).

Based on the watershed analysis in the Hydrology and Water Quality Evaluation (see Appendix G-1) and the sampling results of the Adaptive Management Program (see Appendix G-3), the Quarry Lake Water Quality Analysis (see Appendix G-4) was completed to estimate how the water quality in the quarry lake would change after mining is complete and the quarry pit lake fills with water. The analysis estimated concentrations of the following constituents in the quarry pit lake over time:

- Arsenic;
- Manganese;
- TDS;
- Sulfate;
- Iron;
- Selenium; and
- Vanadium.

These constituents were selected based on the constituents of concern identified in the Adaptive Management Program (see Appendix G-3) and also include metals that could harm wildlife in the lake and that were detected in at least one sample.

The standards used to evaluate whether or not water quality objectives may be exceeded were the primary and secondary drinking water MCLs (SWRCB 2018a and 2018b), the water quality objectives listed in Chapter 3 of the Basin Plan (RWQCB 2017), and the EPA's Aquatic Life Criteria Table (EPA 2021b). The water quality standards are summarized in Table 4.6-4, "Quarry Lake Water Quality Standards."

TABLE 4.6-4
QUARRY LAKE WATER QUALITY STANDARDS

Constituent	Drinking Water MCLs (mg/L)	Basin Plan (mg/L) [a]	EPA Aquatic (mg/L)
Arsenic	0.01	0.15/0.34 [b]	0.15/0.34 [b]
Manganese	0.05 [c]	0.05 [c]	NA
Total Dissolved Solids	500-1,000 [c]	500-1,000 [c]	NA
Sulfate	250-500 [c]	250-500 [c]	NA
Iron	0.3 [c]	0.3 [c]	1.0
Selenium	0.05	0.005/0.02 [b]	0.0015 [d]
Vanadium	NA	NA	NA

Source: SWRCB 2018a, SWRCB 2018b, RWQCB 2017, EPA 2016, EPA 2021b.

Notes: NA = not available or not applicable; EPA = U.S. Environmental Protection Agency; mg/L = milligrams per liter.

a) Table 3.5 of the Basin Plan includes MCLs for certain beneficial uses.

b) 4-day average/1-hour average, also referred to as chronic and acute.

c) Secondary MCL.

d) 30-day average based on EPA (2016).

For constituents where the laboratory results include both samples with detectable values of the specific analyte and samples in which the laboratory did not detect that analyte (referred to as a non-detect result), the results for the non-detect samples were presumed to be one-half of the laboratory detection limit so that statistical analyses can be performed on the entire sample set (EPA 1991).

Conductivity and pH are water quality properties that are not directly related to a mass per volume concentration of a single analyte. The conductivity is a function of the amount of TDS in the water. Thus, the TDS evaluation was used as an indicator of conductivity.

The pH concentration would vary based not only on the nature of the rainfall running off from the exposed geologic formations around the quarry, but would also vary based on the amount of dissolved carbon dioxide and oxygen in the water. These latter two factors are dependent on the amount of carbon dioxide in the atmosphere, the extent of aquatic plant growth in the quarry lake, and the amount of decaying organic matter that accumulates in the quarry lake. As discussed in the Hydrology and Water Quality Evaluation (see Appendix G-1), due to the steep sides of the quarry, it is not anticipated that appreciable aquatic plant growth would occur in the quarry lake. Thus, there would be little or no decaying organic matter in the lake that could affect pH. Furthermore, as discussed in the Adaptive Management Program (see Appendix G-3), the Knoxville Formation and the diabase rock both have a net acid neutralization potential, so acid rock drainage would not occur within the reclaimed quarry and pH levels will not fall below applicable water quality standards. Thus, pH was not estimated as part of the Quarry Lake Water Quality Analysis.

Quarry Pit Lake Seiche Analysis

The Geotechnical Evaluation (see Appendix F) analyzed the potential for a landslide at the south quarry pit slope to result in a seiche that could overtop the sides of the pit lake. The following methods were used to complete the analysis:

- Review relevant science and engineering literature to determine appropriate analytical, empirical, and numerical approaches to estimating subaerial landslide generated waves properties.

- Review characteristics of the sub-aerial pit-slope failure and topography of Clayton Quarry opposite the spillway weir to develop the basic dimensional parameters of a potential landslide scenario with wave generating potential.
- Use available empirical methods to estimate the characteristics of waves generated in the pit basin by the identified potential landslide scenario.
- Estimate wave run-up elevations and mean overtopping discharge rates at the spillway on the opposite side of the pit to the slope failure using empirical methods and calculation tools from the coastal engineering literature.
- Estimate the potential effects of a rock berm concept on mitigating mean overtopping discharges for the identified landslide scenario.

Detailed methodology is provided in Appendix F.

4.6.4 Project Impacts and Mitigation Measures

Impact 4.6-1: Violate Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality

Water quality would have the potential to be affected in the short-term by reclamation activities (e.g., erosion and sedimentation due to land disturbances; uncontained material and equipment storage areas; improper handling of hazardous materials; and leaking oils and grease from heavy equipment). Water quality can also be affected in the long-term if the proposed long-term land use could result in the release of pollutants (e.g., landscaping fertilizers, pesticides and herbicides, and trash). Surface water quality impacts associated with the proposed project can come from both stormwater runoff and discrete non-stormwater discharges to receiving waters. Groundwater quality can be impacted through activities that would put contaminants into contact with groundwater (e.g., drilling of deep wells, release of pollutants in a quarry pit that is excavated below the local groundwater table). Without proper consideration and precautions, and without conducting reclamation activities according to the terms and conditions of applicable permits, such activities can degrade water quality in receiving water bodies, leading to violation of water quality standards and/or Basin Plan objectives.

Mining-Period Reclamation and Final Reclamation Activities

Mining-period reclamation activities under the revised reclamation plan would continue to be subject to all applicable local, state, and federal water quality and hazardous materials management requirements including the Industrial General Permit and the associated site-specific SWPPP. The revised reclamation plan would not alter existing mining-period activities by the development of new facilities or implementation of new activities on the project site. As described in Section 2.5.13, "Mining and Reclamation Sequence and Schedule," in Chapter 2, slope contouring and revegetation of the overburden fill areas would occur concurrent with ongoing mining activities to the extent feasible. Reclamation activities that would be conducted in conjunction with mining would also be subject to coverage under the existing Industrial General Permit and associated site-specific SWPPP. Under Industrial General Permit requirements, CEMEX must periodically review and update the SWPPP to ensure it addresses site specific conditions, and this process would continue under the revised reclamation plan.

After mining is complete in 2068, the existing processing plant facilities would be removed, and the disturbed areas outside of the quarry pit (including the processing plant facilities and overburden fill areas) would be contour graded, resoiled, revegetated, and converted to open space land uses.

Additionally, a 24-inch diameter drainage pipeline would be installed to convey flows from the quarry pipeline to the 18-inch stormwater line located along Mitchell Canyon Road, and erosion control and stormwater management facilities would be installed, as described in Section 2.5.4, "Drainage, Sediment, and Erosion Control," in Chapter 2.

Final reclamation activities, including finish slope contouring, revegetation, development of drainage facilities along the east rim haul road, placement of rip-rap along the east rim of the quarry pit lake, demolition and removal of existing processing plant facilities on the site, and development of an outlet and drainage pipeline at the quarry pit lake, would need to comply with the NPDES program either by incorporating coverage under the Industrial General Permit through an amendment to the existing site-specific industrial activities SWPPP or by filing a Notice of Intent and SWPPP for compliance under the Construction General Permit. Similar to the Industrial General Permit SWPPP, the Construction General Permit SWPPP would identify BMPs and direct inspections and monitoring to protect stormwater runoff, prevent unauthorized discharges, and ensure the avoidance of substantial degradation of water quality during final reclamation. Typical BMPs that could be incorporated into the SWPPP to protect water quality include the following:

- Covering stockpiled soil at the end of each workday.
- Vegetating landscaped/vegetated swale areas as soon as feasible following grading activities.
- Placing perimeter straw wattles to prevent off-site transport of sediment.
- Using drop inlet protection (filters and sandbags or straw wattles), with sandbag check dams within paved areas.
- Regular watering of exposed soils to control dust during demolition and construction.
- Implementing specifications for demolition/construction waste handling and disposal.
- Using contained equipment wash-out and vehicle maintenance areas.
- Maintaining erosion and sedimentation control measures throughout the construction period.
- Stabilizing construction entrances to avoid trucks from imprinting soil and debris onto the adjoining roadway.
- Training, including for subcontractors, on general site housekeeping.

The implementation of Mitigation Measure 4.6-1a would require compliance with NPDES program requirements through SWPPP implementation under either the Industrial or Construction General Permit. Therefore, with implementation of Mitigation Measure 4.6-1a, the potential of mining-period reclamation activities and final reclamation activities to violate water quality standards or substantially degrade water quality would be less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measure 4.6-1a: Compliance with General Permit Requirements

Compliance with requirements set forth in applicable NPDES and SWPPP. The operator of the Clayton Quarry (Operator) shall comply with the requirements set forth in any applicable NPDES program or SWPPP requirements, including, but not limited to, submitting a Notice of Intent prior to the start of activities under the Construction General Permit, updating the existing SWPPP as required by the Industrial General Permit based on changes to site conditions, and implementing typical BMPs for the protection of water quality.

Level of Significance After Mitigation: Less than significant.

Post-Reclamation Conditions

No post-reclamation uses are proposed that would involve activities or facilities that would require the use of hazardous materials, generate trash, or that would otherwise have the potential to degrade water quality or violate water quality standards or WDRs. However, once mining is complete, a quarry pit lake would form as the former mining excavation fills with water over time. The primary source of water into the quarry pit lake would be local rainfall, including rain that falls on the quarry pit and runoff that occurs from the surrounding watershed and the exposed quarry walls. It is estimated that it would take approximately 158 years for the quarry-lake water surface to rise to the proposed pit outlet elevation of 735 feet msl. Once the quarry pit lake reaches the outlet elevation, the quarry pit lake would have a surface area of approximately 32 acres and would hold over 8,500 acre-feet of water. The watershed around the quarry pit lake would consist of 17 acres of undisturbed vegetated land, 41 acres of diabase high walls, and eight acres of Knoxville formation slopes, as described in Table 4.6-5, "Existing and Proposed Watershed Areas." The undisturbed vegetated land is underlain by diabase, therefore, about 88 percent of the 66-acre watershed area would consist of diabase.

TABLE 4.6-5
EXISTING AND PROPOSED WATERSHED AREAS

Watershed ID	Watershed Description	Existing Area (acres)	Proposed Area (acres)
P1	Water surface within the quarry pit	7	32
P2	Exposed quarry pit walls and haul road	64	49[a]
P3	Vegetated areas	19	17
Total Quarry Watershed Area	**Areas Draining To Quarry Pit**	**90**	**98**
M1	Contains the south overburden fill area and the majority of the north overburden fill area	89[a]	81
M2	Contains the northern portion of the north overburden fill area	11	11
Total Mitchell Creek Watershed Area	**Areas Draining To Mitchell Creek**	**100**	**92**

Source: Appendix G-1
Notes: Watersheds on the project site are shown on Figure 4.6-3. P1, P2, and P3 are watersheds draining to the quarry pit. M1 and M2 are watershed draining to Mitchell Creek.
a = this area includes the transitional watershed T, which is an 8-acre watershed in the Knoxville formation that drains towards watershed M1 under existing conditions, but would drain towards watershed P1 under the revised reclamation plan.

The post-mining water quality in the quarry pit lake would primarily be influenced by leaching of the minerals from the underlying geologic formations in the runoff from the surrounding watershed. Studies indicate that oxidation of pyrite in the presence of water and limestone or dolomite results in insoluble ferric (Fe3+) oxide, dissolved ions of sulfate, calcium and magnesium, and carbon dioxide. Such a reaction has the potential to result in elevated concentrations of sulfate, calcium, and magnesium along with elevated TDS levels in the runoff water to the pit, thereby influencing the quality of pit lake water and the quality of water that would discharge from the pit lake once reaching the outlet elevation.

Geochemical conditions on the diabase and in the quarry lake are likely to change over time. At the cessation of mining, surface diabase would not yet be submerged and would be exposed to the atmosphere and intermittent seasonal precipitation. As the quarry fills with water forming the pit lake,

the exposed diabase would be submerged as the lake level rises and the diabase exposure to available oxygen would diminish. The absence of oxygen under submerged conditions would restrict oxidation of the pyrite or other sulfides. Therefore, water quality in the quarry lake would change over time as the lake fills and oxidization rates change. Thus, corrective actions that may be required early in the life of the quarry lake would be expected to change, and could become unnecessary, as the lake fills and once it is full. Likewise, if corrective actions are not necessary early on, that does not necessarily indicate they would not be needed later. It is also possible that the specific exceedances could change over time, necessitating a change in the appropriate corrective measure.

As described above in the "Watershed and Water Quality Analysis" section, leaching tests were conducted on samples of diabase and Knoxville formation to evaluate the potential for minerals within the rocks to leach into rain water that runs off of reclaimed surfaces and enters the quarry. The concentrations of constituents detected in the leachate samples collected in were below the primary and secondary MCLs with the exception of concentrations of six constituents (i.e., arsenic, manganese, pH, conductivity, TDS, sulfate). A Quarry Lake Water Quality Analysis (see Appendix G-4) was completed to evaluate changes in concentrations of the constituents of concern identified in the Adaptive Management Program (see Appendix G-3) and of the metals that could harm wildlife in the lake and that were detected in at least one sample. The results of the analysis are summarized in Table 4.6-6, "Estimated Incremental Constituent Concentrations Over Time."

TABLE 4.6-6
ESTIMATED INCREMENTAL CONSTITUENT CONCENTRATIONS OVER TIME

Constituent Concentrations (mg/L) [a]					Water Quality Standards (mg/L)		
Quarry Lake Water Elevation (feet above mean sea level)	*410*	*530*	*630*	*735*	*MCL*	*Basin Plan* [c]	*EPA Aquatic*
Total Years to Fill	*21*	*41*	*71*	*158*			
Arsenic	0.0009	0.001	0.0012	0.0016	0.01	0.15/0.34 [d]	0.15/0.34 [d]
Manganese	0.0138	0.0148	0.0164	0.0218	0.05 [e]	0.05 [e]	NA
Total Dissolved Solids [b]	174	186	206	274	500-1,000 [e]	500-1,000 [e]	NA
Sulfate	95	102	113	150	250-500 [e]	250-500 [e]	NA
Iron	0.1195	0.1281	0.1421	0.1899	0.3 [e]	0.3 [e]	1.0
Selenium	0.0005	0.0005	0.0006	0.0009	0.05	0.005/0.02 [d]	0.0015 [f]
Vanadium	0.0129	0.014	0.0157	0.0215	NA	NA	NA

Source: Appendix G-4, SWRCB 2018a, SWRCB 2018b, RWQCB 2017, EPA 2016, EPA 2021b.

Notes: MCL = Maximum Contaminant Level; NA = not available or not applicable; EPA = U.S. Environmental Protection Agency; mg/L = milligrams per liter.

a) pH was not evaluated because there would be little or no decaying organic matter in the lake that could affect pH. Furthermore, as discussed in the Adaptive Management Program (see Appendix G-3), the Knoxville Formation and the diabase rock both have a net acid neutralization potential, so acid rock drainage would not occur within the reclaimed quarry and pH levels will not fall below applicable water quality standards

b) Total Dissolved solids are an indicator of conductivity.

c) Table 3.5 of the Basin Plan includes MCLs for certain beneficial uses.

d) 4-day average/1-hour average, also referred to as chronic and acute.

e) Secondary MCL.

f) 30-day average based on EPA (2016).

As shown in Table 4.6-6, none of the constituents detected would exceed any existing water quality standards. TDS is an indicator of conductivity, and because TDS is estimated to occur at levels that are

about half of the MCL and Basin Plan water quality standards, this indicates that conductivity would not be likely to exceed acceptable levels. Once the water level reaches an elevation of 735 feet msl, then any excess water would be discharged from the quarry lake. At that point, the volume of water entering the lake and the volume of water leaving the lake would be the same so that the constituent concentrations would remain constant from that time forward.

It should be noted that mining activities are anticipated to continue until the year 2068, after which the quarry pit lake would take approximately 158 years to fill to the design discharge elevation of 735 feet msl. It is probable that water quality standards will change during this time period. Should changes in water quality standards result in the exceedance of a standard for any given constituent, it is possible that discharges from the quarry pit lake could violate water quality standards. The implementation of Mitigation Measure 4.6-1b would require the Operator to submit a Report of Waste Discharge to the RWQCB prior to discharging any pit lake water and receive WDRs prior to pit lake discharges to downstream water bodies. The WDRs would include a Monitoring and Reporting Program that would verify the concentration of constituents of concern and, if necessary, require the treatment of lake water prior to discharge. Additionally, Mitigation Measure 4.6-1c also requires the establishment of a funding mechanism dedicated to compliance with regulatory requirements for the management and treatment of discharges. Therefore, with implementation of Mitigation Measure 4.6-1c, the potential of the surface water discharges from the quarry pit lake to degrade downstream water quality or violate water quality standards would be less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.6-1b: *RWQCB Discharge Approvals*

The operator of the Clayton Quarry (Operator) shall submit a Report of Waste Discharge to the San Francisco Regional Water Quality Control Board (RWQCB) prior to discharging any pit lake water. The report shall include information on the estimated characteristics of the quarry pit lake water quality as described in the "Quarry Lake Water Quality and Aquatic Life Criteria" Technical Memorandum, prepared by EMKO Environmental, Inc., July 2, 2021. The Operator shall implement any WDRs issued by the RWQCB in response to the Report of Waste Discharge. The Operator shall inform the County that a Report of Waste Discharge has been submitted, and shall provide the County with evidence of NPDES coverage and WDR compliance prior to any off-site discharge and at any time thereafter upon County request.

Mitigation Measure 4.6-1c: *Funding Mechanism*

Within 30-days after the effective date of this permit, the Operator shall submit for review and approval by the Director of Conservation and Development, or designee, ("Director") a proposed funding mechanism (e.g., a bond) and cost basis to secure costs related to the required post-reclamation activities. The funding mechanism shall be in a form and an amount reasonably acceptable to the Director and shall be sufficient to cover costs associated with those post-reclamation activities described in Table 1 below, including the activities required by Mitigation Measure 4.6-7. The funding mechanism shall be held by the County, or held and managed by a third party approved by the Operator and County, as determined by the Director. On the fifth anniversary of this permit's effective date, and at five-year intervals thereafter, the Operator shall submit an updated post-reclamation activity funding mechanism and cost basis to the Director for review and approval. The updated cost basis must be calculated to account for inflation and updated materials, construction, and maintenance costs, sufficient for the

Director to determine whether the funded amount sufficiently secures anticipated costs related to the required post-reclamation activities. The Operator shall submit a Condition of Compliance review application (or equivalent) and associated deposit with each 5-year review to cover County time and material costs related to the Director's review of the updated funding mechanism and cost basis.

Table 1
Clayton Quarry Lake Drainage Post-Reclamation Inspection and Maintenance Activities

Item	Description	Implementation Timing
Inspection Items		
1	Quarry pit drainage outlet structure, including: a. Condition of concrete bulkhead (e.g., spalling, exposed reinforcing, cracks, joint openings) b. Condition of steel plate (e.g., abrasion, rust) c. Condition of debris screen (e.g., abrasion, rust, connection to steel plate)	Annual inspection
2	24-inch HDPE drainage pipe (culvert), including: a. Condition of pipe at inlet b. Condition of pipe at manholes (2) c. Condition of pipe connection at Mitchell Canyon Rd.	Annual inspection
3	Rip-rap mound above drainage outlet (e.g., scour, undermining, washout, or other damage)	Annual inspection
4	Quarry lake perimeter fencing	Annual inspection
Maintenance Items		
5	Repairs to quarry pit drainage outlet structure (e.g., concrete facing and reinforcement)	Deficiencies to be addressed prior to next inspection; immediate repair if structural integrity of drainage outlet is in jeopardy
6	Clean-out of 24-inch HDPE drainage pipe (culvert)	Deficiencies to be addressed prior to next inspection; clean out sediment and debris prior to onset of rainy season, if needed
7	Maintenance of rip-rap mound (e.g., clean-out of sediment and debris and replacement of rip- rap rock)	Deficiencies to be addressed prior to next inspection; clean out sediment and debris and re-establish rip-rap protection prior to onset of rainy season, if needed
8	Repair damaged quarry lake perimeter fencing	Deficiencies to be addressed prior to next inspection; repair wire mesh and barbed wire, if needed

Level of Significance After Mitigation: Less than significant.

Groundwater Quality

As described under Section 4.6.1.5, above, the western areas of the project site, where the quarry pit is located, are underlain by diabase rock types and the Knoxville formation, where groundwater occurs only in fractures and results from surface water seeping into the fractures in the rock mass. The eastern portion of the project site is underlain by alluvium and is part of the Clayton Valley groundwater basin (see Figure 4.4-1). Both the Geotechnical Evaluation (see Appendix F) and the Hydrology and Water

Quality Evaluation (see Appendix G-1) indicate that the quarry is not hydraulically connected to the Clayton Valley groundwater basin.

Because the quarry pit is not hydraulically connected to the Clayton Valley groundwater basin, reclamation activities within the quarry pit and the formation of the proposed quarry pit lake would not have the potential to come into contact with and potentially degrade local groundwater quality. The activities proposed on the eastern portion of the project site that is underlain by the Clayton Valley groundwater basin generally involve only shallow disturbance of the ground surface associated with removal of processing plant facilities, contour grading, resoiling, and installation of drainage infrastructure. Groundwater monitoring at a location 1.5 miles north of the project site indicates groundwater levels in the vicinity of the project site range from about 30 to 40 feet below the ground surface (Terraphase Engineering Inc. 2021). As described in Section 2.5.3, "Surface and Groundwater Quality Protection," the deepest ground disturbance proposed within the portion of the project site that overlays the Clayton Valley groundwater basin would be excavation of between 5 to 10 feet below the ground surface for the development of the proposed drainage pipeline. Therefore, the activities proposed under the revised reclamation plan would not have the potential to encounter groundwater. This impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.6-2: Substantially Decrease Groundwater Supplies or Interfere Substantially With Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin

As described under Section 4.6.1.5, above, the western areas of the project site, where the quarry pit is located, are underlain by diabase rock types and the Knoxville formation, where groundwater occurs only in fractures and results from surface water seeping into the fractures in the rock mass. The eastern portion of the project site is underlain by alluvium and is part of the Clayton Valley groundwater basin (see Figure 4.4-1). There is no sustainable groundwater management plan in place for Clayton Valley groundwater basin, which is classified as a very low priority basin under the SGMA.

The proposed project would not require the use of groundwater and would not develop impervious surfaces that could interfere with groundwater recharge. The impervious surfaces at the plant site, which is located within the Clayton Valley groundwater basin, would be removed when the processing plant facilities are removed as part of final reclamation. This would potentially increase groundwater recharge within the groundwater basin.

The final elevation of the quarry pit would be approximately 110 feet msl. The lowest elevation of the project site (other than the quarry pit) is approximately 560 feet msl at the Mitchell Canyon Road entrance to the project site. Therefore, the quarry pit would be approximately 450 feet deeper than the lowest elevation of the project site. If the quarry pit were hydraulically connected to the Clayton Valley groundwater basin, this could result in the flow of water from the Clayton Valley groundwater basin into the quarry pit. DWR (2021a) groundwater basin mapping indicates that the quarry pit is not underlain by a groundwater basin. In addition, as described under Section 4.6.1.5, above, both the Geotechnical Evaluation (see Appendix F) and the Hydrology and Water Quality Evaluation (see Appendix G-1) indicate that the quarry is not hydraulically connected to the Clayton Valley groundwater basin located east and north of the quarry pit. Upon completion of mining, the quarry pit

would fill with water from rainfall and spring flows through the fractures. The spring flows do not represent water entering the quarry from outside of the watershed. The springs are just an additional mechanism by which local rainfall enters the current dewatered quarry. Therefore, the development of the quarry pit lake under the revised reclamation plan would not interfere with or draw water away from the adjacent Clayton Valley groundwater basin.

The proposed project would not require the use of groundwater and would decrease impervious surfaces. Furthermore, the quarry pit lake would not be hydrologically connected to the Clayton Valley groundwater basin and therefore water from the Clayton Valley groundwater basin would not be drawn to the quarry pit. For these reasons, the potential of the proposed project to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the local groundwater basin would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-3: Substantially Alter Drainage Patterns in a Manner Which Would Result in Erosion or Siltation Within Areas That Drain to the Northern Watershed

As described above in the "On-Site Drainage" section and shown on Figure 4.6-3, the project site is divided into multiple watersheds (watersheds M1, M2, P1, P2, P3, and T, plus the northern watershed).

The revised reclamation plan would not alter the northern watershed area with the exception of the removal of the existing processing plant facility and development of a berm along the northeast corner of the project site. The existing settling ponds and containment basins would be re-graded to final contours, but the stormwater detention pond at the open field to the north of the processing plant site (shown on Figure 2-5) would be retained. Post-reclamation runoff from the plant site would be directed to the stormwater detention pond. The stormwater detention pond can hold up to 225,000 gallons of stormwater per day, which is equivalent to the 225,000 gallons per day of stormwater that the existing stormwater conveyance and containment system is designed to hold (CEMEX 2019). Any excess stormwater would enter the existing drainage swale across the open field that would convey runoff to existing and man-made drainage courses in DA96 in the City of Concord. The removal of the processing plant facility would decrease impervious surfaces within the northern watershed area and thereby decrease both the peak flow rate and the total runoff generated from the plant site area relative to existing conditions. The northern watershed area, including the proposed berm, would be resoiled and revegetated in accordance with the revised reclamation plan, which would stabilize the soil surface.

The proposed project would continue to retain up to 225,000 gallons per day of stormwater from the plant site, would lower peak flow rates and total runoff generated at the plant site, and would revegetate the northern watershed area that drains to DA96. This would minimize and potentially decrease the potential for erosion and siltation to occur on-site or off-site. For these reasons, the potential impact related to erosion and siltation as a result of changes in drainage patterns within the northern watershed would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-4: Substantially Alter Drainage Patterns in a Manner Which Would Result in Erosion or Siltation Within the Quarry, Mitchell Creek, and Transitional Watershed Areas

As described above in the "On-Site Drainage" section and shown on Figure 4.6-3, the project site is divided into multiple watersheds (watersheds M1, M2, P1, P2, P3, and T, plus the northern watershed). The proposed and existing watershed areas are summarized in Table 4.6-5 under Impact 4.6-1, above.

The proposed project would alter drainage on the project site such that the watershed T would drain into the quarry pit (watershed P1); under existing conditions, watershed T drains to Mitchell Creek via watershed M1. The revised reclamation plan would not add impervious surfaces to the project site.

As described under Section 4.6.3.2, "Analysis Methodology," above, the existing and predicted runoff volumes and peak flow rates within the watersheds were estimated for 10-year (24-hours), 100-year (24-hour), and 20-year (1-hour) events. The results of the analysis are summarized in Table 4.6-7, "Existing and Reclaimed Peak Runoff for Design Storm Events."

Erosion and Sedimentation with Quarry Pit Watersheds

As described in Table 4.6-5, the quarry pit watershed areas consist of water surface at the bottom of the quarry pit (watershed P1), undisturbed vegetated areas (watershed P2), and exposed quarry pit walls (watershed P3). With the exception of wave action, the lake at the bottom of the quarry pit would be a still body of water that would not result in erosion. When the quarry pit lake reaches its final elevation of 735 feet msl, both the diabase and Knoxville quarry walls would be exposed to long-term, repeated action of wind-generated waves against the shore. The diabase rock is a hard igneous rock that is not susceptible to erosion from waves, precipitation, or stormwater runoff. The Knoxville formation is a sedimentary rock and therefore is more vulnerable to erosion than the diabase rock. As described in Chapter 2, and consistent with the recommendations of the Geotechnical Evaluation (see Appendix F), the revised reclamation plan proposes to install light-class rip-rap on the Knoxville slope faces on the east rim of the quarry that may come in contact with water in the future quarry pit lake. Slopes on the east rim of the quarry that do not receive rip-rap treatment would be ripped, disced, and/or scarified and then revegetated. The installation of rip-rap and vegetation would protect the Knoxville formation slopes from erosion due to wave action and stormwater runoff.

The quarry east rim haul road above an elevation of approximately 635 feet msl would be located in the Knoxville formation and would be vulnerable to erosion. As described in Chapter 2, the revised reclamation plan proposes to install adequate drainage controls along the quarry road (e.g., cross slopes, rock-lined ditches, and rock slope protection swales) to direct precipitation and runoff from Knoxville slopes to the diabase benches in the quarry pit (located below an approximate elevation of 635 feet msl). These drainage facilities would be designed to accommodate runoff from a 100-year, 24-hour storm. These erosion control measures are consistent with recommendations of the analysis of runoff from the east rim haul road (see Appendix G-6). The quarry east rim haul road below an elevation of approximately 635 feet msl would be located in diabase and would therefore not be vulnerable to erosion. The undisturbed areas of watershed P3 are vegetated. Vegetation stabilizes soils and therefore vegetated areas have low potential for erosion.

TABLE 4.6-7
EXISTING AND RECLAIMED PEAK RUNOFF FOR DESIGN STORM EVENTS

Storm Frequency	Peak Runoff (cubic feet per second) At Time of Concentration							
	Quarry Watersheds		*Mitchell Creek Watersheds*					
	Existing Watersheds P1, P2, and P3 (90 acres)	*Proposed Watersheds P1, P2, P3, and T (98 acres)*	*Existing Watershed M1+T (89 acres)*	*Proposed Watershed M1 (81 acres)*	*Existing Watershed M2 (11 acres)*	*Proposed Watershed M2 (11 acres)*	*Total Existing Mitchell Creek Watersheds M1+M2+T (89 acres)*	*Total Proposed Mitchell Creek Watersheds M1+M2 (81 acres)*
10-Year, 24-hour	140	160	70	65	9	9	79	74
20 Year, 1-hour	170	200	85	80	11	11	96	91
100-Year, 24-hour	250	270	130	115	16	16	146	131

Source: Appendix G-1.
Notes: Watersheds on the project site are shown on Figure 4.6-3.

The implementation of Mitigation Measures 4.6-4a and 4.6-4b would require the incorporation of all erosion control measures recommended in the Geotechnical Evaluation (see Appendix F) and the analysis of runoff from the east rim haul road (see Appendix G-6). These measures include the placement of rip-rap and vegetation along the quarry pit lake shore, and the installation of drainage controls such as cross slopes and rock-lined ditches along the portion of east rim haul road located in the Knoxville formation. With implementation of Mitigation Measures 4.6-4a and 4.6-4b, the potential of the implementation of the revised reclamation to result in increased erosion and sedimentation within the quarry pit lake watershed would be less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measure 4.6-4a: *Incorporate Haul Road Erosion Control Measures*

Incorporate erosion control measures into the revised reclamation plan consistent with recommendations of the "Runoff from East Rim Access and Upper Quarry Haul Roads" Memorandum, prepared by EMKO Environmental, Inc., April 18, 2017. The memorandum shall be appended to the Mitigation Monitoring and Reporting Program and shall be incorporated into the conditions of approval for the project. Erosion control measures include, but are not limited to the installation of drainage controls such as cross slopes and rock-lined ditches along the portion of east rim haul road located in the Knoxville formation.

Mitigation Measure 4.6-4b: *Incorporate Quarry Pit and Overburden Fill Area Erosion Control Measures*

Incorporate erosion control measures into the revised reclamation plan consistent with recommendations of the "Geotechnical Evaluations for Revised Reclamation Plan, Clayton Quarry, Clayton, California" Report, prepared by Golder Associates, May 2017. The geotechnical evaluation shall be appended to the Mitigation Monitoring and Reporting Program and shall be incorporated into the conditions of approval for the project. These erosion control measures include, but are not limited to, the placement of rip-rap and vegetation along the quarry pit lake shore, as well as the following measures to be implemented within the overburden fill areas:

- *2.5H:1V or flatter slopes with wheel and track rolling compactive effort;*
- *Slope heights under 50 feet vertical, unless interim benches are used for drainage control;*
- *Use of "J-ditches" or functional equivalent where beneficial to direct drainage horizontally across fill areas to designated drainage channels;*
- *Fill slopes revegetated with appropriate erosion control seed mix; and*
- *Erosion control fabric, wattles and other BMPs implemented as needed to reduce erosion and improve stability of the surficial layer of soil.*

Level of Significance After Mitigation: Less than significant.

Erosion and Sedimentation within Mitchell Creek Watersheds

Watersheds M1 and M2 contain the north and south overburden fill areas. As described in Section 2.5.8, "Protection of Fish and Wildlife Habitat," in Chapter 2, one unnamed ephemeral channel (300 linear feet) in the footprint of the south overburden fill area would be filled in the development of the south overburden fill area. This channel is located entirely within the boundaries of the project site and does not flow off-site. The Operator would obtain any necessary authorizations from regulatory agencies

prior to the placement of fill in the ephemeral channel (e.g., U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and/or Regional Water Quality Control Board). As described in Section 2.5.4, "Drainage, Sediment, and Erosion Control," in Chapter 2, erosion control measures would be incorporated into the overburden fill areas, consistent with the recommendations of the Geotechnical Evaluation (see Appendix F).

The implementation of these measures would minimize erosion and siltation within the overburden fill areas.

The proposed project would not add impervious surfaces to watershed M1. Furthermore, under the revised reclamation plan, quarry excavation would alter the direction of runoff within watershed T from watershed M1 and into the quarry. This would reduce the area of watershed M1 from 89 acres to 81 acres (Table 4.6-5). Consequently, total runoff rates and volumes flowing within watershed M1 would be reduced, as shown on Table 4.6-7.

The proposed project would not add impervious surfaces to watershed M2, and this watershed would remain the same size as under existing conditions (Table 4.6-5). Therefore, the proposed project would not substantially alter drainage patterns and runoff rates within watershed M2 (Table 4.6-7).

The proposed project would reduce or maintain the areas of watersheds M1 and M2, and would not add impervious surfaces to watersheds M1 and M2. In addition, the implementation of Mitigation Measure 4.6-4b would require the proposed project to implement the erosion and siltation control measures recommended in the Geotechnical Evaluation (see Appendix F) in order to minimize erosion and siltation from overburden fill areas. Therefore, with implementation of Mitigation Measures 4.6-4b, the potential for the proposed project to result in changes in drainage patterns that could result in increased erosion and sedimentation within watersheds M1 and M2 would be less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measure 4.6-4b (see Impact 4.6-4).

Level of Significance After Mitigation: Less than significant.

Off-Site Erosion and Sedimentation

Under exiting conditions, runoff from the Mitchell Creek watershed areas (watersheds M1 and M2) and the transitional watershed area (watershed T) drains to Mitchell Creek. Runoff to the quarry watershed areas (watersheds P1, P2, and P3) is contained within the quarry pit and does not flow off-site. As mining progresses as allowed under existing entitlements and under the revised reclamation plan, the east face of the quarry would shift to the east and runoff from watershed T would begin to flow to the quarry pit, and would be contained within the quarry pit until the elevation the quarry pit lake reaches 735 feet msl. The hydrology and water quality study estimates that this would occur about 158 years after mining is completed in 2068. Consequently, runoff rates and volumes flowing from watershed M1 to Mitchell Creek would be reduced to below existing conditions and fully detained for approximately 158 years. Runoff rates and volumes flowing from watershed M2 would remain unchanged. Therefore, total runoff rates and volumes flowing to Mitchell Creek from the project site would decrease, and the potential for off-site erosion and sedimentation to increase in the first 158-year period after mining is complete would be less than significant.

When the water level in the quarry pit lakes rises to 735 feet msl, water would begin to flow into the proposed outlet structure and drainage pipeline, and would enter the DA71A drainage system.

Consequently, flows to DA71A would increase relative to existing conditions. The drainage pipeline from the quarry pit lake would enter the DA71A drainage system by flowing to a 15-inch reinforced concrete pipe that connects to an 18-inch reinforced concrete pipe, before discharging to Mitchell Creek. Therefore, although discharges from the quarry pit lake would increase runoff rates and volumes to the DA71A drainage system, the system consists of reinforced concrete pipelines that are not vulnerable to erosion. Thus, discharges from the quarry pit lake under the proposed project would not have the potential to increase erosion and sedimentation within the DA71A drainage system.

With regards to proposed flows to Mitchell Creek, Table 4.6-8, "Change in Peak Runoff to Mitchell Creek," shows that the flow rate through the outlet structure would range from 2.3 cfs during the 20-year, 1-hour storm to 5.5 cfs during the 100-year storm. These flow rates are lower than the flow rates generated from watershed T under existing conditions. Therefore, runoff rates to Mitchell Creek would decrease by between 2.1 cfs for the 10-year storm to 6.0 cfs for the 100-year storm during storm events that occur after the quarry pit lake water level reaches 735 feet msl. Furthermore, the peak storm flows from the quarry would likely not occur until after the peak flows from the lower sub-watersheds have begun to recede due to the time it would take water in the quarry pit lake to accumulate and rise above the outlet structure opening. Consequently, runoff rates within Mitchell Creek would be lower than existing conditions, and the discharges from the quarry pit lake under the proposed project would not have the potential to increase erosion and sedimentation within Mitchell Creek.

TABLE 4.6-8
CHANGE IN PEAK RUNOFF TO MITCHELL CREEK

Storm Frequency	Peak Runoff (cubic feet per second) At Time of Concentration		
	Existing Runoff in Watershed T	*Controlled Discharge from Quarry Pit Lake*	*Change in Runoff to Mitchell Creek*
10-Year, 24-hour	6.3	4.2	-2.1
20 Year, 1-hour	7.8	2.3	-5.5
100-Year, 24-hour	11.5	5.5	-6.0

Source: Appendices G-1 and G-2.
Notes: Watersheds on the project site are shown on Figure 4.6-3.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-5: Substantially Alter Drainage Patterns in a Manner Which Would Result in On-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System

Under the proposed reclamation plan, the runoff from watershed T (shown on Figure 4.6-3) would be altered to flow to the quarry pit instead of to Mitchell Creek via watershed M1. An outlet structure and drainage pipeline would be installed at the quarry pit lake to release flows to the off-site DA71A drainage system along Mitchell Canyon Road and Diablo Downs Road in a controlled manner. This would ensure that on-site flooding would not occur as a result of runoff from watershed T being diverted from watershed M1 to the quarry pit lake.

Similarly, although the areas of the quarry pit lake watersheds (P1, P2, P3) would change under the proposed project as shown in Table 4.6-5, the runoff from these watersheds would be detained in the proposed quarry pit lake and discharged via controlled releases through the proposed outlet structure

and drainage pipeline. This would ensure that on-site flooding would not occur as a result changes in the areas of quarry pit lake watersheds.

As described under Impact 4.6-3, in the northern watershed, the proposed project would continue to retain up to 225,000 gallons per day of stormwater from the plant site, and would lower peak flow rates and total runoff generated at the plant site by removing impervious surfaces. Thus, changes in drainages patterns within the northern watershed would not have the potential to cause on-site flooding or exceedance of the storm drainage system. No other substantial changes in drainage patterns are proposed, and the revised reclamation plan would not add impervious surfaces to any of the on-site watersheds. Therefore, the potential of the proposed project to result in on-site flooding or exceed the capacity of existing on-site storm drainage system would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-6: Substantially Alter Drainage Patterns in a Manner Which Would Result in Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System

DA96 Drainage System

As described under Impact 4.6-3, in the northern watershed, the proposed project would continue to retain up to 225,000 gallons per day of stormwater from the plant site, and would lower peak flow rates and total runoff generated at the plant site by removing impervious surfaces. Thus, changes in drainages patterns within the northern watershed would not have the potential result in off-site flooding or exceed the capacity of the existing DA96 Drainage System.

Mitchell Creek

As described under Impact 4.6-4, runoff rates to Mitchell Creek would decrease under the revised reclamation plan during the 158-year period that the quarry pit lake is filling with water to 735 feet msl because runoff from watershed T (shown on Figure 4.6-3) would be altered to flow to the quarry pit instead of to Mitchell Creek via watershed M1. When the water level in the quarry pit lakes rises to 735 feet msl, water would begin to flow into the proposed outlet structure and drainage pipeline, and would enter the DA71A drainage system which flows to Mitchell Creek. However, as shown in Table 4.6-8 the flow rate through the quarry pit lake outlet structure would be lower than the flow rates generated from watershed T under existing conditions. Therefore, runoff rates to Mitchell Creek would be lower than existing conditions both during both the 158-year period that the quarry pit lake is filling with water and during the period after the water level in the quarry pit lake reaches 735 feet msl. Consequently, the potential of the proposed project to alter drainage patterns in a manner that could result in flooding in Mitchell Creek would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

DA71A Drainage System

As described under Impact 4.6-4, runoff rates to the DA71A drainage system would increase when the water level in the quarry pit lake reaches 735 feet msl. However, the peak storm flows from the quarry would likely not occur until after the peak flows from the lower sub-watersheds have begun to recede due to the time it would take water in the quarry pit lake to accumulate and rise above the outlet

structure opening. Furthermore, the hydrology and water quality study (see Appendix G-1) and the DA71A Drainage Area runoff estimates (see Appendix G-5) indicate that the existing capacity of the DA71A storm drain system within the 15-inch reinforced concrete pipeline to which the drainage pipeline would connect is about 18 cfs. As shown on Figure 4.6-2, the drainage pipeline downstream of the 15-inch reinforced concrete pipeline is 18-inches in diameter. The capacity of the 18-inch pipeline is much higher due to the larger diameter and the steeper slope along Diablo Downs Drive compared to Mitchell Canyon Road. Therefore, the 18 cfs capacity of the 15-inch reinforced concrete pipeline is the limiting factor in the DA71A drainage system.

Based on the watershed area and Flood Control District (1991) guidance, the storm drains within DA71A should be designed to convey the runoff from a 10-year, 24-hour storm. Existing discharges to the 15-inch reinforced concrete pipeline during a 10-year, 24-hour storm consist of approximately 10.8 cfs (9 cfs from watershed M2 and 1.8 cfs from Mitchell Canyon Road) (Appendix G-5). The controlled discharge from the quarry pit lake for the 10-year, 24-hour storm would be approximately 4.2 cfs, as shown in Table 4.6-8. Therefore, total discharge to the DA71A storm drain system would be approximately 15.0 cfs and would not exceed its existing capacity.

Given that the peak flows in the DA71A drainage system would have begun to subside before discharges from the quarry pit lake would occur, and given that the discharges from the quarry pit lake would not cause an exceedance of the capacity of the DA71A drainage system even if the discharges occurred during peak flows, the potential of the proposed project to alter drainage patterns in a manner that could result in flooding or the exceedance of the capacity of the DA71A drainage system would be less than significant.

Flooding Due to Dam Failure Inundation

The proposed project would develop a reservoir (i.e., the quarry pit lake) on the project site. Failure of the quarry pit slopes could result in the uncontrolled release of water and downstream inundation. If the dam height is more than 6 feet and it impounds 50 acre-feet or more of water, or if the dam is 25 feet or higher and impounds more than 15 acre-feet of water, it will be under DSoD jurisdictional oversight, unless it is exempted. The Hydrology and Water Quality Evaluation (Appendix G-1) indicates that, unless multiple 100-yr, 24-hr storms occur within three days of each other, the quarry pit lake would contain less than 50 acre-feet of water above the elevation of the invert elevation of the outlet structure, and the depth of the water above that elevation would be less than about 1.3 feet. Because the outlet structure and pipe would be constructed completely within undisturbed native geologic materials, there would be less than 50 acre-feet of water above the outlet structure, and the depth of the water above the outlet structure would be less than 6 feet, the reclaimed quarry lake and outlet structure would not fall under the jurisdiction of DSoD. Correspondence from DSoD to CEMEX dated February 7, 2019 confirms this jurisdictional status (Tapia, pers. comm., 2019).

In addition, as discussed under Impact 4.4-4, in Section 4.4. the slope stability analyses completed of the east and west quarry walls and of the Knoxville formation/diabase contact indicate that the proposed design of the quarry provides acceptable factors-of-safety for slope stability under both static and pseudo-static (seismic) conditions. These analyses evaluated conditions that would occur when the quarry pit is excavated to a depth of 110 feet msl, and when the quarry pit is excavated and filled with water to a depth of 735 feet msl. The results of these analyses indicate that there is minimal potential for a landslide to occur at the quarry pit lake that could result in the uncontrolled release of water from the lake. However, the Geotechnical Evaluation (see Appendix F) notes that differences between the geotechnical characterization and geologic models described in this report and the actual

geotechnical and geologic conditions encountered as the east side of the quarry pit is mined should be anticipated. The implementation of Mitigation Measure 4.4-1 would require periodic inspection of the quarry slopes by a qualified engineering geologist or geotechnical engineer. The engineering geologist or geotechnical engineer would provide recommendations to mitigate slope instability concerns that are not addressed by the most recent geotechnical investigation (see Appendix F). This would reduce the potential for inundation of downstream areas to occur as a result of slope instability within the quarry pit lake to a less-than-significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measure 4.4-4 (see Impact 4.4-4).

Level of Significance After Mitigation: Less than significant.

Impact 4.6-7: Substantially Alter Drainage Patterns in a Manner Which Would Result Uncontrolled Discharges From the Quarry Pit Lake and Thereby Result in On- Or Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System

Under the proposed reclamation plan, the runoff from watershed T (shown on Figure 4.6-3) would be altered to flow to the quarry pit instead of to Mitchell Creek via watershed M1. An outlet structure and drainage pipeline would be installed at the quarry pit lake to release flows to the DA71A drainage system along Mitchell Canyon Road and Diablo Downs Road in a controlled manner. However, if maintenance is not conducted during the estimated 158-year duration after the development of the proposed outlet structure and drainage pipeline (anticipated in 2068, after the completion of mining), the structures could degrade and/or could become obstructed with debris over time. This in turn could prevent water from flowing through the structures, as proposed. The Hydrology and Water Quality Evaluation estimates that it would take 33 years for the quarry pit lake to fill from the elevation of the outlet structure (735 feet msl) to the lowest elevation of the native geologic material around the rim of the quarry (750 msl). It would take an additional 14 years for the water to rise from 750 to 755 feet msl (a 5-foot-tall rip-rap berm would be placed around the lake to prevent wave overtopping). The Hydrology and Water Quality Evaluation estimates that overtopping of the quarry pit lake would generate outflow as high as 160 cfs for a 10-year (24-hour) storm, 200 cfs for a 20-year (1-hour) storm, and 270 cfs for a 100-year (240-hour) storm. These rates are approximately double the existing runoff rates from the Mitchell Creek watersheds (Table 4.6-7) and approximately two orders of magnitude greater than the controlled discharge rates through the outlet structure (Table 4.6-8). Therefore, the overtopping of the quarry pit lake would likely result in flooding due to the exceedance of the capacity of the existing downstream drainage systems, if it actually occurred.

As shown in Figure 2-8, "Revised Reclamation Plan Detail," in Chapter 2, two manholes would be developed along the proposed pipeline to allow for maintenance access. Additionally, the Hydrology and Water Quality Evaluation notes that a 12-inch HDPE pipeline would be sufficient to convey flows from the quarry pit lake, but that the project proposed to develop a 24-inch pipeline to provide greater access for maintenance and minimize potential for sediment buildup that reduces capacity in the pipeline. The implementation of Mitigation Measure 4.6-7 would require regular inspection and as-needed repair of the outlet structure and drainage pipeline. The implementation of Mitigation Measure 4.6-1c would ensure that long-term funding is available for the completion of the inspections and repairs.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measures: *Implement Mitigation Measures 4.6-1c (see Impact 4.6-1).*

Mitigation Measure 4.6-7: *Quarry Pit Lake Outlet Structure and Pipeline Maintenance.*

Following the construction of the quarry pit lake outlet structure and drainage pipeline, the operator of the Clayton Quarry shall retain a qualified professional engineer approved by the County to conduct inspection and as-needed repair of the drainage pipeline annually, in the late summer/early fall, and after any earthquake in Contra Costa County that generates strong (modified Mercalli Intensity VI) or greater ground shaking. Reports documenting inspection findings and any repair completed shall be submitted to the County after each inspection.

Level of Significance After Mitigation: Less than significant.

Impact 4.6-8: Substantially Alter Drainage Patterns in a Manner Which Would Impede or Redirect Flood Flows

As described under Section 4.6.1.5, above, the project site is located in an area mapped Zone X, Area of Minimal Flood Hazard. The project site elevation is greater than 500 feet msl, and therefore the project site is not subject to coastal hazards such as tsunami and sea level rise. The project site is not located within or near a mapped dam failure inundation zone (DSoD 2021). Because the project site is not subject to flooding, the proposed project would not have the potential to impede or redirect flood flows.

Level of Significance: No impact

Mitigation Measure: None required.

Impact 4.6-9: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation

As described under Section 4.6.1.5, above, the project site is located in an area mapped Zone X, Area of Minimal Flood Hazard. The project site elevation is greater than 500 feet msl, and therefore the project site is not subject to coastal hazards such as tsunami and sea level rise. The project site is not located within or near a mapped dam failure inundation zone (DSoD 2021).

There are no lakes on or near the project site that could cause flooding on-site due to seiche. However, the proposed project would result in the formation of a quarry pit lake on the project site. As part of the Geotechnical Evaluation (see Appendix F), Golder evaluated the potential for a landslide at the south quarry pit slope to result in a seiche that could overtop the sides of the pit lake. The analysis found that a maximum wave height of about 10 feet would be generated, which could result in a run-up slope height of 13 feet along the opposite shore. The resulting overtopping would generate flows of about 0.1 gpm per linear foot, and would not likely exceed a total volume of 20 gallons in a seiche event. This volume would be readily absorbed by the proposed rip-rap along the shore of the quarry pit lake, as noted in the Hydrology and Water Quality Evaluation (see Appendix G-1), and there would be no sources of pollutants along the shores of the lake that could be exposed to this water.

The proposed land use under the reclamation plan is open space, which would not involve the use or storage of hazardous materials on the project site that could be released in the event of flood. As

discussed above, the risk of flood hazard on the project site is low. Therefore, the potential release of pollutants due to project inundation would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.6-10: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan

The proposed project would not require the use of groundwater and would not develop impervious surfaces that could interfere with groundwater recharge. The western areas of the project site, where the quarry pit is located, are underlain by diabase rock types and the Knoxville formation, where groundwater occurs only in fractures and results from surface water seeping into the fractures in the rock mass. The eastern portion of the project site is underlain by alluvium and is part of the Clayton Valley groundwater basin (see Figure 4.4-1). The Geotechnical Evaluation (see Appendix F) and the Hydrology and Water Quality Evaluation (see Appendix G-1) both indicate that the quarry is not hydraulically connected to the Clayton Valley groundwater basin. There is no sustainable groundwater management plan in place for Clayton Valley groundwater basin, which is classified as a very low priority basin under the SGMA. For these reasons, the proposed project would not have the potential to conflict with or obstruct a sustainable groundwater management plan.

The Basin Plan is the master policy document that establishes the water quality objectives and strategies needed to protect designated beneficial water uses in the San Francisco Bay region. The SWRCB and RWQCB enforce compliance with the water quality objectives of the Basin Plan through the issuance of NPDES permits. The reclamation activities that would occur during mining would be subject to the Industrial General Permit and associated site-specific SWPPP. Following the completion of mining, activities associated with final reclamation and any post-reclamation activities associated with water quality management as described above at Impact 4.6-1 would need to comply with the NPDES program either by incorporating coverage under the Industrial General Permit through an amendment to the existing site-specific industrial activities SWPPP or by filing a Notice of Intent and SWPPP for compliance under the Construction General Permit. The implementation of Mitigation Measure 4.6-1a would require compliance with NPDES program requirements through SWPPP implementation under either the Industrial or Construction General Permit. The Operator would be required to implement the appropriate measures to ensure that stormwater and non-stormwater discharges from the site would not result in water quality degradation that could conflict with the Basin Plan.

The Quarry Lake Water Quality Analysis (see Appendix G-4) evaluated the anticipated water quality of the quarry pit lake and found that none of the constituents of concern (arsenic, manganese, TDS, sulfate, iron, selenium, and vanadium) would exceed any existing water quality standards (Table 4.6-6). It should be noted that mining activities are anticipated to continue until the year 2068, after which the quarry pit lake would take approximately 158 years to fill to the design discharge elevation of 735 feet msl. It is probable that water quality standards will change during this time period. Should changes in water quality standards result in the exceedance of a standard for any given constituent, it is possible that discharges from the quarry pit lake could violate water quality standards. Mitigation Measure 4.6-1b would require the project to submit a Report of Waste Discharge to the RWQCB prior to discharge of water from the quarry pit lake that would notify the RWQCB of the planned quarry pit lake discharges to the downstream water bodies. Any WDRs issued by the RWQCB in response to the Report of Waste Discharge would be implemented. .

Compliance with these permits and implementation of Mitigation Measures 4.6-1a and 4.6-1b would ensure that the revised reclamation plan would not cause water quality impairment of surface waters such that existing and potential beneficial uses of key surface water drainages downstream steam of the project site would be adversely impacted. As a result, the project would not conflict with or obstruct the water quality objectives of the Basin Plan.

Level of Significance Before Mitigation: Potentially significant**.**

Mitigation Measures: Implement Mitigation Measures 4.6-1a and 4.6-1b (see Impact 4.6-1).

Level of Significance After Mitigation: Less than significant.

4.7—LAND USE AND PLANNING

This section of the Draft EIR 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 California Environmental Quality Act (CEQA) Guidelines, mitigation measures are proposed only to address physical impacts that may result from the project.

4.7.1 Environmental Setting

The project site is mainly comprised of mining and processing facilities associated with CEMEX's operation (see Figure 2-4, "Proposed Site Plan," and Figure 2-5, "Existing Facilities" in Chapter 2, "Project Description"). The northern portion of the site (within Assessor's Parcel Number [APN] 122-020-007) contains the plant site, sites of pre-Surface Mining and Reclamation Act (SMARA) mining disturbance (no mining since 1975), a storm water detention pond, and an open field. CEMEX's current mining operations are being conducted in a quarry pit within APN 122-020-013. This area also contains a haul road to the quarry site and the overburden fill area. Additional uses include processing activities, retention/detention basins, stockpiles, administrative offices, truck scales, and other facilities related to mining and processing. The *Contra Costa County General Plan* designates the site as "Agricultural Lands." Furthermore, the site's current zoning classifications is General Agricultural District (A-2) (see Figures 2-6, "General Plan Designations," and 2-7, "Zoning Designations").

Land uses adjacent to the project site include other mining operations (west), open space areas (south and east), recreational facilities (south and southeast), and residential development (north and northeast) (see Figure 2-5). Open space and a separate mining operation, the Lehigh Hanson Aggregates Kaiser Quarry, currently operated by Hanson Aggregates, abuts the proposed project site's western border. To the south and east, the site is bound by open space and Mount Diablo State Park. Mitchell Canyon Road and Mitchell Creek are also located east of the quarry. Residential uses are also located in the city of Concord and unincorporated Contra Costa County to the north and east of the project site. The nearest residential developments are contiguous to the northern and northeastern boundaries of the project area, with the nearest home approximately 30 feet from the northeast corner of APN 122-020-007, the location of the open field. The nearest home to the project site is approximately 65 feet from the entrance driveway.

4.7.2 Regulatory Setting

The site is located in unincorporated Contra Costa county, where the *Contra Costa County General Plan* serves as the applicable general plan document (County General Plan). This document provides overall land use policy direction, and the Contra Costa County Code of Ordinances provides the applicable land use regulations.

Applicable county planning policies and zoning regulations that pertain to the project site are described below, 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, "Project Consistency with Local Planning Documents," 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 EIR 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 Draft EIR.

4.7.2.1 Contra Costa County General Plan

The project site is located in an unincorporated area of Contra Costa County and, as such, the proposed project is subject to the land use regulations and planning policies promulgated in the County General Plan, adopted by the Board of Supervisors on January 18, 2005, reprinted in July 2010, and amended through December 2014. The County General Plan includes the definition and designation of various land use categories, with corresponding allowable uses, intensities, and densities.

Land Use Element

The County General Plan designates the site as "Agricultural Lands." The purpose of the Agricultural Lands designation is to preserve and protect lands capable of and generally used to produce food, fiber, and plant materials. Uses that are allowed in the Agricultural Lands designation include all land dependent and non-land dependent agricultural production and related activities (Contra Costa County 2014).

This subsection lists the applicable land use goals, policies, and programs of the Land Use Element:

Overall Land Use Goals:

Goal 3-G: To discourage development on vacant rural lands outside of planned urban areas which is not related to agriculture, mineral extraction, wind energy, or other appropriate rural uses; discourage subdivision down to minimum parcel size of rural lands that are within, or accessible only through, geologically unstable areas; and to protect open hillsides and significant ridgelines.

Goal 3-M: Protect and promote the economic viability of agricultural land.

Growth Management, 65/35 Land Preservation Standard, Urban Limit Line:

Policy 3-12: Preservation and buffering of agricultural land should be encouraged as it is critical to maintaining a healthy and competitive agricultural economy and assuring a balance of land uses. Preservation and conservation of open space, wetlands, parks, hillsides and ridgelines should be encouraged as it is crucial to preserve the continued availability of unique habitats for wildlife and plants, protect unique scenery, and provide a wide range of recreational opportunities for county residents.

Public Facilities and Services Element

This subsection lists the applicable land use goals, policies, and programs of the Public Facilities and Services Element of the County General Plan :

Overall Public Facilities and Services:

Policy 7-12: The County shall attempt to cooperate with cities when processing applications for subdivisions or other large projects located within a city's Sphere of Influence.

Water Service:

Policy 7-23: The County shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.

Policy 7-24: Opportunities shall be identified and developed in cooperation with water service agencies for use of non-potable water, including ground water, reclaimed water, and untreated surface water, for other than domestic use.

Policy 7-25: Land uses and activities that could result in contamination of groundwater supplies shall be identified, monitored and regulated to minimize the risk of such contamination.

Policy 7-27: The reclamation of water shall be encouraged as a supplement to existing water supplies.

Drainage and Flood Control:

Goal 7-O: To protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare.

Goal 7-P: To protect creeks and riparian zones identified as valuable from damage caused by nearby development activity**.**

Goal 7-Q: To employ alternative drainage systems improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.

Goal 7-U: To support the concept that existing development pays the cost of building and maintaining drainage improvements required to serve existing developed areas.

Policy 7-38: Watershed management plans shall be developed which encourage the development of detention basins and erosion control structures in watershed areas to reduce peak stormwater flows, as well as to provide wildlife habitat enhancement.

Policy 7-40: Alternative drainage system improvements such as floodplains, leveed floodways, bypass channels and culverts, and detention basins, shall be incorporated into new flood control plans and existing plans as they are revised.

Policy 7-41: Aesthetic, environmental, and recreational benefits shall be taken into full consideration when determining the costs and benefits of alternative drainage system improvements.

Policy 7-42: Design guidelines shall be prepared which address aesthetic and engineering characteristics and criteria for alternative drainage system improvements.

Policy 7-47: Where required, if it is not possible to provide a channel cross section sufficient to carry the 100-year flow, detention basins should be developed.

Policy 7-48: Open bypass channels, detention basins and all drainage facility rights of way which are provided at different locations in order to supplement existing natural creeks should be developed as an asset to the development, e.g., as a secondary recreation use.

Policy 7-51: Detention basins shall be designed for multiple uses such as parks and playing fields when not used for holding water, if liability and maintenance issues can be satisfactorily resolved.

Fire Protection:

Policy 7-73: Fire fighting equipment access shall be provided to open space areas in accordance with the Fire Protection Code and to all future development in accordance with Fire Access Standards.

Solid Waste Management:

Goal 7-AG: To reduce the amount of waste disposed of in landfills by:

1. reducing the amount of solid waste generated (waste reduction);
2. reusing and recycling as much of the solid waste as possible;
3. utilizing the energy and nutrient value of the solid waste (waste to energy and composting); and
4. properly disposing of the remaining solid waste (landfill disposal).

Goal 7-AH: To divert as much waste as feasible from landfills through recovery and recycling.

Policy 7-91: Solid waste resource recovery (including recycling, composting, and waste to energy) shall be encouraged so as to extend the life of sanitary landfills, reduce the environmental impact of solid waste disposal, and to make use of valuable resources, provided that specific resource recovery programs are economically and environmentally desirable.

Policy 7-99: Solid waste hauling, with the exception of residential waste collection trucks, on collectors and local streets through residential areas should be avoided.

Hazardous Waste Management:

Goal 7-AM: To eliminate the generation and disposal of hazardous waste materials to the maximum extent feasible, by:

1. reducing the use of hazardous substances and the generation of hazardous waste at their source;
2. recovering and recycling the remaining waste for reuse;
3. treating those wastes not amenable to source reduction or recycling so that the environment and community health are not threatened by their ultimate disposal;
4. incinerating those wastes amenable to this technology; and
5. properly disposing of treated residuals in approved residual repositories.

Conservation Element

This subsection lists the applicable land use goals, policies, and programs of the Conservation Element of the County General Plan :

Overall Conservation:

Goal 8-A: To preserve and protect the ecological resources of the County.

Goal 8-C: To achieve a balance of uses of the County's natural and developed resources to meet the social and economic needs of the County's residents.

Policy 8-1: Resource utilization and development shall be planned within a framework of maintaining a healthy and attractive environment.

Policy 8-2: Areas that are highly suited to prime agricultural production shall be protected and preserved for agriculture and standards for protecting the viability of agricultural land shall be established.

Policy 8-3: Watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Vegetation and Wildlife:

Policy 8-6: Significant trees, natural vegetation, and wildlife populations generally shall be preserved.

Policy 8-10: Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.

Policy 8-14: Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.

Policy 8-21: The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.

Policy 8-28: Efforts shall be made to identify and protect the County's mature native oak, bay, and buckeye trees.

Open Space Element

This subsection lists the applicable land use goals, policies, and programs of the Open Space Element of the County General Plan:

Goal 9-A: To preserve and protect the ecological, scenic, cultural/historic, and recreational resource lands of the county.

Policy 9-1: Permanent open space shall be provided within the county for a variety of open space uses.

Policy 9-2: Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Policy 9-4: Where feasible and desirable, major open space components shall be combined and linked to form a visual and physical system in the county.

4.7.2.2 Contra Costa County Zoning Ordinance

The project site is subject to the Contra Costa County Code of Ordinances Title 8, Zoning. The site's current zoning classifications is A-2 General Agricultural District (A-2) (see Figures 2-6 and 2-7). As the local land use authority, Contra Costa County authorizes surface mining activities on unincorporated lands through the issuance of land use permits and approval of reclamation plans pursuant to County Code of Ordinances Title 8, Zoning, Division 88 Special Land Uses, Chapter 88-11, Surface Mining and Reclamation.

4.7.2.3 Contra Costa County Surface Mining and Reclamation Ordinance

The project site was originally developed by John J. Harrison following the issuance of a quarry permit issued on February 17, 1947. The project site currently operates under LUP numbers 363-67 (operating entitlement), which was approved by Contra Costa County in 1968 and confirmed in 1983, and 2054-81 (reclamation plan entitlement), which was approved by Contra Costa County in 1983, and allow for an expanded quarrying operations beyond the areas covered by the original 1947 permit. These permits regulate the quarry operations mining of construction material aggregates in the northwest quarter of Section 23, Township (T) 1 North (N), Range (R) 1 West (W), Mount Diablo Base and Meridian (MDB&M), stockpiling in the southwest quarter of Section 14 T1N, R1W, and northwest quarter of Section 23, T1N, R1W, MDB&M, blasting and crushing in the quarry pit, and use of Mitchell Canyon Road to Clayton Road as a primary haul road, and they authorize reclamation. Quarrying operations are vested.

As provided by the County's 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. (See Contra Costa County Zoning Code Section 88-11.602, et seq.). Thus, the proposed project is subject to the County Zoning Code.

4.7.2.4 Contra Costa County Tree Protection and Preservation Ordinance

The Contra Costa County Tree Protection and Preservation Ordinance, Chapter 816-6 of Title 8 Zoning Code, provides for the preservation of certain protected trees in the unincorporated area of this county. In addition, this chapter provides for the protection of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development.

The ordinance defines a protected tree as a tree that is adjacent to or part of a riparian, foothill woodland, or oak savanna area, or part of four or more trees, that measures twenty (20) inches or larger in circumference (6.4 inches in diameter) at breast height (measured 4.5 feet above natural grade). Subject trees include any California buckeye (*Aesculus californica*), California juniper (*Juniperus californica*), coast live oak (*Quercus agrifolia*), blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), or native blue or red elderberry (*Sambucus nigra subsp. caerulea* or *S. racemosa* var. *racemosa*). Heritage trees are also protected trees by this definition.

This ordinance requires the following three tree preservation standards, except where otherwise provided by the involved development's conditions of approval or approved permit application.

- Prior to the start of any clearing, stockpiling, trenching, grading, compaction, paving or change in ground elevation on a site with trees to be preserved, the applicant shall install fencing at the dripline or other area as determined by an arborist report of all trees adjacent to or in the area to be altered. Prior to grading or issuance of any permits, the fences may be inspected and the location thereof approved by appropriate county staff.
- No grading, compaction, stockpiling, trenching, paving or change in ground elevation shall be permitted within the dripline unless indicated on the grading plans approved by the county and addressed in any required report prepared by an arborist. If grading or construction is approved within the dripline, an arborist may be required to be present during grading operations. The arborist shall have the authority to require protective measures to protect the roots. Upon completion of grading and construction, an involved arborist shall prepare a report outlining further methods required for tree protection if any are required. All arborist expense shall be borne by the developer and applicant unless otherwise provided by the development's conditions of approval.
- No parking or storing vehicles, equipment, machinery or construction materials, construction trailers and no dumping of oils or chemicals shall be permitted within the dripline of any tree to be saved.

4.7.2.5 Contra Costa County Climate Action Plan

In December 2015, Contra Costa County Board of Supervisors approved the final draft of the Contra Costa County Climate Action Plan (CAP), which would apply to all unincorporated areas of Contra Costa County (Contra Costa County 2015). Incorporated cities are responsible for preparing and implementing their own climate action plans. 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 CAP also lays the groundwork for achieving long-term state GHG reduction goals for 2035. The following implementation measures and actions in the CAP apply to the proposed project:

Climate Action Plan:
Healthy Community Measure 4: Adaptation Integration. Consider potential climate change impacts in local planning documents and processes.

Healthy Community Action 4.1: During the development review process, consider possible impacts of climate change on the project or plan area.

Healthy Community Action 7.4: As healthy community strategies are implemented, consider prioritizing projects and programs that conserve and/or construct green spaces.

4.7.2.6 East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan

The project site falls within the boundaries of the *East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan* (ECCC HCP/NCCP). The ECCC HCP/NCCP is intended to provide an effective framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. The Plan allows for the County to implement the Plan to control endangered species permitting for activities and projects in the region that they perform or approve while providing comprehensive species, wetlands, and ecosystem conservation and contributing to the recovery of endangered species in northern California. To that end, the Plan describes how to avoid, minimize, and mitigate, to the maximum extent practicable, impacts on

covered species and their habitats and wetlands while allowing for the growth of selected regions of the County and the cities of Pittsburg, Clayton, Oakley, and Brentwood. Although the project site is within the area covered by the ECCC HCP/NCCP, mining is not a covered activity under the ECCC HCP/NCCP (East Contra Costa County Habitat Conservation Plan Association 2006).

4.7.2.7 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
CONTRA COSTA COUNTY LAND USE ELEMENT	
General Land Use	
Goal 3-G To discourage development on vacant rural lands outside of planned urban areas which is not related to agriculture, mineral extraction, wind energy, or other appropriate rural uses; discourage subdivision down to minimum parcel size of rural lands that are within, or accessible only through, geologically unstable areas; and to protect open hillsides and significant ridgelines.	**Consistent:** The proposed project does not include any new development on vacant land. Furthermore, the project is related to mineral extraction.
Goal 3-M: Protect and promote the economic viability of agricultural land.	**Consistent:** The site is zoned **A-2** General Agricultural District (A-2) and its General Plan designation is Agricultural land. Mining is allowed in these areas under the County Code and General Plan. The County General Plan recognizes Clayton Quarry as a significant mineral resource area that is to be protected. In addition, surface mining and reclamation disturbance areas are not currently in prime or other agriculture land production. Last, the proposed project will result in an end use of open space, thereby protecting the economic viability of agricultural land.
Growth Management, 65/35 Land Preservation Standard, Urban Limit Line:	
Policy 3-12: Preservation and buffering of agricultural land should be encouraged as it is critical to maintaining a healthy and competitive agricultural economy and assuring a balance of land uses. Preservation and conservation of open space, wetlands, parks, hillsides and ridgelines should be encouraged as it is crucial to preserve the continued availability of unique habitats for wildlife and plants, protect unique scenery, and provide a wide range of recreational opportunities for county residents.	**Consistent:** The proposed project will result in an end use of open space, therefore contributing to a balance of land uses and preserving open space.
CONTRA COSTA COUNTY PUBLIC FACILITIES AND SERVICES ELEMENT	
OVERALL PUBLIC FACILITIES AND SERVICES	
Policy 7-12: The County shall attempt to cooperate with cities when processing applications for subdivisions or other large projects located within a city's Sphere of Influence.	**Consistent:** The proposed project is located within the City of Clayton's Spere of Influence. The City of Clayton's planning staff, City Council, and community have been invited to comment on the proposed project and this Draft EIR.

Goals/Objectives/Policies	Consistency Analysis
WATER SERVICE	
Policy 7-23: The County shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.	**Consistent:** The proposed project complies with regulations for controlling point and non-point water pollution sources, as discussed in Section 4.6, "Hydrology and Water Quality," of this Draft EIR. The Hydrology and Water Quality section also contains mitigation measures, including requirements to obtain necessary permits, which will ensure cooperation with applicable regulatory agencies.
Policy 7-24: Opportunities shall be identified and developed in cooperation with water service agencies for use of non-potable water, including ground water, reclaimed water, and untreated surface water, for other than domestic use.	**Consistent:** The County will work with the operator and water agencies for use of non-potable water for other than domestic uses provided that the operator remains in compliance with applicable water quality standards.
Policy 7-25: Land uses and activities that could result in contamination of groundwater supplies shall be identified, monitored and regulated to minimize the risk of such contamination.	**Consistent:** This Draft EIR (Section 4.6, "Hydrology and Water Quality") considers the proposed project's impact on groundwater supply and quality. The analysis has determined the impact would be less than significant with mitigation incorporated into the project
DRAINAGE AND FLOOD CONTROL	
Goal 7-O: To protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare.	**Consistent:** The proposed reclamation plan would significantly enhance the quarry property as compared to existing conditions, with an end use of open space that would form a quarry lake and provide habitat value for wildlife. The proposed project would remove natural resources associated with one 300-foot ephemeral stream on site. However, Section 4.3, "Biological Resources," provides mitigation measures to reduce potentially significant impacts to biological resources to a less than significant level. The proposed project is not located near the Delta or any riparian zones.
Goal 7-Q: To employ alternative drainage systems improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.	**Consistent:** The proposed project provides for the quarry pit to slowly fill with stormwater following reclamation to form a quarry lake with a design pipe outflow structure at the northeast corner of the pit (see Figure 2-8, "Revised Reclamation Plan Detail," and Figure 2-9, "Drainage Pipe Outlet Structure") to convey discharges from the future quarry lake to existing stormwater drainage infrastructure located along Mitchell Canyon Road and Diablo Downs Drive. Section 4.6, "Hydrology and Water Quality," provides analysis of project site peak runoff to Mitchell Canyon Creek. Runoff rates would be lower than existing conditions under the proposed project and would not necessitate a need for structural modifications to watercourses.
Goal 7-U: To support the concept that existing development pays the cost of building and maintaining drainage improvements required to serve existing developed areas.	**Consistent:** The proposed project does not fall within the definition of existing development for purposes of this policy. However, the applicant has proposed, and mitigation measures have been incorporated into, this project to cover the cost of building and maintaining drainage improvements from the project site.

Goals/Objectives/Policies	Consistency Analysis
Policy 7-38: Watershed management plans shall be developed which encourage the development of detention basins and erosion control structures in watershed areas to reduce peak stormwater flows, as well as to provide wildlife habitat enhancement.	**Consistent.** The proposed project involves the creation of a quarry lake that will slowly fill with stormwater that would otherwise contribute to stormwater flows and that will enhance wildlife habitat. With implementation of mitigation identified in this Draft EIR (Sections 4.3, "Biological Resources," and 4.6, "Hydrology and Water quality"), the proposed project would not result in significant impacts to surface water or groundwater resources.
Policy 7-40: Alternative drainage system improvements such as floodplains, leveed floodways, bypass channels and culverts, and detention basins, shall be incorporated into new flood control plans and existing plans as they are revised.	**Consistent:** The proposed project's drainage system improvements will be incorporated into new flood control plans and existing plans as they are revised.
Policy 7-41: Aesthetic, environmental, and recreational benefits shall be taken into full consideration when determining the costs and benefits of alternative drainage system improvements.	**Consistent:** The proposed project's aesthetic, environmental, and recreational impacts are considered in Chapter 4, "Environmental Analysis," Chapter 7, "Other CEQA Topics," and Section 4.1, "Aesthetics and Visual Resources," of this Draft EIR.
Policy 7-42: Design guidelines shall be prepared which address aesthetic and engineering characteristics and criteria for alternative drainage system improvements.	**Consistent:** Design guidelines are not applicable to this project. However, the reclamation plan and mine design have been incorporated into this project to address aesthetic (visual screening) and engineering (geotechnical and hydrological evaluations) characteristics.
Policy 7-47: Where required, if it is not possible to provide a channel cross section sufficient to carry the 100-year flow, detention basins should be developed.	**Consistent:** The Contra Costa County Flood Control and Water Conservation District may treat the final reclaimed quarry excavation as a detention basin; as such, the water management structures have been designed to meet the applicable County and Surface Mining and Reclamation Act requirements.
Policy 7-48: Open bypass channels, detention basins and all drainage facility rights of way which are provided at different locations in order to supplement existing natural creeks should be developed as an asset to the development, e.g., as a secondary recreation use.	**Consistent:** The proposed project's end use will be open space, which is considered an asset to the development. In addition, the proposed quarry lake would detain peak flows and reduce peak runoff to the Mitchell Creek drainage areas.
Policy 7-51: Detention basins shall be designed for multiple uses such as parks and playing fields when not used for holding water, if liability and maintenance issues can be satisfactorily resolved.	**Consistent:** The proposed quarry lake will be used for holding stormwater and open space habitat value, supporting a variety of species, including raptors. Furthermore, the Contra Costa County Flood Control and Water Conservation District may treat the final reclaimed quarry excavation as a detention basin; as such, the water management structures have been designed to meet the Detention Basin Guidelines.
FIRE PROTECTION	
Policy 7-73: Fire fighting equipment access shall be provided to open space areas in accordance with the Fire Protection Code and to all future development in accordance with Fire Access Standards.	**Consistent:** The proposed project will provide access to fire fighting equipment via the existing access roads (see Figure 2-8, "Revised Reclamation Plan Detail").
SOLID WASTE MANAGEMENT	
Goal 7-AG: To reduce the amount of waste disposed of in landfills by: 1) reducing the amount of solid waste generated (waste reduction);	**Consistent:** The Applicant will be required to comply with all conditions imposed by Central Contra Costa Sanitary District pertaining to solid waste and recycling.

Goals/Objectives/Policies	Consistency Analysis
2) reusing and recycling as much of the solid waste as possible; 3) utilizing the energy and nutrient value of the solid waste (waste to energy and composting); and 4) properly disposing of the remaining solid waste (landfill disposal).	
Goal 7-AH: To divert as much waste as feasible from landfills through recovery and recycling.	**Consistent:** The Applicant will be required to comply with all conditions imposed by Central Contra Costa Sanitary District pertaining to solid waste and recycling.
Policy 7-91: Solid waste resource recovery (including recycling, composting, and waste to energy) shall be encouraged so as to extend the life of sanitary landfills, reduce the environmental impact of solid waste disposal, and to make use of valuable resources, provided that specific resource recovery programs are economically and environmentally desirable.	**Consistent:** The Applicant will be required to comply with all conditions imposed by Central Contra Costa Sanitary District pertaining to solid waste and recycling.
Policy 7-99: Solid waste hauling, with the exception of residential waste collection trucks, on collectors and local streets through residential areas should be avoided.	**Consistent:** The proposed project would not result in solid waste hauling on collector or local streets through residential areas.
HAZARDOUS WASTE MANAGEMENT	
Goal 7-AM: To eliminate the generation and disposal of hazardous waste materials to the maximum extent feasible, by: 1) reducing the use of hazardous substances and the generation of hazardous waste at their source; 2) recovering and recycling the remaining waste for reuse; 3) treating those wastes not amenable to source reduction or recycling so that the environment and community health are not threatened by their ultimate disposal; 4) incinerating those wastes amenable to this technology; and 5) properly disposing of treated residuals in approved residual repositories.	**Consistent:** The Applicant will be required to comply with all conditions imposed by Central Contra Costa Sanitary District pertaining to hazardous waste materials.
CONTRA COSTA COUNTY CONSERVATION ELEMENT	
OVERALL CONSERVATION	
Goal 8-A: To preserve and protect the ecological resources of the County.	**Consistent:** This Draft EIR (Section 4.3, "Biological Resources") evaluates proposed project impacts on ecological and biological resources and includes mitigation measures recommended by a qualified biologist.
Goal 8-C: To achieve a balance of uses of the County's natural and developed resources to meet the social and economic needs of the County's residents.	**Consistent:** The proposed project would involve reclamation after utilization of a natural resource and would result in an end use of open space, which would contribute to the County's natural resources.
Policy 8-1: Resource utilization and development shall be planned within a framework of maintaining a healthy and attractive environment.	**Consistent:** The proposed project would result in an end use of open space. The proposed reclamation plan has incorporated visual screening berms and native seed mixes. Furthermore, this Draft EIR (Section 4.1, "Aesthetics and Visual Resources") evaluates aesthetic impacts of the proposed project, which were determined to be less than

Goals/Objectives/Policies	Consistency Analysis
	significant with mitigation incorporated. The aesthetics evaluation concluded that views of the project site would be improved for all specific visual simulation locations analyzed.
Policy 8-2: Areas that are highly suited to prime agricultural production shall be protected and preserved for agriculture and standards for protecting the viability of agricultural land shall be established.	**Consistent:** No areas suited for prime agricultural production are located on the project site.
Policy 8-3: Watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.	**Consistent:** This Draft EIR (Section 4.3, "Biological Resources") evaluates proposed project impacts on biological resources and includes mitigation measures that would reduce impacts to less than significant.
VEGETATION AND WILDLIFE	
Policy 8-6: Significant trees, natural vegetation, and wildlife populations generally shall be preserved.	**Consistent:** This Draft EIR (Section 4.3, "Biological Resources") evaluates proposed project impacts on biological resources, including significant trees, vegetation, and wildlife populations, and includes mitigation measures that would reduce impacts to less than significant. Furthermore, Appendix E-2, "Arborist Report" includes a tree survey and analysis of trees that may be impacted by the proposed project.
Policy 8-10: Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.	**Consistent:** The proposed project is not located within a significant ecological resource area.
Policy 8-14: Development on hillsides shall be limited to maintain valuable natural vegetation, especially forests and open grasslands, and to control erosion. Development on open hillsides and significant ridgelines throughout the County shall be restricted, and hillsides with a grade of 26 percent or greater shall be protected through implementing zoning measures and other appropriate actions.	**Consistent:** The proposed project would not develop residential or other buildings on hillsides. Instead, the proposed project would result in the reclamation of an existing mining operation to an end use of open space. The proposed project would be required to comply with County zoning measures and other regulatory requirements that would protect hillsides.
Policy 8-21: The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.	**Consistent:** Plantings included in the proposed project include native trees and shrubs, including a tree screen along the quarry east rim for reducing visual impacts**.** The proposed reclamation plan has incorporated visual screening berms and native seed mixes. The goal of the revegetation plan is to restore native plant communities such as chaparral where it is safe, practicable, and consistent with the planned end use to do so. Seed mixes feature California native grasses and shrubs that are common in the undisturbed chaparral plant communities surrounding the quarry. The species chosen for inclusion in the seed mixes and are intended to be self-sustaining without dependence on irrigation, or ongoing applications of soil amendments or fertilizers.
Policy 8-28: Efforts shall be made to identify and protect the County's mature native oak, bay, and buckeye trees.	**Consistent:** This Draft EIR (Section 4.3, "Biological Resources") evaluates proposed project impacts on biological resources, including significant trees, vegetation, and wildlife populations, and includes mitigation measures that would reduce impacts to less than significant. Furthermore,

Goals/Objectives/Policies	Consistency Analysis
	Appendix E-2," Arborist Report," includes a tree survey and analysis of trees that may be impacted by the proposed project.
CONTRA COSTA COUNTY OPEN SPACE ELEMENT	
OVERALL OPEN SPACE	
Goal 9-A: To preserve and protect the ecological, scenic, cultural/historic, and recreational resource lands of the county.	**Consistent:** This Draft EIR (Chapter 4, "Environmental Analysis" and Chapter 7, "Other CEQA Topics") evaluates the proposed project's impacts on ecological/biological, scenic, and recreational resources. The project would have no impact to recreational lands or cultural resources, and potentially significant impacts to biological and scenic resources identified in Sections 4.1, "Aesthetics and Visual resources," and 4.3, "Biological Resources" would have less than significant impacts with mitigation incorporated.
Policy 9-1: Permanent open space shall be provided within the county for a variety of open space uses.	**Consistent:** Implementation of the proposed project would provide permanent open space.
Policy 9-2: Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.	**Consistent:** This Draft EIR (Chapters 4, "Environmental Analysis" and Chapter 7, "Other CEQA Topics," and Sections 4.1, "Aesthetics and Visual Resources," 4.3, "Biological Resources," and 4.6 "Hydrology and Water Quality") evaluates the proposed project's impacts on ecological/biological, hydrologic, scenic, and cultural resources. Impacts on these resources as a result of the proposed project have been determined less than significant, with and without mitigation incorporated.
Policy 9-4: Where feasible and desirable, major open space components shall be combined and linked to form a visual and physical system in the county.	**Consistent:** The project site would be reclaimed to open space; however, the site would remain private property in perpetuity. The proposed reclaimed conditions would improve the visual connection of the project site to its surrounding open space areas (see Section 4.1, "Aesthetics and Visual Resources"), e.g. Mt. Diablo.
Policy 9-7: Open space shall be utilized for public safety, resource conservation, and appropriate recreation activities for all segments of the community.	**Consistent:** Implementation of the proposed project would result in an end use of open space that is consistent with resource conservation.
Policy 9-8: Development project environmental review will consider the effect of the project on the county's open space resources, whenever the project proposes to convert substantial amounts of land from an open space designation to an urban development designation.	**Consistent:** The proposed project would not result in conversion of open space resources to urban development designation.
SCENIC RESOURCES	
Policy 9-11: High-quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damage, and damage to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26 percent or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.	**Consistent:** The proposed project is the reclamation of an existing mining operation. No new development on an open hillside is proposed. Furthermore, the project site is not located on a significant ridgeline (Contra Costa County 2014).

Goals/Objectives/Policies	Consistency Analysis
Policy 9-12: In order to conserve the scenic beauty of the county, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damage to significant trees and other visual landmarks.	**Consistent:** The proposed project involves reclaiming an existing disturbed site to open space, including placing overburden fill in the Overburden Fill Areas, which involves removing 77 protected trees. The proposed tree removal plan (see sheet 13 of the proposed reclamation plan) has been designed to minimize removal and replace protected trees to the extent feasible, as described in Section 4.3, "Biological Resources." Mitigation measures are also provided to minimize damage to significant trees.
Policy 9-14: Extreme topographic modification, such as filling in canyons or removing hilltops, shall be avoided. Clustering and planned unit development approaches to development shall be encouraged. All future development plans, whether large- or small-scale, shall be based on identifying safe and suitable sites for buildings, roads, and driveways. Exemptions to this policy are appropriate for mining, landfill, and public projects in open space areas.	**Consistent:** This policy applies to residential buildings. In addition, the proposed project is the reclamation of a mining operation; therefore, the project is exempt from this policy.
Policy 9-20: Hilltops, ridges, rock outcroppings, mature stands of trees, and other natural features shall be considered for preservation, at the time that any development applications are reviewed.	**Consistent:** This Draft EIR (Sections 4.1, "Aesthetics and Visual Resources," and 4.3, "Biological Resources") analyzes visual and biological impacts resulting from the proposed project. Impacts have been determined to be less than significant with mitigation incorporated.
CONTRA COSTA COUNTY SAFETY ELEMENT	
SEISMIC HAZARD	
Goal 10-A: To protect human life and reduce the potential for serious injuries from earthquakes; and to reduce the risks of property losses from seismic disturbances which could have severe economic and social consequences for the County as a whole.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts from the proposed project. Impacts have been determined to be less than significant.
Goal 10-B: To reduce to a practical minimum injuries and health risks resulting from the effects of earthquake ground shaking on structures, facilities and utilities.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts and associated health risks from the proposed project. Impacts have been determined to be less than significant.
Goal 10-C: To protect persons and property from the life-threatening, structurally and financially disastrous effects of ground rupture and fault creep on active faults, and to reduce structural distress caused by soil and rock weakness due to geologic faults.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts and associated health risks from the proposed project. Impacts have been determined to be less than significant.
Goal 10-D: To reduce to a practical minimum the potential for life loss, injury, and economic loss due to liquefaction-induced ground failure, levee failure, large lateral land movements toward bodies of water, and consequent flooding; and to mitigate the lesser consequences of liquefaction.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils" and 4.6) analyzes liquefaction and flooding impacts and associated health risks from the proposed project. Impacts have been determined to be less than significant.
Policy 10-5: Staff review of applications for development permits and other entitlements, and review of applications to other agencies which are referred to the County, shall include appropriate recommendations for seismic strengthening and detailing to meet the latest adopted seismic design criteria.	**Consistent:** This project does not require a development permit so this policy is not applicable. Nevertheless, this Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts from the proposed project. Impacts have been determined to be less than significant.

Goals/Objectives/Policies	Consistency Analysis
Policy 10-8: Ground conditions shall be a primary consideration in the selection of land use and in the design of development projects.	**Consistent:** The proposed project would result in an end land use of open space. Ground conditions were considered in the selection of land use and in the design of the proposed project.
Policy 10-10: Policies regarding liquefaction shall apply to other ground failures which might result from groundshaking but which are not subject to such well-defined field and laboratory analysis.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils" and 4.6, "Hydrology and Water Quality") analyzes groundshaking impacts and associated health risks from the proposed project. Impacts have been determined to be less than significant.
GROUND FAILURE AND LANDSLIDE HAZARDS	
Goal 10-E: To minimize the risk of loss of life or injury due to landslides, both ordinary and seismically-induced.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts, slope stability, and associated health risks from the proposed project. Impacts have been determined to be less than significant.
Goal 10-F: To reduce economic losses and social disruption from landslides, both ordinary and seismically-induced.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts, slope stability, and associated health risks from the proposed project. Impacts have been determined to be less than significant.
Policy 10-23: Slope stability shall be given careful scrutiny in the design of developments and structures, and in the adoption of conditions of approval and required mitigation measures.	**Consistent:** This Draft EIR (Section 4.4, "Geology and Soils") analyzes seismic impacts, slope stability, and associated health risks from the proposed project. Impacts have been determined to be less than significant.
Policy 10-29: Significant very steep hillsides shall be considered unsuitable for types of development which require extensive grading or other land disturbance.	**Consistent:** The proposed project is the reclamation of an existing mining operation on a hillside. No new development would occur beyond reclaiming the site to open space and a quarry lake.
FLOOD HAZARDS	
Policy 10-55: The potential effects of dam or levee failure are so substantial that geologic and engineering investigation shall be warranted as a prerequisite for authorizing public and private construction of either public facilities or private development in affected areas.	**Consistent:** The proposed project does not feature dams or levees that could result in failure.
Policy 10-58: Dams and levees should be designed to withstand the forces of anticipated (design) earthquakes at their locations.	**Consistent:** The proposed project does not feature dams or levees that could result in failure.
HAZARDOUS MATERIALS	
Policy 10-62: Storage of hazardous materials and wastes shall be strictly regulated.	**Consistent**: The Applicant will be required to comply with all conditions imposed by the Contra Costa Sanitary District pertaining to hazardous waste reduction, recycling, and storage.
Policy 10-64: Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.	**Consistent:** To the extent applicable to facilities at the site, the proposed project will be required to comply with the Contra Costa County Building Code, which accounts for up-to-date safety and environmental protection standards.
WATER SUPPLY	
Goal 10-K: To protect the quality, quantity, and productivity of water resources as vital resources for maintaining the public, ecological and economic health of the region.	**Consistent:** This Draft EIR (Section 4.6, "Hydrology and Water Quality") analyzes the proposed project's impact on water resources. These impacts have been determined less than significant with mitigation incorporated.

Goals/Objectives/Policies	Consistency Analysis
Goal 10-L: The safety of valuable underground water supplies for present and future users shall be ensured by preventing contamination.	**Consistent:** This Draft EIR (Section 4.6, "Hydrology and Water Quality") analyzes the proposed project's impact on underground water supply. These impacts have been determined less than significant with mitigation incorporated.
Policy 10-81: New water storage reservoirs shall be encouraged in appropriate locations subject to adequate mitigation of environmental impacts.	**Consistent:** The proposed project includes the creation of a quarry lake that will slowly fill with stormwater. However, this water is not anticipated to be used for water supply. The quarry lake will be part of an end land use of open space.
CONTRA COSTA COUNTY NOISE ELEMENT	
OVERALL NOISE	
Goal 11-A: To improve the overall environment in the County by reducing annoying and physically harmful levels of noise for existing and future residents and for all land uses.	**Consistent:** Section 4.8, "Noise," analyzes potential noise impacts from the proposed project. Impacts to noise were deemed less than significant with mitigation incorporated.
Goal 11-B: To maintain appropriate noise conditions in all areas of the County.	**Consistent:** Section 4.8, "Noise," analyzes potential noise impacts from the proposed project. Impacts to noise were deemed less than significant with mitigation incorporated.
Goal 11-C: To ensure that new developments will be constructed so as to limit the effects of exterior noise on the residents.	**Consistent:** Section 4.8, "Noise," analyzes potential noise impacts from the proposed project. Impacts to noise were deemed less than significant with mitigation incorporated.
Goal 11-E: To recognize citizen concerns regarding excessive noise levels, and to utilize measures through which the concerns can be identified and mitigated.	**Consistent:** Contra Costa County citizens are encouraged to participate and comment on the proposed project as part of the CEQA process. Section 4.8, "Noise," addresses noise concerns and determined that noise impacts would be less than significant with mitigation incorporated.
Policy 11-8: Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.	**Consistent:** Section 4.8, "Noise," addresses noise concerns and determined that noise impacts would be less than significant with mitigation incorporated. In addition, Mitigation Measure 4.1-4 (Aesthetics) requires reclamation activities to be limited to 7 am to 7 pm Monday through Friday.
Policy 11-11: Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.	**Consistent:** See Consistency analysis for Policy 11-8, above.
COUNTY SURFACE MINING AND RECLAMATION ORDINANCE	
RECLAMATION PLANS	
Policy 88-11.802—Reclamation plan required. No person shall begin, establish, maintain, continue or conduct any surface mining operation without (1) first submitting, and obtaining approval of, a reclamation plan under this article, and (2) fully performing and complying with it.	**Consistent:** The proposed project is a reclamation plan amendment to an existing reclamation plan. The proposed amendment must be approved before the operator can comply with the proposed plan rather than the existing approved plan.
Policy 88-11.810—Reclamation plan requirements. Every reclamation plan shall address at least the following subjects, in addition to the requirements in Public Resources Code Sections 2772 through 2774 and California Code of Regulations Section 3500 et seq and 3700 et seq**.**	**Consistent:** The proposed reclamation plan amendment addresses all of the required subjects in Public Resources Code Sections 2772 through 2774 and California Code of Regulations Section 3500 et seq and 3700 et seq. The State Division of Mine Reclamation reviewed the reclamation plan and had no comment.

Goals/Objectives/Policies	Consistency Analysis
Policy 88-11.812—General requirements. The reclamation plan shall identify the specific properties it applies to; and it shall be based upon the character of the surrounding area and the characteristics of that property, including the type of overburden, soil stability, topography, geology, vegetation, wildlife, climate, stream characteristics, and principal mineral commodities. Reclamation of mined lands shall be carried out in accordance with the requirements of this chapter.	**Consistent:** The proposed project identifies the properties that it applies to and is based upon the character of the surrounding area and the characteristics of that property.
Policy 88-11.814—Guarantees. The reclamation plan shall state that the operator, applicant, and permittee guarantees and accepts responsibility for all reclamation work for the life of the surface mining operation and for a period of two years after completion of such operation or such greater period as may be determined necessary to assure the permanence of physical reclamation features.	**Consistent:** The proposed reclamation plan amendment states that the operator, applicant, and the Applicant guarantees and accepts responsibility for all reclamation work for the life of the surface mining operation and for a period of two years after completion of such operation or such greater period as may be determined necessary to assure the permanence of physical reclamation features
Policy 88-11.816—Progressive reclamation. Reclamation of mined areas shall take place as soon as practicable following completion of surface mining operations. When simultaneous or concurrent reclamation is practicable, the reclamation plan shall include a timetable for commencing and completing such reclamation and shall include (a) the beginning and expected ending dates for each phase; (b) all reclamation activities required; (c) criteria for measuring completion of specific reclamation activities; and (d) estimated costs for completion of each phase of reclamation.	**Consistent:** The proposed reclamation plan amendment outlines the schedule for reclamation at the project site. Reclamation is anticipated to be completed complete by 2068.
Policy 88-11.818—Disposal of overburden and mining waste. (a)Permanent on-site disposal of overburden and mining waste shall be compatible with the probable future uses of the site. The land surface shall be made stable, and adequate drainage shall be provided. Final disposal of such materials shall not be in the form of apparently artificial piles or dumps of overburden or mining waste. To the maximum extent practicable, grading shall be designed to blend with the natural terrain features of the area.(b)Toxic materials shall be removed from the site or shall be protected and isolated to prevent leaching.(c)Overburden and mining waste placed below the existing or potential groundwater level shall not reduce water transmissivity or the area through which water may flow unless approved equivalent transmissivity or area has been provided elsewhere.	**Consistent:** This Draft EIR (Sections 4.4, "Geology and Soils," and 4.6 "Hydrology and Water Quality") analyzes slope stability, drainage, groundwater, and other impacts related to overburden treatment proposed under the project. Impact analyses relating to overburden and mining waste have determined these impacts less than significant or less than significant with mitigation incorporated. Furthermore, the proposed project is designed to blend with natural terrain features.
Policy 88-11.820—Drainage, erosion and sediment control. (a)Any temporary stream or watershed diversion shall be restored in final reclamation to its condition prior to surface mining operations, unless the planning agency determines restoration is unnecessary.(b)Regrading and	**Consistent:** This Draft EIR (Sections 4.4, "Geology and Soils," and 4.6 "Hydrology and Water Quality") analyzes drainage, erosion, and other related impacts that could occur under the proposed project. Impact analyses relating to overburden and mining waste have determined these impacts less than significant or less than significant with mitigation

Goals/Objectives/Policies	Consistency Analysis
revegetation shall be designed and carried out to minimize erosion, to provide for drainage to natural outlets or interior basins designed for water storage, and to eliminate closed depressions and similar catchments that could serve as breeding areas for insects.(c)Silt basins, which have outlet to lower ground and will or may store water during periods of surface runoff, shall be equipped with sediment control and removal facilities, and with protected spillways designed to minimize erosion.(d)Final grading and drainage shall be designed to prevent discharge of sediment loads higher than before mining operations.(e)Upon reclamation, the operator shall preclude or eliminate 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.	incorporated. Furthermore, the proposed project is designed to minimize erosion, provide drainage to natural outlets, and to prevent discharge of sediment loads. Furthermore, the impact analysis in Section 4.6, "Hydrology and Water Quality," of this Draft EIR describes how the proposed project would not degrade water quality below applicable standards with the incorporation of mitigation measures.
88-11.822—Final slope gradient. Final slope gradients shall assure 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. They shall not exceed the critical gradient as determined by an engineering analysis of the slope stability. Additionally, they shall not: (1) Be incompatible with the alternate future uses anticipated for the site; or(2)Be hazardous to persons that may use the site under the alternate future uses anticipated for the site; or(3)Reduce the effectiveness of revegetation and erosion control measures where such are necessary.	**Consistent:** An engineering analysis of the soils and geologic conditions of the site is included in Appendix F of this Draft EIR. This report concludes that the proposed project slope gradients are suitable and safe for the end use of open space and do not exceed the critical gradient with mitigation incorporated. Furthermore, the proposed project does not include any slope designs (permanent or temporary) that would be incompatible with the intended future use as open space, 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.
88-11.824—Emplacement of fill. All fill shall be compacted to avoid excessive settlement and to the degree necessary to accommodate anticipated future uses. If future uses of the site include streets or structures for human occupancy, or if an engineered fill is necessary as a safety measure, fill emplacement shall conform to the requirements of Division 716 of this code. Material used as fill shall be of a quality suitable to prevent contamination and pollution of groundwater.	**Consistent:** Proposed fill would be compacted and of a quality suitable to prevent contamination and pollution of groundwater, and the future use of the site does not include streets or structures for human occupancy.
88-11.826—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.	**Consistent:** Knoxville substrate constitutes the best available substrate material for revegetation. Furthermore, topsoil for the overburden fill areas would be salvaged up to a depth of eighteen inches and used as cover for reclamation. A soil scientist would determine whether substrate requires resoiling at the processing plant site once removed. If required, Knoxville-derived overburden materials would be imported from the quarry or fill areas to use as planting medium and spread to a depth of eighteen inches over the plant site. These materials may also be blended with wash fines from on-site silt ponds.

Goals/Objectives/Policies	Consistency Analysis
88-11.828—Revegetation. All lands permanently exposed by mining operations shall be revegetated, except as the director of community development determines this to be technically infeasible or detrimental. Revegetation methods and plant materials utilized shall be appropriate for the site's topographical, soil and climatic conditions, and native species shall be used wherever practicable.	**Consistent:** No further revegetation is proposed for the diabase benches of the quarry pit, as the existing diabase benches can no longer be safely accessed for purposes of revegetation. The Knoxville benches and slopes of the mining pit would be revegetated with native chaparral. The knoxville slopes and remaining areas of the project site would be seeded and adhere to performance standards, including cover, density, and species richness set forth in the proposed reclamation plan.
88-11.830—Water. All bodies of water created by the reclamation plan are subject to approval.	**Consistent:** The proposed quarry lake is subject to approval by the Contra Costa County Planning Commission.
88-11.838—Amendments. Amendments to an approved reclamation plan may be submitted to the planning agency at any time, detailing proposed changes. Substantial deviations from the approved plan shall not be undertaken until such amendment has been filed with and approved by the planning agency. Amendments to an approved plan shall be processed and considered as provided in Section 88-11.808 for reclamation plans.	**Consistent:** The proposed project is a reclamation plan amendment that has been filed and is currently undergoing the approval process by the planning agency.
CONTRA COSTA COUNTY TREE PROTECTION AND PRESERVATION ORDINANCE	
Policy. Prior to the start of any clearing, stockpiling, trenching, grading, compaction, paving or change in ground elevation on a site with trees to be preserved, the applicant shall install fencing at the dripline or other area as determined by an arborist report of all trees adjacent to or in the area to be altered. Prior to grading or issuance of any permits, the fences may be inspected and the location thereof approved by appropriate county staff.	**Consistent.** As described in Section 4.3, "Biological Resources," tree protection fencing would be required prior to the start of fill disposal and maintained during the entire fill disposal process, as stipulated by Mitigation Measure 4.3-6c.
Policy. No grading, compaction, stockpiling, trenching, paving or change in ground elevation shall be permitted within the dripline unless indicated on the grading plans approved by the county and addressed in any required report prepared by an arborist. If grading or construction is approved within the dripline, an arborist may be required to be present during grading operations. The arborist shall have the authority to require protective measures to protect the roots. Upon completion of grading and construction, an involved arborist shall prepare a report outlining further methods required for tree protection if any are required. All arborist expense shall be borne by the developer and applicant unless otherwise provided by the development's conditions of approval.	**Consistent.** As described in Section 4.3, "Biological Resources," no grading, compaction, stockpiling, trenching, paving or change in ground elevation would occur beyond what is proposed (and would ultimately be approved by the County if the project as a whole is approved) in the proposed plans. Furthermore as stipulated by Mitigation Measures 4.3-6a through 6e, grading and construction within the dripline would be avoided unless approved by a qualified arborist.
Policy. No parking or storing vehicles, equipment, machinery or construction materials, construction trailers and no dumping of oils or chemicals shall be permitted within the dripline of any tree to be saved.	**Consistent.** As described in Section 4.3, "Biological Resources," Mitigation Measure 4.3-6d stipulates that heavy machinery shall not be allowed to operate or park within the drip line of avoided trees unless approved by a qualified arborist.

Goals/Objectives/Policies	Consistency Analysis
CONTRA COSTA COUNTY CLIMATE ACTION PLAN	
Healthy Community Measure 4. Adaptation Integration. Consider potential climate change impacts in local planning documents and processes.	**Consistent.** Potential climate change impacts are discussed in Section 4.5, "Greenhouse Gas Emissions," of this Draft EIR.
Healthy Community Action 4.1. During the development review process, consider possible impacts of climate change on the project or plan area.	**Consistent.** Potential climate change impacts are discussed in Section 4.5, "Greenhouse Gas Emissions," of this Draft EIR.
Healthy Community Action 7.4. As healthy community strategies are implemented, consider prioritizing projects and programs that conserve and/or construct green spaces.	**Consistent.** The implementation of the proposed project would result in construction of additional open space.

4.7.3 Significance Thresholds and Analysis Methodology

The project description was compared to the local governing plans having jurisdiction over 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.

4.7.3.1 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.

4.7.3.2 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.

4.7.4 Project Impacts and Mitigation Measures

Impact 4.7-1: Physically Divide an Established Community

The reclamation activities associated with the project as proposed would not result in the physical division of an existing community. The project site is situated at 515 Mitchell Canyon Road, on the east side of Mount Zion, approximately one-half mile south of the City of Clayton in an unincorporated portion of the County. Although a residential development exists adjacent to the plant site across Mitchell Canyon Road, 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.

Level of Significance: No impact.

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.

As discussed in detail in Table 4.7-1, the proposed project would not substantially conflict with any land use policies adopted by Contra Costa 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 and applicable zoning regulations. 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 Draft EIR describes existing noise and vibration conditions near the Clayton Quarry, summarizes applicable jurisdictional laws and regulations associated with noise and vibration, and presents the significance criteria and thresholds for the evaluation of noise and vibration-related environmental impacts. This section then describes analysis methodologies and identifies the potential noise and vibration effects of the proposed project. Measures to mitigate potential noise and vibration impacts are recommended, as appropriate.

4.8.1 Environmental Setting

4.8.1.1 Technical Background

Acoustic Fundamentals

Acoustics is the scientific study that evaluates perception, propagation, absorption, and reflection of sound waves. Sound is a mechanical form of radiant energy, transmitted by a pressure wave through a solid, liquid, or gaseous medium. Sound that is loud, disagreeable, unexpected, or unwanted is generally defined as noise; consequently, the perception of sound is subjective in nature, and can vary substantially from person to person. Common sources of environmental noise and relative noise levels are shown in Table 4.8-1, "Typical Noise Levels Associated with Common Activities."

A sound wave is initiated in a medium by a vibrating object (e.g., vocal cords, the string of a guitar, the diaphragm of a radio speaker). The wave consists of minute variations in pressure, oscillating above and below the ambient atmospheric pressure. The number of pressure variation cycles occurring per second is referred to as the frequency of the sound wave and is expressed in hertz, which is equivalent to one complete cycle per second.

Directly measuring sound pressure fluctuations would require the use of a very large and cumbersome range of numbers. To avoid this and have a more useable numbering system, the decibel (dB) scale was introduced. Sound level expressed in decibels (dB) is the logarithmic ratio of two like pressure quantities, with one pressure quantity being a reference sound pressure and the second pressure being that of the sound source of concern. For sound pressure in air, the standard reference quantity is generally considered to be 20 micropascals, which directly corresponds to the threshold of human hearing. The use of the decibel is a convenient way to handle the million-fold range of sound pressures to which the human ear is sensitive.

A decibel is logarithmic; it does not follow normal algebraic methods and cannot be directly added. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). A sound level increase of 10 dB corresponds to 10 times the acoustical energy, and an increase of 20 dB equates to a 100-fold increase in acoustical energy.

The loudness of sound perceived by the human ear depends primarily on the overall sound pressure level and frequency content of the sound source. The human ear is not equally sensitive to loudness at all frequencies in the audible spectrum. To better relate overall sound levels and loudness to human perception, frequency-dependent weighting networks were developed. The standard weighting networks are identified as A through E. There is a strong correlation between the way humans perceive sound and A-weighted sound levels (dBA). For this reason, the dBA can be used to predict community response to noise from the environment, including noise from transportation and stationary sources.

TABLE 4.8-1
TYPICAL NOISE LEVELS ASSOCIATED WITH COMMON ACTIVITIES

Common Outdoor Activities	Noise Level *(dBA)*	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher (in next room)
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing (Healthy)	0	Lowest Threshold of Human Hearing (Healthy)

Source: Caltrans 2013a.

Noise can be generated by a number of sources, including mobile sources (transportation) such as automobiles, trucks, and airplanes, and stationary sources (non-transportation) such as construction sites, machinery, and commercial and industrial operations. As acoustic energy spreads through the atmosphere from the source to the receiver, noise levels attenuate (decrease) depending on ground absorption characteristics, atmospheric conditions, and the presence of physical barriers (e.g., walls, building façades, berms). Noise generated from mobile sources generally attenuate at a rate of 3 dBA (typical for hard surfaces, such as asphalt) to 4.5 dBA (typical for soft surfaces, such as grasslands) per doubling of distance, depending on the intervening ground type. Stationary noise sources spread with more spherical dispersion patterns that attenuate at a rate of 6 to 7.5 dBA per doubling of distance for hard and soft sites, respectively (Caltrans 1998).

Atmospheric conditions such as wind speed, turbulence, temperature gradients, and humidity may additionally alter the propagation of noise and affect levels at a receiver. Furthermore, the presence of a large object (e.g., barrier, topographic features, and intervening building façades) between the source and the receptor can provide significant attenuation of noise levels at the receiver. The amount of noise level reduction or "shielding" provided by a barrier primarily depends on the size of the barrier, the location of the barrier in relation to the source and receivers, and the frequency spectra of the noise. Natural barriers

such as earthen berms, hills, or dense woods as well as man-made features such as buildings, concrete berms and walls may be effective barriers for the reduction of source noise levels.

Noise Descriptors

The intensity of environmental noise levels can fluctuate greatly over time and as such, several different descriptors of time-averaged noise levels may be used to provide the most effective means of expressing the noise levels. The selection of a proper noise descriptor for a specific source depends on the spatial and temporal distribution, duration, and fluctuation of both the noise source and the environment near the receptor(s). Noise descriptors most often used to describe environmental noise are defined below.

L_{max} (Maximum Noise Level): The maximum instantaneous noise level during a specific period of time.

Lx (Statistical Descriptor): The noise level exceeded "X" percent of a specific period of time. For example, L50 is the median noise level, or level exceeded 50% of the time.

L_{eq} (Equivalent Noise Level): The average noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value is calculated, which is then converted back to dBA to determine the L_{eq}. In noise environments determined by major noise events, such as aircraft over-flights, the L_{eq} value is heavily influenced by the magnitude and number of single events that produce the high noise levels.

L_{dn} (Day-Night Average Noise Level): The 24-hour L_{eq} with a 10-dBA "penalty" for noise events that occur during the noise-sensitive hours between 10 p.m. and 7 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours, and this generates a higher reported noise level when determining compliance with noise standards. The L_{dn} attempts to account for the fact that noise during this specific period of time is a potential source of disturbance with respect to normal sleeping hours.

CNEL (Community Noise Equivalent Level): The CNEL is similar to the L_{dn} described above, but with an additional 5-dBA "penalty" added to noise events that occur during the noise-sensitive hours between 7 p.m. and 10 p.m., which are typically reserved for relaxation, conversation, reading and television. When the same 24-hour noise data are used, the reported CNEL is typically approximately 0.5 dBA higher than the L_{dn}.

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 L_{eq} which corresponds to the steady-state A-weighted sound level containing the same total energy as the time-varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptors such as L_{dn} and CNEL, as defined above, and shows very good correlation with community response to noise. Use of these descriptors along with the maximum noise level occurring during a given time period provides a great deal of information about the ambient noise environment in an area.

Negative Effects of Noise on Humans

Excessive and chronic exposure to elevated noise levels can result in auditory and non-auditory effects on humans. Auditory effects of noise on people are those related to temporary or permanent hearing loss caused by loud noises. Non-auditory effects of exposure to elevated noise levels are those related to behavioral and physiological effects. The non-auditory behavioral effects of noise on humans are associated primarily with the subjective effects of annoyance, nuisance and dissatisfaction, which lead to interference with activities such as communications, sleep and learning. The non-auditory physiological health effects of noise on humans have been the subject of considerable research attempting to discover correlations

between exposure to elevated noise levels and health problems, such as hypertension and cardiovascular disease. The majority of research infers that noise-related health issues are predominantly the result of behavioral stressors and not a direct noise-induced response. The extent to which noise contributes to non-auditory health effects remains a subject of considerable research, with no definitive conclusions.

The degree to which noise results in annoyance and interference is highly subjective and may be influenced by several non-acoustic factors. The number and effect of these non-acoustic environmental and physical factors vary depending on individual characteristics of the noise environment such as sensitivity, level of activity, location, time of day, and length of exposure. One key aspect in the prediction of human response to new noise environments is the individual level of adaptation to an existing noise environment. The greater the change in the noise levels that are attributed to a new noise source, relative to the environment an individual has become accustomed to, the less tolerable the new noise source will be to an individual.

With respect to how humans perceive and react to changes in noise levels, a 1 dBA increase is generally imperceptible outside of a laboratory environment, a 3 dBA increase is barely perceptible, a 6 dBA increase is clearly noticeable, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Charles M. Salter Associates 1998). These subjective reactions to changes in noise levels was developed on the basis of test subjects' reactions to changes in the levels of steady-state, pure tones or broad-band noise and to changes in levels of a given noise source.

Vibration Fundamentals

Vibration is similar to noise in that it is a pressure wave traveling through an elastic medium involving a periodic oscillation relative to a reference point. Vibration is most commonly described in respect to the excitation of a structure or surface, such as in buildings or the ground. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions, impacts). Vibration levels can be depicted in terms of amplitude and frequency; relative to displacement, velocity, or acceleration.

Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal, or the quantity of displacement measured from peak to trough of the vibration wave. RMS is defined as the positive and negative statistical measure of the magnitude of a varying quantity. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a period of one second. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (Federal Transit Administration [FTA] 2018). Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. Human response to vibration has been found to correlate well to average vibration amplitude; therefore, vibration impacts on humans are evaluated in terms of RMS vibration velocity.

PPV and RMS vibration velocity are nominally described in terms of inches per second (in/sec). However, as with airborne sound, vibration velocity can also be expressed using decibel notation as vibration decibels (VdB). The logarithmic nature of the decibel serves to compress the broad range of numbers required to describe vibration and allow for the presentation of vibration levels in familiar terms.

Typical outdoor sources of perceptible groundborne vibration include construction equipment, steel-wheeled trains, and vehicles on rough roads. Although the effects of vibration may be imperceptible at low levels, effects may result in detectable vibrations and slight damage to nearby structures at moderate and high levels, respectively. At the elevated levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in damage to structural components. Table 4.8-2, "Typical Levels of Groundborne Vibration," identifies some common sources of vibration, corresponding VdB levels, and associated human perception and potential for structural damage.

TABLE 4.8-2
TYPICAL LEVELS OF GROUNDBORNE VIBRATION

Human/Structural Response	Velocity Level RMS *(VdB)*	Typical Events (50-foot setback)
Threshold, minor cosmetic damage	100	Blasting, pile driving, vibratory compaction equipment
	95	Heavy tracked vehicles (Bulldozers, cranes, drill rigs)
Difficulty with tasks such as watching a video or reading a computer screen	90	Commuter rail, upper range
Residential annoyance, infrequent events	80	Rapid transit, upper range
Residential annoyance, occasional events	75	Commuter rail, typical bus or truck over bump or on rough roads
Residential annoyance, frequent events	72	Rapid transit, typical
Approximate human threshold of perception to vibration	65	Buses, trucks, and heavy street traffic
	60	Background vibration in residential settings in the absence of activity
Lower limit for equipment ultra-sensitive to vibration	50	

Source: FTA 2018.

4.8.1.2 Sensitive Receptors in the Project Vicinity

Nearest Noise and Vibration Sensitive Receptors

Sensitive receptors are defined as land uses where noise-sensitive people may be present or where noise-sensitive activities may occur. Examples of noise-sensitive land uses include residences, schools, hospitals, and retirement homes. Examples of noise-sensitive activities are those that occur in locations such as churches and libraries.

The nearest sensitive receptors to the project site consist of: 1) single family residences located east of Mitchell Canyon Road, approximately 50 feet east of the project site; 2) single family residences located approximately 300 feet southeast of the project site, 3) single family residences located approximately 440 feet north of the project site; and 4) Mt. Diablo State Park, with the nearest trail located approximately 650 feet at the closest distance southeast of the project site. The locations of these receptors are shown on Figure 4.8-1, "Nearest Sensitive Receptors to the Clayton Quarry."

4.8.1.3 Ambient Noise and Vibration Environment

In Contra Costa County, transportation-related noise sources are the primary sources of noise and include traffic along freeways, traffic along major arterials, railroad corridors, Bay Area Rapid Transit Lines, and airports. Industrial plant and materials processing plant noise can be important noise sources to specific localities.

The existing ambient noise environment at the Clayton Quarry is defined primarily by existing CEMEX excavation and processing operations, traffic along Mitchell Canyon Road, and natural sounds (wind, birds, insects, etc.). The project site is not located near a highway, arterial, or railroad corridor. Traffic noise in the area was estimated as less than 60 dBA L_{dn} under both existing and future conditions in the *Contra Costa County General Plan* (Contra Costa County 2014). The project site is also not located near an airport and is not subject to airport noise.

4.8.1.4 Ambient Vibration Environment

The use of earthmoving equipment on the Clayton Quarry may have the potential to generate vibration in close proximity to the equipment, but does not generate perceptible vibration off-site because vibration attenuates rapidly with distance. No other potential sources of vibration are located in the vicinity of the Clayton Quarry.

4.8.2 Regulatory Setting

4.8.2.1 Federal

40 Code of Federal Regulation (CFR),Part 205(B)

Federal regulations establish noise limits for medium and heavy trucks weighing more than 4.5 tons (gross vehicle weight rating) under Title 40 of the Code of Federal Regulations (CFR), Section 205.50 et seq. Under this regulation, the truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway center line. These controls are implemented through regulatory controls on truck manufacturers.

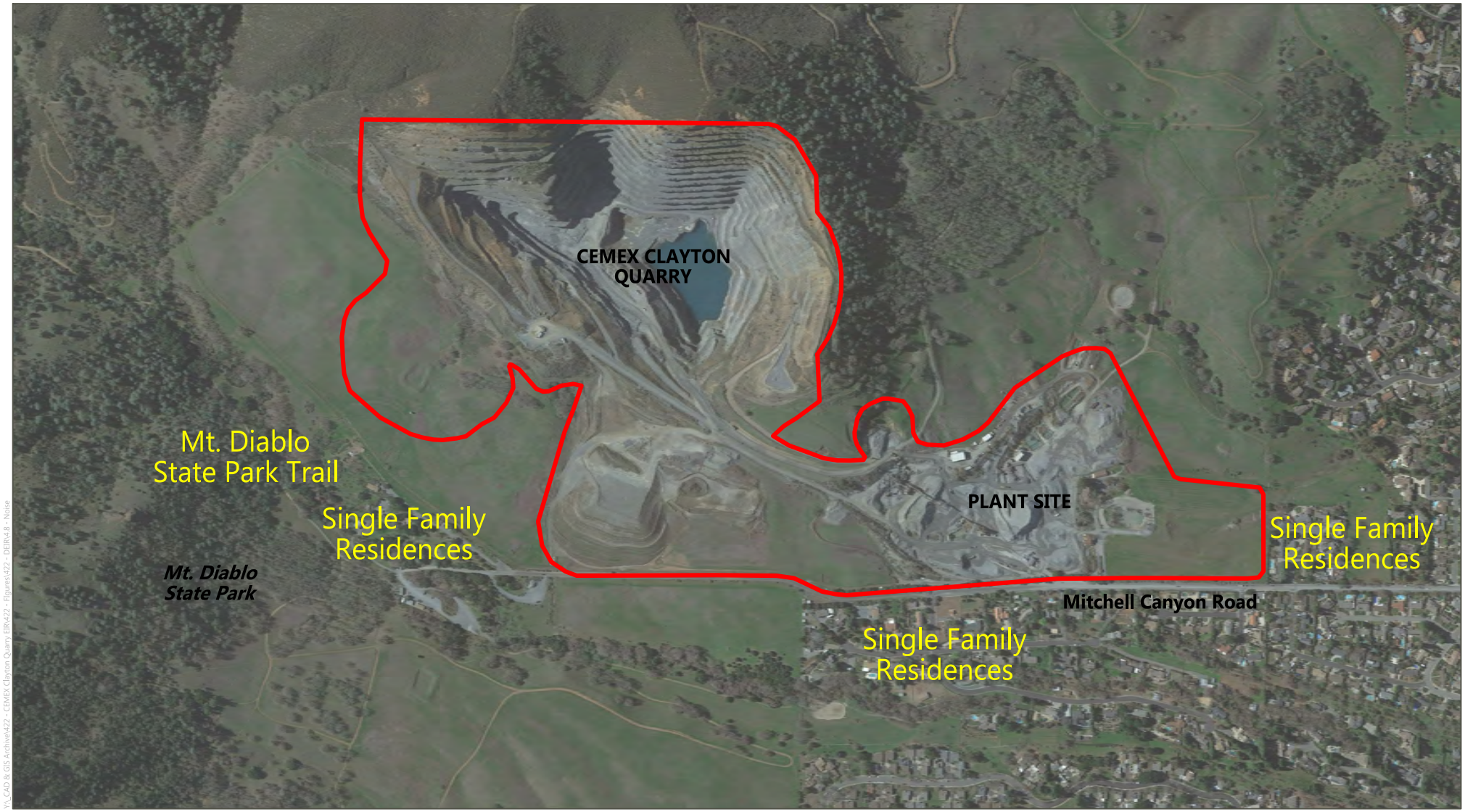
Occupational Health and Safety Administration

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 (29 CFR 1910.95). Additionally, this regulation also establishes maximum impulse or impact noise (e.g., blasting noise) of 140 dB peak sound pressure level, which is approximately the threshold of pain. 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.

4.8.2.2 State

California Noise Control Act

Sections 46000 to 46080 of the California Health and Safety Code codify the California Noise Control Act of 1973. The California Noise Control Act established the Office of Noise Control under the California Department of Health Services. The California Noise Control Act required that the Office of Noise Control adopt, in coordination with the Governor's Office of Planning and Research (OPR), guidelines for the preparation and content of noise elements for general plans. The most recent guidelines are contained in General Plan Guidelines, published by the OPR (2017). The document provides guidelines for cities and counties to use in their general plans to reduce conflicts between land use and noise.



SOURCE: Aerial—Google Earth (flown 2-10-2020); compiled by Benchmark Resources in 2021

BENCHMARK RESOURCES

Nearest Sensitive Receptors to the Clayton Quarry

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 4.8-1

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California Occupational Safety and Health Administration (Cal/OSHA) Regulations

Noise exposure of construction workers is regulated by the California Occupational Safety and Health Administration (Cal/OSHA). Title 8 of the California Code of Regulations (CCR), Sections 5095 et seq. (Control of Noise Exposure) sets noise exposure limits for workers and requires employers who have workers who may be exposed to noise levels above these limits to establish a hearing conservation program, make hearing protection available, and keep records of employee noise exposure measurements.

4.8.2.3 Local

Contra Costa County Code of Ordinances

The Contra Costa County Code of Ordinances does not have a specific noise ordinance, but does require noise generated as part of grading to be controlled to prevent nuisances to public and private ownerships, and indicates that noise control is an appropriate permit condition for surface mining operations:

Division 716—Grading

716-8.1108—Nuisances:

Operations shall be controlled to prevent nuisances to public and private ownerships because of dust, drainage, removal of natural support of land and structures, encroachment, noise, and/or vibration.

Division 88—Special Land Uses

Chapter 88-11—Surface Mining and Reclamation

88-11.610—Conditions-Operations and Maintenance:

Examples of permit conditions relating to mining operations and site maintenance are:

(1) Land uses permitted on the site; (2) Temporary and finished slopes, and benches; (3) Setbacks from property lines, roads, water channels; and other features; (4) Fencing and screening; (5) Limiting use of explosives; (6) Drainage and use of surface water or groundwater; (7) Storing minerals and overburden; (8) Salvaging topsoil and vegetation; (9) Controlling noise, dust, and bright lights; (10) Limiting hours of operation; (11) Ingress, egress and traffic management; (12) Hauling management; (13) Limited duration of the permit; (14) Phasing excavation; (15) Controlling sedimentation.

Contra Costa County General Plan

The *Contra Costa County General Plan* (Contra Costa County 2014) establishes the following goals and policies associated with noise that are relevant to the proposed project.

Noise

Goal 11-A: To improve the overall environment in the County by reducing annoying and physically harmful levels of noise for existing and future residents and for all land uses.

Goal 11-B: To maintain appropriate noise conditions in all areas of the County.

Goal 11-C: To ensure that new developments will be constructed so as to limit the effects of exterior noise on the residents.

Goal 11-E: To recognize citizen concerns regarding excessive noise levels, and to utilize measures through which the concerns can be identified and mitigated.

Policy 11-8: Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be

commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

4.8.3 Significance Criteria and Analysis Methodology

4.8.3.1 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.

The Clayton Quarry is not located in the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport or public use airport. Therefore criterion (c) is not applicable and not discussed further in this Draft EIR.

4.8.3.2 Significance Thresholds

The Appendix G significance criteria are qualitative criteria and do not quantitatively define a substantial noise increase or excessive vibration. The quantitative thresholds used in the analysis of potential noise and vibration impacts are described below.

Noise Thresholds (Criterion a)

Similar to construction-type activities, noise generated during the proposed reclamation activities would be temporary and generated by construction equipment, therefore the FTA daytime construction noise threshold of 90 dBA L_{eq} was used to assess the potential for substantial noise generation to occur at nearby sensitive receptors. In addition, consistent with Policy 11-8 of the *Contra Costa County General Plan*, this analysis considers temporary increases in ambient noise levels generated by any nighttime reclamation activities to be significant.

Vibration Thresholds (Criterion b)

Table 4.8-3, "Vibration Thresholds to Prevent Disturbance," presents the FTA vibration thresholds for assessing the potential of annoyance to occur at buildings with sensitive land uses, residences, and institutional land uses. Because construction equipment would move across the site during proposed reclamation activities, it is unlikely that a given receptor would be exposed to more than 70 vibration generating events per day. Therefore, "Occasional Events" FTA threshold of 75 RMS (VdB) was applied to the analysis of potential annoyance of nearby residential receptors.

TABLE 4.8-3
VIBRATION THRESHOLDS TO PREVENT DISTURBANCE

Land Use Category	Root Mean Square (RMS) *(Vibration Decibels [VdB])*		
	Frequent Events	Occasional Events	Infrequent Events
Category 1: Buildings where vibration would interfere with interior ops.	65[d]	65[d]	65[d]
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

Source: FTA 2018.
Notes:
a. "Frequent Events" is defined as more than 70 vibration events of the same source per day.
b. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
c. "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.
d. This criterion limit is based on levels that are acceptable for most moderately-sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

Table 4.8-4, "Vibration Criteria to Prevent Damage to Structures," presents the FTA vibration thresholds for assessing the potential for vibration damage to buildings. The 0.3 in/sec PPV threshold for buildings of typical construction was used to determine the potential for cosmetic damage to occur to nearby receptors.

TABLE 4.8-4
VIBRATION CRITERIA TO PREVENT DAMAGE TO STRUCTURES

Building Category	Peak Particle Velocity (PPV) *(inches per second)*	Root Mean Square (RMS) *(Vibration Decibels [VdB])*
Reinforced-concrete, steel or timber (no plaster)	0.5	102
Engineered concrete and masonry (no plaster)	0.3	98
Non-engineered timber and masonry buildings	0.2	94
Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2018.

4.8.3.3 Analysis Methodology

Noise Methodology

In accordance with FTA guidance for the general assessment of construction noise (FTA 2018), the combined noise levels of the two noisiest pieces of equipment used during the proposed reclamation activities were calculated to represent the potential reasonable worst case noise levels that would occur during each phase of reclamation. The following equation was applied to estimate the L_{eq} (dBA) of each piece of construction equipment:

$$L_{eq.equip} = L_{emission} + 10 \log Adj_{usage}$$

Where:

$L_{emission}$ is the noise emission level of the particular piece of equipment at the reference distance of 50 feet.

Adj_{usage} is the usage factor to account for the fraction of time that the equipment is in use over the specified time period.

The usage factor, which represents the time period of one-hour during which the equipment is in full power operation, was assumed to be 1 because most construction equipment operates continuously for one-hour or more during typical construction activities. This is also a reasonable assumption for construction equipment operated during reclamation activities.

The construction equipment and phases are summarized in Table 4.8-5, "Equipment for Reclamation Activities."

TABLE 4.8-5
EQUIPMENT FOR RECLAMATION ACTIVITIES

Phase Name	Proposed Equipment
OVERBURDEN FILL AREAS	
Finish Slopes and Drainage	Backhoe, water truck
Revegetation	Hydroseed truck
QUARRY PIT AREA	
Contour Final Knoxville Slope	Excavator, loader, haul truck, water truck
Riprap Knoxville Slope Face	Excavator, loader, haul truck, water truck
Drainage: East Rim Haul Road	Grader, loaders (2), backhoe, water truck
Drainage: Rock Slope Protection Swales on Knoxville Face	Backhoe, excavator, loader, haul truck, water truck, concrete pumper truck
Drainage Outlet Structure	Backhoe, loader, welder, water truck, concrete pumper truck
Jack and Bore: Excavate Receiving Pit	Excavator, loader
Jack and Bore: Boring Sub Casing Pipe	Boring machine, loader, 25-ton hydro crane
Tree Screen Along East Rim Road	Backhoe
Install Drainage Outlet Pipe to Mitchell Canyon Road	Excavator, loader, welder
Riprap Mound at Quarry Drainage Outlet	Excavator, loader, haul truck, water truck
Fencing and Gates	Backhoe
Revegetation	Hydroseed truck
PLANT AREA	
Landscape Screening Berm	Loader, scrapers (2), dozer, water truck
Removal of Processing Plant and Support Structures	80-ton rough terrain crane, excavators (3), loaders (3), dozer, concrete industrial saws (3), welders (3), forklift, water truck
Contour Grading and Resoiling	Dozers (2), scrapers (3), loader, grader, water truck
Revegetation	Hydroseed truck

Source: Appendix D-1.
Notes: This table is also included as Table 2-2 in Chapter 2, "Project Description," of this Draft EIR.

Vibration Methodology

The vibration analysis compared the distance between the proposed reclamation activities and the nearest receptors to the buffer distance required for vibration generated by construction equipment to be reduced

to below the annoyance threshold of 75 RMS VdB and the 0.3 in/sec PPV. This distance was estimated by applying the following propagation adjustments to the known vibration generated by typical construction equipment:

$$PPV2 = PPV1 \times \left(\frac{D1}{D2}\right)^{1.1}$$

Where:

PPV1 is the reference vibration level at a specified distance, and PPV2 is the calculated vibration level.

D1 is the reference distance (in this case 25 feet), and D2 is the distance from the equipment to the receiver.

$$RMS2 = RMS1 - 30\ \log_{10}\left(\frac{D2}{D1}\right)$$

Where:

RMS1 is the reference vibration level at a specified distance, and RMS2 is the calculated vibration level.

D1 is the reference distance (in this case 25 feet, and D2 is the distance from the equipment to the receiver.

4.8.4 Project Impacts and Mitigation Measures

Impact 4.8-1: Generation of a Substantial Temporary or Permanent Increase in Ambient Noise Levels in the Vicinity of the Project Site in Excess of Standards Established in the Local General Plan or Noise Ordinance, or Applicable Standards of Other Agencies

Traffic Noise

The proposed project would temporarily increase vehicular travel to and from the project site, which would potentially increase noise along local area roadways. As determined under the Air and Greenhouse Gases Emissions Study (see Appendix D-1), the proposed project would generate up to 98 daily vehicle trips per day, including all worker, vendor, and hauling trips, during removal of the processing plant, which is the reclamation activity with the highest trip count. The peak number of daily vehicle trips generated would be far less than existing traffic levels associated with mining and processing operations at the site (see Appendix D-1). Based on the additive properties of noise discussed in Section 4.8.1.1, above, the number of vehicle trips must nearly double for a perceptible increase in noise to occur. Because the peak project-generated vehicle trips generated would be far less than those generated by existing Clayton Quarry operations, it would also be far less than existing traffic along local area roadways that includes both quarry-generated and non-quarry traffic. Therefore, the proposed project does not have the potential to double traffic along local area roadways, and the traffic noise generated would not be perceptible or substantial. After final reclamation, the project site would be converted to open space land use and vehicular trips to the site would be minimal and intermittent, and would not be a substantial source of traffic noise. Therefore, the potential of the proposed project to result in a substantial traffic noise impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Mining-Period Reclamation Activities

Mining-period reclamation activities under the revised reclamation plan would not alter existing mining activities by the development of new facilities or by bringing substantially different activities to the project site. As described in Section 2.5.13, "Mining and Reclamation Sequence and Schedule," in Chapter 2, "Project Description," slope contouring and revegetation of the overburden fill areas would occur concurrent with ongoing mining activities to the extent feasible. Noise generated from these activities would consist of haul, water, and hydroseed trucks; backhoes; loaders; scrapers; bulldozers; and excavators (see Table 4.10-5). As described in Section 2.5.12, "Equipment for Reclamation Activities," in Chapter 2, this equipment is already used on-site for mining activities (not part of the proposed project). Furthermore, the noise generated by mining and processing operations on the project site would be greater than the noise generated by the periodic use of existing construction equipment for reclamation instead of mining. Therefore, the potential of mining-period reclamation activities to generate substantial daytime noise would be less than significant.

The use of construction equipment at night to conduct reclamation during the mining period could be a significant source of nighttime noise relative to existing conditions because mining and processing operations do not generally occur at night. The Applicant has agreed to Mitigation Measure 4.1-4, "Daily Limitation of Construction Activities," which limits reclamation activities to daytime hours (7 a.m. to 7 p.m. Monday through Friday. With the incorporation of Mitigation Measure 4.1-4, no reclamation activities would occur at night. Therefore, the potential of mining-period reclamation activities to generate substantial nighttime noise would be less than significant with mitigation.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Final Reclamation Activities

After mining is complete, which is currently anticipated to be in 2068, final reclamation activities would occur over the course of approximately one year and would be the primary source of noise on the project site. The existing processing plant facilities would be removed, and the disturbed areas outside of the quarry pit (including the processing plant facilities and overburden fill areas) would be contour graded, resoiled, revegetated, and converted to open space land uses. Additionally, a 24-inch diameter drainage pipeline would be installed to convey flows from the quarry pit lake to the 18-inch stormwater line located along Mitchell Canyon Road, and erosion control and stormwater management facilities would be installed, as described in Section 2.5.4, "Drainage, Sediment, and Erosion Control," in Chapter 2.

Final reclamation activities, including finish slope contouring, revegetation, development of drainage facilities along the east rim haul road, placement of rip-rap along the east rim of the quarry pit lake, demolition and removal of existing processing plant facilities on the site, and development of an outlet and drainage pipeline at the quarry pit lake, would utilize the equipment summarized in Table 4.8-5.

Table 4.8-6, "Noise Levels from Reclamation Equipment," summarizes the estimated noise levels of the two noisiest pieces of equipment that would be used on the project site during each reclamation phase.

TABLE 4.8-6
NOISE LEVELS FROM RECLAMATION EQUIPMENT

Phase Name	Two Highest Noise Generating Equipment	Noise Level at 50 Feet *(dBA Lmax)*	Addition of Two Noisiest Pieces of Equipment at 50 Feet *(dBA Leq)*
OVERBURDEN FILL AREAS			
Finish Slopes and Drainage	Backhoe Water truck	80 84	85
Revegetation	Hydroseed truck[a]	84[a]	84[a]
QUARRY PIT AREA			
Contour Final Knoxville Slope Riprap Knoxville Slope Face Riprap Mound at Quarry Drainage Outlet Drainage: Rock Slope Protection Swales on Knoxville Face	Excavator Haul truck	85 84	88
Drainage: East Rim Haul Road	Grader Water truck	85 84	88
Drainage Outlet Structure	Concrete pumper truck Water truck	82 84	88
Jack and Bore: Excavate Receiving Pit Install Drainage Outlet Pipe to Mitchell Canyon Road	Excavator Loader	85 80	86
Jack and Bore: Boring Sub Casing Pipe	Crane (25-ton) Boring Machine	85 80	86
Tree Screen Along East Rim Road Fencing and Gates	Backhoe[a]	80[a]	80[a]
Revegetation	Hydroseed truck[a]	84[a]	84[a]
PLANT AREA			
Landscape Screening Berm	Scraper Dozer	85 85	88
Removal of Processing Plant and Support Structures	**Concrete Saw Crane (80-ton rough terrain)**	**90 85**	**91**
Contour Grading and Resoiling	Dozer Grader	85 85	88
Revegetation	Hydroseed truck[a]	84[a]	84[a]

Sources: Appendix D-1; FTA 2018.
Notes: Bold text indicates noise generated during this phase would meet or exceed the 90 dBA L_{eq} significance threshold.
a. Only one noise generating piece of equipment is anticipated to be used in this phase of work.

Based on Table 4.8-6, the removal of the processing plant and support structures would have the potential to generate noise levels at the nearest sensitive receptors above the 90 dBA L_{eq} significance threshold. All remaining activities would generate noise levels below these thresholds at the nearest sensitive receptors. It should be noted that the remaining activities would typically be located further than 50 feet from the nearest sensitive receptors. The project site is approximately 190 acres, and the distance between equipment on the project site and the nearest sensitive receptors would vary from a minimum of 50 feet and a maximum of more than 3,500 feet. As described in Section 4.8.1.1, above, noise levels decrease by approximately 7.5 dBA for every doubling of distance over a soft surface.

Therefore, the majority of noise generated during final reclamation activities would be substantially below the noise levels presented in Table 4.8-6. Nevertheless, noise levels generated during the removal of the processing plant and support structures could generate noise with the potential to exceed 90 dBA L_{eq} at the nearest sensitive receptors. It is anticipated that this phase of final reclamation would be completed in approximately 3 months within the course of the approximately one year duration of final reclamation. The implementation of Mitigation Measure 4.8-1 would require the proposed project to implement noise control measures during the removal of the processing plant and support structures, and implement notification and complaint procedures. In addition the implementation of Mitigation Measure 4.1-4 would limit the hours and days of demolition to periods that would be least likely to be disruptive to the surrounding community. With implementation of Mitigation Measures 4.8-1 and 4.1-4, the potential of the proposed final reclamation activities to generate substantial noise would be less than significant with mitigation.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures:

Mitigation Measures: *Implement Mitigation Measure 4.1-4 (see Impact 4.1-4).*

Mitigation Measure 4.8-1: *Noise Reduction During Removal of Processing Plant and Support Structures*

To reduce potential construction-equipment reclamation-related noise impacts associated with the removal of processing plant and support structures on the project site, the following multi-part mitigation measure shall be implemented during the removal of the processing plant and support structures:

- *The operator of the Clayton Quarry (Operator), employees, and the demolition contractor shall ensure that all internal combustion engine-driven equipment are equipped with mufflers that are in good condition and appropriate for the equipment.*
- *The demolition contractor shall locate stationary noise-generating equipment as far as feasible from sensitive receptors. In addition, the construction contractor shall place such stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.*
- *The demolition contractor shall locate, to the maximum extent practical, on-site equipment in staging areas to maximize the distance between construction-related noise sources and noise-sensitive receptors nearest the project site.*
- *The demolition contractor shall prohibit unnecessary idling of internal combustion engines.*
- *An on-site complaint and enforcement manager (manager) shall be available to respond to and track noise complaints. The telephone number of the manager shall be posted at the entrance to the quarry site. The manager shall be trained to use a sound level meter and should be available during all construction hours to respond to noise complaints. The manager shall be responsible for responding to any noise complaints regarding construction noise and for coordinating with the adjacent land uses. The manager will determine the cause of any complaints and coordinate with the demolition team to implement effective measures (considered technically and economically feasible, such as noise curtains, temporary sound walls, berms, etc.) to correct the problem. The complaints and noise reduction measures shall be documented and provided to the County upon request.*

- *At least one week prior to commencement of the removal of the processing plant and supporting structures, the Operator shall prepare a notice that the demolition work will commence. The notice shall be posted at the site and mailed to all the owners and occupants of property within 300 feet of the exterior boundary of the project site as shown on the latest equalized assessment roll. The notice shall include the telephone number of the complaint and enforcement manager. A copy of the notice shall be mailed to Contra Costa County Department of Conservation and Development.*
- *This mitigation measure 4.8-1 only applies to reclamation activities, not to operational activities.*

Level of Significance After Mitigation: Less than significant.

Post-Reclamation Conditions

Upon completion of final reclamation activities, the site would be converted to an open space land use. With the exception of periodic monitoring and maintenance of the quarry pit lake and associated drainage pipeline, no other activities would occur on the site. Monitoring and maintenance activities would be short-term, intermittent, limited to daytime hours, and would generally not require the use of noise-generating equipment. Therefore, the potential of the proposed project to generate substantial noise after the completion of reclamation would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

Impact 4.8-2: Generate Excessive Groundborne Vibration or Groundborne Noise from Reclamation Activities

Vibration generated during reclamation-period mining activities and final reclamation would be generated by the operation of the earthmoving equipment summarized in Table 4.8-5 during proposed reclamation activities. Table 4.8-7, "Vibration Levels of Earthmoving Equipment," shows the reference vibration levels for types of equipment similar those that would be operated on the project site during reclamation.

TABLE 4.8-7
VIBRATION LEVELS OF EARTHMOVING EQUIPMENT

Equipment	PPV at 25 Feet[a] (in/sec)	RMS at 25 Feet[b] (VdB)	Buffer Distances for Vibration Disturbance (Feet)	Buffer Distances for Vibration Damage (Feet)
			On-Site and Off-Site Receptors (75 VdB Threshold)	*On- and Off-Site Receptors (0.3 in/sec PPV Threshold)*
Large bulldozer	0.089	87	43	8
Caisson drilling	0.089	87	43	8
Loaded trucks	0.076	86	40	7
Jackhammer	0.035	79	23	4
Small bulldozer	0.003	58	5	1

Source: FTA 2018; Caltrans 2013b

Notes: NA = Not available.

a. PPV = peak particle velocity, in/sec = inches per second,
b. RMS = root mean square, VdB = vibration decibel

Based on the buffer distances for vibration damage presented in Table 4.8-7, the proposed reclamation activities would not have the potential to generate vibration that could disturb the nearest sensitive receptors or cause damage to buildings because the nearest receptors and buildings are located approximately 50 feet from the project site, and the distances within which potentially significant impacts could occur are 43 feet and 8 feet, respectively.

Note that although vibration estimates are not available for tunnel boring machine equipment, the vibration generated would be similar to caisson drill vibration, as tunnel boring machines drill through the ground surface. Furthermore, the use of a boring machine would be limited to the first 300-foot-segment of the proposed drainage pipeline, which is located in the central portion of the project site, approximately 1,000 feet from the nearest sensitive receptor. Vibration dissipates rapidly with distance, therefore, the use of a tunnel boring machine to develop a 24-inch-diameter pipeline would not have the potential to generate excessive groundborne vibration at any nearby receptors.

Upon completion of final reclamation activities, the project site would be converted to an open space land use, which would not contain any activities or uses that could be a source of excessive groundborne vibration.

For these reasons, the potential for vibration damage or disturbance to occur during proposed reclamation activities would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

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 EIR, 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 EIR identifies potentially significant environmental impacts associated with implementation of the proposed project, which are addressed by resource topic in Chapter 4, "Environmental Analysis." These issues, and others that could contribute considerably to cumulatively 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 Draft EIR 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, criteria pollutants, and particulate matter)
Biological Resources	Local and areas within the same watershed
Greenhouse Gases (GHG)	Global (GHG)
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

Source: Data compiled by Benchmark Resources in 2021.

The project is 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 2021) and 2068 (approximately 47 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.

5.2 RELATED PROJECTS

5.2.1 Analysis Method

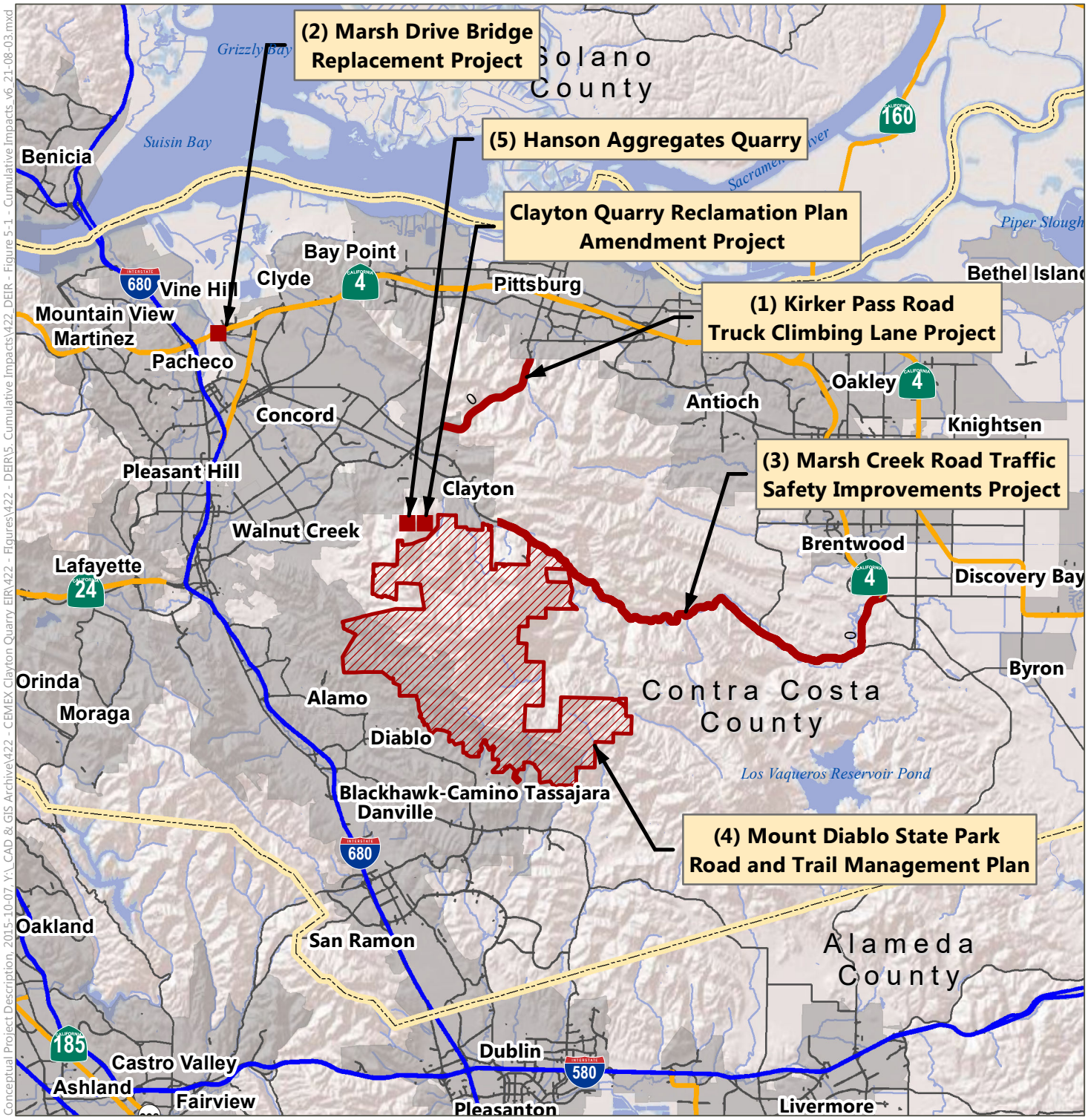
The CEQA Guidelines allow for the use of two methods to determine the scope of related projects for the cumulative impact analysis (CEQA Guidelines Section 15130):

> **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 EIR, the first 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 Cumulative Projects," and shown in Figure 5-1, "Approximate Location of Cumulative Impacts." 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 or 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 surrounded by residential neighborhoods and recreational uses; thus, projects associated with mining, recreation, and transportation were considered as part of this analysis and included on the project list. While the project site is located in an unincorporated area of Contra Costa County, it is in also near and in the sphere of influence of the City of Clayton. For this reason, relevant projects in Clayton are also included in Table 5-2.



SOURCES: Cumulative Impacts–County of Contra Costa, Public Works, accessed March 2021; ESRI World Shaded Relief accessed March 2021; compiled by Benchmark Resources in 2021

NOTES:

1. Cumulative project numbers correspond to Cumulative Projects List in Table 5-2.

County Boundary
Water Body
City
Interstate Highway
State Highway
Major Road

BENCHMARK RESOURCES

N

0 2 4 8 Miles

Approximate Location of Cumulative Impacts
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
DRAFT EIR
Figure 5-1

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TABLE 5-2
LIST OF NEARBY CUMULATIVE PROJECTS

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
1	Kirker Pass Truck Climbing Lane Project	Construct a truck climbing lane in the northbound direction of Kirker Pass Road.	1-mile, beginning at the Concord Pavilion and ending at the northern Hess Road intersection.	Contra Costa County	Completed in 2020.
2	Marsh Drive Bridge Replacement Project	Replace two existing bridges (Bridges #28C-0143 and #28C-0145) on Marsh Creek Road.	Marsh Drive over Walnut Creek Channel located in both unincorporated Contra Costa County and City of Concord.	Contra Costa County	Construction expected in May of 2022 with 18 months to complete.
3	Marsh Creek Road Traffic Safety Improvements	Install safety improvements along a 14 mile stretch of Marsh Creek Road	14 mile stretch of Marsh Creek Road between the cities of Brentwood and Clayton – e.g., rumble strips.	Contra Costa County	Completed in 2020.
4	Mount Diablo State Park Road and Trail Management Plan	Provides specific direction for the long-term construction, maintenance, and management of the roads and trails within Mount Diablo State Park.	Approximately 200 miles of roads and trails within the approximately 20,000-acre park.	State of California	Approved on March 10, 2016.
5	Hanson Aggregates Quarry	Active quarry located on the opposite side of Mount Zion	The Hanson Aggregates quarry operation operates on approximately 118 acres of the site.	Contra Costa County/Hanson Aggregates	Approved, in operation since 1953 – status on-going.

Sources: Kendrick, pers. comm., 2020; California State Parks 2016 and 2021; Contra Costa County Department of Conservation and Development (DCD) 2016, 2020, and 2021; Data compiled by Benchmark Resources in 2021.
Notes: Cumulative project locations are shown on Figure 5-1.

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, "Aesthetics and Visual Resources," are as follows:

- Impact 4.1-1: Substantial Adverse Effect on a Scenic Vista (no impact);

- Impact 4.1-2: Substantially Damage Scenic Resources Within View of a Scenic Highway (no impact);
- Impact 4.1-3: Substantial Degradation of the Approved Visual Character or Quality of the Site and Its Surroundings (less than significant); and
- Impact 4.1-4: 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, with the exception of the Hanson Aggregates Quarry, which is located adjacent to the CEMEX Clayton Quarry property, but it is on the other side of Mount Zion and therefore not part of the same viewshed as the project site. Based on this setting, only the Mount Diablo State Park Road and Trail Management Plan is a potential contributor to potential cumulative aesthetics impacts.

The ongoing mining operations and the quarry pit are visible from all four key observation points (see Figures 4.1-1 through 4.1-5 in Section 4.1). The Mount Diablo State Park Road and Trail Management Plan describes the existing road and trail conditions in a park and provides a roadmap for future management including specific actions for individual roads and trails. The nearest activities planned under this cumulative project are to improve bridges leading to the Mitchell Canyon Trailhead and to include improve accessibility to visitors' facilities consistent with Americans with Disabilities Act requirements. These areas of improvements are located east of Mitchell Creek, more than 400 feet east of the project site. Because of the distance from the project site and the location of these activities at the valley floor, the activities would generally not be visible. Furthermore, similar to the proposed project, the construction associated with the Mount Diablo Plan State Park Road and Trail Management Plan would be temporary and would not occur at night. Upon completion of construction, areas disturbed by both the Mount Diablo State Park and proposed project construction activities would be returned to similar or improved conditions (i.e., the proposed project would include landscaping featuring more trees and natural habitat). For these reasons, a significant cumulative aesthetic impact would not occur.

5.3.2 Air Quality

Project impacts pertaining to air quality, as described in Section 4.2, "Air Quality," are as follows:

- Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan (less than significant);
- Impact 4.2-2: 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 (less than significant);
- Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations (less than significant); and
- 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 Metropolitan 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, the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant.

The project is in the vicinity of another surface mine (Hanson Aggregates Quarry) that operates heavy equipment for mining and reclamation purposes. The project's reclamation activities would add to the air quality impacts of this other mining project in the vicinity. Air quality emissions in the area may also increase considerably with construction and buildout of other nearby projects (see Project 5 in 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.

While project-specific mitigation measures are not required for the proposed project, the project applicant would meet applicable CARB requirements that require mobile fleets to utilize cleaner emitting heavy equipment at the project site to help reduce the project impacts. This should ensure that the cumulative impacts would remain at a less than significant level.

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, and associated Toxic Air Contaminants (TACs) and particulate matter 2.5 micrometers or smaller ($PM_{2.5}$) 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 laws 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 mining operation on the project site (see Appendix D-1, "Air and Greenhouse Gas Emissions Study").

5.3.3 Biological Resources

Project impacts pertaining to biological resources, as described in Section 4.3, "Biological Resources," are as follows:

- Impact 4.3-1: The Project Could Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species due to Ground Surface Disturbance and Vegetation Removal (less than significant with mitigation);

- Impact 4.3-2: The Project Could Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species due to Exposure to Quarry Pit Lake Water (less than significant);
- Impact 4.3-3: The Project Could Have an Adverse Effect on Riparian Habitat or Other Sensitive Natural Communities (less than significant with mitigation);
- Impact 4.3-4: The Project Could Have an Adverse Effect on Protected Wetlands (less than significant with mitigation);
- Impact 4.3-5: The Project Could Interfere with Native Resident or Migratory Fish or Wildlife Species Movement, Corridors, or Nursery Sites (less than significant with mitigation);
- Impact 4.3-6: The Project Could Conflict with Local Policies or Ordinances Protecting Biological Resources (less than significant with mitigation); and
- Impact 4.3-7: The Project Could Conflict with Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other Local or Regional Plan Protecting Biological Resources (less than significant).

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 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 non-native grassland, chaparral, and oak woodland 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. Grading and construction activity relating to the creation of the overburden fill areas would result in species displacement, vegetation and tree removal, loss of habitat, and impacts to wetlands. This habitat loss could contribute to the regional cumulative loss of wildlife habitat, including foraging and nesting habitat for the identified special status species. The displacement of species within the overburden fill area footprints and consequential loss of habitat are considered potentially significant both on a project level and cumulative basis.

Mitigation measures identified for the project provide for the replacement of trees 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. Due to state and federal regulatory requirements and Contra Costa 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, 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.

As discussed in Section 4.3, the project would result in a potentially significant impact associated biological resources. For this impact, the following mitigation measures are proposed:

- Mitigation Measure 4.3-1a: Botanical Surveys.
- Mitigation Measure 4.3-1b: Special-status Vertebrates Surveys.
- Mitigation Measure 4.3-1c: Bat Surveys.

- Mitigation Measure 4.3-1d: Wildlife Exclusion Fence.
- Mitigation Measure 4.3-1e: Biologist Presence.
- Mitigation Measure 4.3-1f: No Monofilament Plastics.
- Mitigation Measure 4.3-1g: Nesting Bird Surveys.
- Mitigation Measure 4.3-1h: Burrowing Owl Protection.
- Mitigation Measure 4.3-1i: Bumblebee Protection.
- Mitigation Measure 4.3-1j: Take Coverage for Federally Listed Species.
- Mitigation Measure 4.3-1k: Trapping Federally Listed Species.
- Mitigation Measure 4.3-1l: Take Permit.
- Mitigation Measure 4.3-3: Acquire Necessary Permits for Jurisdictional Features.
- Mitigation Measure 4.3-6a: Tree Avoidance.
- Mitigation Measure 4.3-6b: Tree Maintenance During Construction, Root Zones.
- Mitigation Measure 4.3-6c: Tree Protection Fencing.
- Mitigation Measure 4.3-6d: Use of Heavy Equipment.
- Mitigation Measure 4.3-6e: Storage of Construction Materials and Debris.
- Mitigation Measure 4.3-6f: Incidental Damage to Protected Trees.
- Mitigation Measure 4.3-6g: Trimming.
- Mitigation Measure 4.3-6h: Tree Planting Monitoring and Establishment.
- Mitigation Measure 4.3-6i: Oak Tree Plan.

5.3.4 Geology and Soils

Project impacts pertaining to geology, soils, and paleontological resources, as described in Section 4.4, "Geology and Soils," 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 Potential Substantial Adverse Effects, as Result of Seismically-Induced Liquefaction, Lateral Spreading, and Settlement (less than significant);
- Impact 4.4-4: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Rockfalls and Landslides within the Quarry (less than significant with mitigation);
- Impact 4.4-5: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Overburden Fill Areas (less than significant);
- Impact 4.4-6: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Plant Site Area (less than significant);
- Impact 4.4-7: Result in Substantial Soil Erosion or the Loss of Topsoil (less than significant);

- Impact 4.4-8: 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 with mitigation);
- Impact 4.4-9: 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);
- Impact 4.4-10: Directly or indirectly destroy a unique geological feature (less than significant); and
- Impact 4.4-11: Directly or indirectly destroy a unique paleontological resource (less than significant with mitigation).

Potential effects to geologic and soil conditions and to paleontological resources are typically considered site specific. The scope of potential cumulative impacts is limited to the area that is physically affected by the project. Therefore, the cumulative impact setting for geology, soils, and paleontological resources consists of the project area and immediately adjacent properties. Only project 4, the Mount Diablo State Park Road and Trail Management Plan (California State Parks 2016), and project 5, Hanson Aggregates Quarry are located adjacent to the proposed project site. Regarding project 4, this plan describes the existing road and trail conditions in a park and provides a roadmap for future management including specific actions for individual roads and trails. The nearest activities planned under this cumulative project are to improve bridges leading to the Mitchell Canyon Trailhead and to include improve accessibility to visitors' facilities consistent with Americans with Disabilities Act requirements. These areas of improvements are located east of Mitchell Creek, more than 400 feet east of the project site. Because of the distance from the project site, and because the planned activities would involve minimal ground disturbance, the potential geologic, soils, and paleontological impacts associated with the Mount Diablo State Park Road and Trail Management Plan would not have the potential combine with and exacerbate potential impacts related to geology, soils, seismicity, and paleontological resources on the project site. Regarding project 5, the Hanson Aggregates Quarry has been operating for 68 years. Similar to CEMEX at its site, Hanson Aggregates continues to comply with applicable conditions of approval and reclamation plan requirements to ensure that potential impacts to geology and soils are avoided and minimized to the extent that there are no off-site impacts to these resources. Thus, a significant cumulative impact would not occur.

5.3.5 Greenhouse Gases

Project impacts pertaining to GHG, as described in Section 4.5, "Greenhouse Gas Emissions," 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); and
- Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations (less than significant).

GHG 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:

- Mitigation Measure 4.5-1a: Idling Times.
- 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: Generator Alternative Fuel.

Even without mitigation, the project's GHG emissions were estimated to be less than significant. Effective implementation of Mitigation Measures 4.5-1a through -1g would further 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-1g, 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, "Hydrology and Water Quality," are as follows:

- Impact 4.6-1: Violate Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality (less than significant with mitigation);
- Impact 4.6-2: Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge such that the Project May Impede Sustainable Groundwater Management of the Basin (less than significant);
- Impact 4.6-3: Substantially Alter Drainage Patterns in a manner which would result in Erosion or Siltation within Areas that Drain to the Northern Watershed (less than significant);
- Impact 4.6-4: Substantially Alter Drainage Patterns in a manner which would result in Erosion or Siltation within the Quarry, Mitchell Creek, and Transitional Watershed Areas (less than significant);
- Impact 4.6-5: Substantially Alter Drainage Patterns in a manner which would result in On-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System (less than significant);
- Impact 4.6-6: Substantially Alter Drainage Patterns in a manner which would result in Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System (less than significant);
- Impact 4.6-7: Substantially Alter Drainage Patterns in a manner which would result Uncontrolled Discharges from the Quarry Lake and Thereby result in On- Or Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System (less than significant with mitigation);
- Impact 4.6-8: Substantially Alter Drainage Patterns in a Manner Which Would Impede or Redirect Flood Flows (less than significant);
- Impact 4.6-9: Release of Pollutants in Flood Hazard, Tsunami, or Seiche Zones Due to Project Inundation (less than significant); and
- Impact 4.6-10: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan (less than significant with mitigation).

Cumulative Water Quality Impacts

Cumulative water quality and drainage 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 watershed that is downslope from the project site; for example, a project may generate additional runoff

that may contribute to flooding or increased erosion when considered in combination with other projects within the same watershed. Projects 1, 3, 4, and 5 listed in Table 5-2 are relevant to this impact because they are located upstream or downstream of Mitchell Creek and Mount Diablo Creek, to which the project site drains. The Hanson Aggregates Quarry (project 5 in Table 5-2) drains west to the Pine Creek watershed, which is part of the larger Walnut Creek watershed (Walnut Creek Watershed Council 2013).

Stormwater discharged from past and existing projects within the project vicinity has contained pollutants that have contributed to impairment of the water quality of Mount Diablo Creek and Suisun Bay, as described in Table 4.6-2, "Water Quality Impairments," in Section 4.6. Stormwater regulations have become progressively more stringent since the passing of the federal Clean Water Act, and current regulations now require new developments to manage and treat all significant sources of stormwater pollutants. As described in Section 4.6.3, "Regulatory Setting," in Section 4.6, the proposed project and cumulative projects, depending on their specific activities, must comply with the Federal Water Pollution Control Act, Porter-Cologne Water Quality Control Act, State Water Resources Control Board (SWRCB) and San Francisco Bay Regional Water Quality Control Board (RWQCB) National Pollutant Discharge Elimination System permits (NPDES), California Surface Mining and Reclamation Act, *Contra Costa County General Plan* (Contra Costa County 2014), Contra Costa County Clean Water Program, Contra Costa County Flood Control and Water Conservation District (Flood Control District), and Contra Costa County Surface Mining and Reclamation Ordinance, which help to reduce the potential for impacts related to hydrology and water quality impacts.

Although discharges from the quarry pit lake under the proposed project would have the potential to result in degradation of downstream water quality without mitigation, the development of a quarry lake is a unique project in the watershed, and the potential water quality impacts of a quarry lake would not be anticipated to combine with other cumulative projects within the watershed (such as projects 1, 3, and 4, listed in Table 5-2) that consist of typical urban development and infrastructure projects, whose discharges would be minimized and addressed by existing regulations. The reclamation activities associated with the proposed project (e.g., processing plant demolition, revegetation) would be subject to existing regulations that would minimize and address potential water quality impacts. In addition, as noted above, although project 5 is also a quarry project with a quarry pit located on-site, this quarry is located on the opposite side of Mount Zion and drains to a different watershed. Stormwater runoff and discharges from this quarry site would be required to comply with existing regulations to ensure that they minimize and address potential water quality impacts. Therefore, the potential for water quality impacts associated with the proposed project to combine with reasonably foreseeable cumulative projects and create a cumulative water quality impact would be less than significant.

Additionally, as described under Impact 4.6-4, in Section 4.6, the changes in drainage patterns as a result of the proposed project would decrease runoff to Mitchell Creek or Mount Diablo Creek and therefore would not contribute to cumulative flooding or erosion impacts in downstream watersheds. The potential overtopping of the proposed quarry lake would be as a result of infrastructure failure specific to the quarry pit lake and would not be anticipated to combine with other cumulative projects in the watershed (such as projects 1, 3, and 4, listed in Table 5-2) that consist of typical urban development and infrastructure projects, and do not propose the entrainment and release of water from lakes. Therefore, the potential for the drainage impacts associated with the proposed project to combine with reasonably foreseeable cumulative projects and create a cumulative drainage impact would be less than significant.

Cumulative Groundwater Impacts

The context for the evaluation of the cumulative impacts on groundwater recharge and groundwater supply is the Clayton Valley groundwater basin because the northeast portion of the project site, which consists of quaternary alluvium, is underlain by the Clayton Valley groundwater basin. As described in Section 4.6.1.4, "Local Groundwater Conditions," the groundwater on the western portions of the project site occurs only in fractures and results from surface water seeping into fractures in the rock mass on the slopes of Mount Zion (see Appendix F). Similar to the western portion of the proposed project site, project 5, which is located on the western slopes of Mount Zion, is not located within a designated groundwater basin (California Department of Water Resources [DWR] 2021). The project 5 quarry site geology is indicated as diabase rock (shown on Figure 4.4-1, "Site Geology Map," in Section 4.4). Therefore, similar to the western portion of the project site, groundwater only occurs as surface water seepage into rock fractures. Based on the geotechnical evaluation (see Appendix F) and the geologic characteristics of Mount Zion shown on Figure 5-2, "Geology of Mount Zion," there are no geologic features that could create a hydrological connection between the project 5 quarry site and the proposed project site. Therefore, project 5 would not have the potential to contribute to cumulative impacts to groundwater quality or supply. Only project 4, listed in Table 5-2 is relevant to this impact because only Mount Diablo State Park is underlain (partially) by the Clayton Valley groundwater basin.

The proposed project would decrease impervious surfaces through the removal of the processing plant facilities and therefore would not contribute to cumulative groundwater recharge impacts. Project 4 consists of the Mount Diablo State Park Road and Trail Management Plan (California State Parks 2016), which provides specific direction for the long-term construction, maintenance, and management of the roads and trails within Mount Diablo State Park. Neither the proposed project nor project 4 would require the pumping of groundwater from the underlying basin. As described in Impact 4.6-2 in Section 4.6, the quarry pit would not be hydrologically connected to the Clayton Valley groundwater basin. It is unlikely that future projects overlaying the Clayton Valley groundwater basin would require the pumping of groundwater from the basin because these areas are located within urban areas with established water providers. Therefore, the potential for the proposed project to combine with reasonably foreseeable cumulative projects and create a cumulative impact related to groundwater supply would be less than significant.

5.3.7 Land Use and Planning

Project impacts pertaining to land use and planning, as described in Section 4.7, "Land Use and Planning," 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 *Contra Costa County General Plan* (Contra Costa County 2014) 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 community, but instead would help to soften any existing division by reclaiming the site to open space.

The proposed changes to the approved reclamation plan are located within the boundaries of the existing permitted quarry and do not pertain to quarry operations. 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 approved reclamation plan.

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 and vibration, as described in Section 4.8, "Noise," are as follows:

- Impact 4.8-1: Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project site in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (less than significant with mitigation); and
- Impact 4.8-2: Generate Excessive Groundborne Vibration or Groundborne Noise from Reclamation Activities (less than significant).

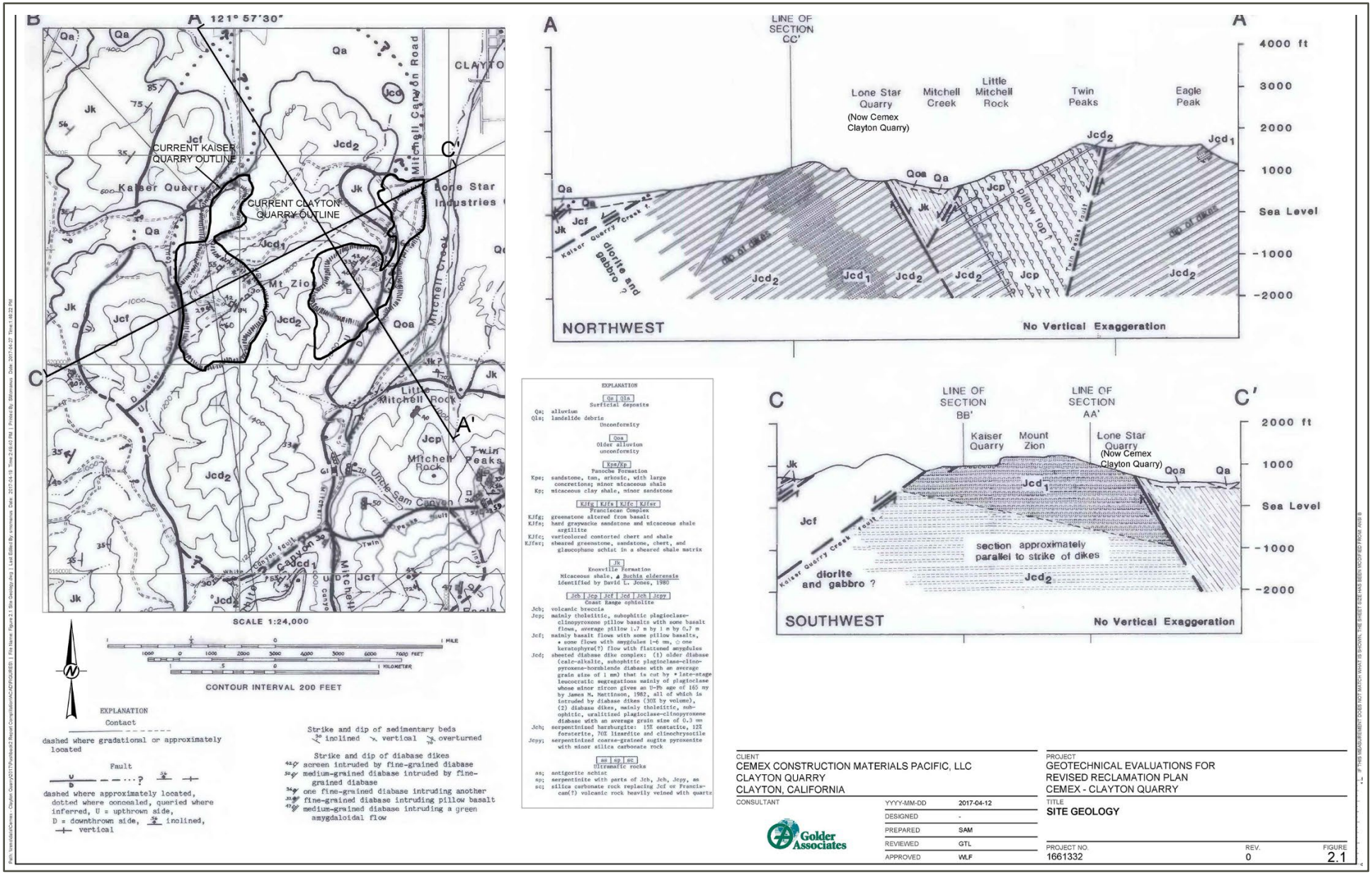
Noise and vibration dissipate rapidly with distance. Therefore, only project 4, Mount Diablo State Park Road and Trail Management Plan, and project 5, Hanson Aggregates Quarry, which are located in close proximity to the project site, are considered in this analysis.

Project 5, Hanson Aggregates Quarry, is located on the other opposite side of Mount Zion from the proposed project. The mountain provides shielding from noise generated by the Hanson Aggregates Clayton Quarry at sensitive receptors located east of the project site. Similarly, the mountain provides shielding from noise generated by the CEMEX Clayton Quarry at sensitive receptors located west of the Hanson Aggregates Quarry. The nearest receptors to both sites are residences located approximately 0.25 miles north of the Hanson Aggregates Quarry and 0.5 miles north of the project site. At these distances, noise and vibration generated from either site would not be substantial or excessive, and the potential for a cumulative impact to occur would be less than significant.

Project 4, Mount Diablo State Park Road and Trail Management Plan, plan describes the existing road and trail conditions in a park and provides a roadmap for future management including specific actions for individual roads and trails. The nearest activities planned under this cumulative project are to improve bridges leading to the Mitchell Canyon Trailhead and to include improve accessibility to visitors' facilities consistent with Americans with Disabilities Act requirements. These areas of improvements are located east of Mitchell Creek, more than 400 feet east of the project site. Because of the distance from the project site, and because the planned activities would involve short-term, relatively minor construction, without major sources of construction noise, such as pile drivers, the potential for a cumulative noise or vibration impact to occur would be less than significant.

5.3.9 Summary of Significant and Unavoidable Cumulative Impacts

As discussed in the preceding sections, the project would not result in significant and unavoidable cumulative impacts.



SOURCE: Golder Associates 2017; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Geology of Mount Zion

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 5-2

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6—ALTERNATIVES

6.1 INTRODUCTION

This chapter describes the three alternatives to the proposed Clayton Quarry Reclamation Plan Amendment Project; evaluates the comparative effects of the alternatives relative to the proposed project; and identifies the "*environmentally superior alternative*", as required under the California Environmental Quality Act (CEQA) Guidelines §15126.6(e). Alternatives considered but rejected from further consideration are also described.

6.2 CEQA REQUIREMENTS FOR ALTERNATIVES ANALYSIS

The CEQA Guidelines specify that an 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 continued, 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 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 reclamation plan to respond to changed circumstances which have resulted in the approved reclamation plan's infeasibility and to provide an environmentally superior alternative for reclamation. As defined in Section 2.3, "Project Objectives," in Chapter 2, "Project Description," specific project objectives include:

1) Complete reclamation over an anticipated period of 47 years (including monitoring) to a post-mining land use of open space;
2) Facilitate reduction of the surface mining footprint that leaves the east rim of the quarry intact, providing visual buffer between the quarry and view sheds to the east;
3) Create permanent overburden fill areas to be revegetated;

[1] *Big Rock Mesas Property Association v. Board of Supervisors of the County of Los Angeles* (2d Dist. 1977) 73 Cal. App. 3d 218).

4) Establish final grading contours reflecting a maximum depth of excavation at elevation 110 feet above mean sea level (msl) with finish slope angles that achieve adequate factors of safety;
5) Establish a final drainage plan that provides for the formation of a lake and control of stormwater discharge from the project site in a manner that would not result in downstream flooding;
6) Facilitate revegetation of the quarry east rim, overburden fill areas and processing plant site to a combination of chaparral and grassland habitats that feature California native seed mixes;
7) Clarify pre-1976 (pre-SMARA) disturbance areas, including any areas disturbed outside the boundaries of the 1983 approved reclamation plan;
8) Achieve current State reclamation standards during reclamation;
9) Maximize the extraction of the remaining available on-site hardrock resources through the anticipated reclamation end date of 2068, including a change in the final bottom elevation of excavation the quarry pit to 110 feet msl;
10) Continue to supply the regional demands for Portland Cement Concrete (PCC) grade aggregate and thereby reduce regional vehicle miles travelled (VMT); and
11) Establish a reclamation plan that limits the emission of air quality criteria pollutants, toxic air contaminants, and dust.

6.4 SUMMARY OF SIGNIFICANT ENVIRONMENTAL IMPACTS

After applying CEQA standards of significance to the entire range of adverse impacts that would result from implementation of the project, no significant and unavoidable impacts have been identified through the analysis presented in Chapter 4, "Environmental Analysis," Chapter 5 "Cumulative Impacts," or Chapter 7, "Other CEQA Topics."

The proposed project would result in significant impacts related to aesthetics, air quality, biological resources, geology and soils, greenhouse gas, hydrology and water quality that could be reduced to less than significant levels through implementation of mitigation measures identified in Chapter 4.

6.5 ALTERNATIVES DEVELOPMENT PROCESS

CEQA requires that a range of reasonable and feasible alternatives to a proposed project be evaluated in an EIR. Many factors are considered in the reclamation of a hardrock mining and processing site, including potential end uses, construction methodology, slope stability, contractual requirements, statutory and regulatory requirements, and other factors. Contra Costa County's (County) consideration of alternatives to the proposed project emphasizes an effort to identify alternatives that would address 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.

CEQA Guidelines §15126.6(f)(2)(b) recognizes 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 (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 [i.e., the operator of the Clayton Quarry]) and is considered unnecessary for purposes of a meaningful evaluation that compares environmental effects of potential alternatives with those of the proposed project.

6.6 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.

6.6.1 Agriculture Irrigation Alternative

Under the Agriculture Irrigation Alternative, the proposed reclamation plan would be implemented as described in Chapter 2. However, rather than discharging to a drainage pipeline, water from the proposed quarry pit lake would be used for agricultural irrigation on the project site. The reclaimed plant site would be converted to active agricultural use under this alternative. This alternative would avoid potential impacts to downstream water quality by eliminating the need to convey flows from the quarry pit lake to off-site drainages. This alternative would also be consistent with the current A-2 General Agricultural District (A-2) zoning designation of the project site. Although the proposed drainage pipeline would not be required, thereby avoiding potential impacts to cultural, paleontological, and tribal resources along the proposed pipeline alignment, it is probable that water supply infrastructure to move water from the quarry lake to the agricultural fields on the project site would be required, and that similar potential impacts related to ground disturbance would occur.

The County has rejected this alternative because requiring private landowners to maintain active agriculture at the project site in perpetuity in sufficient scale to utilize water to prevent a discharge from a future quarry lake is infeasible. Should farming on the project site cease, the lack of water use for irrigation would cause water levels in the quarry lake to rise until the lake overflows. The uncontrolled discharge from the overflow would likely lead to erosion, sedimentation, and increased runoff rates and volumes to Mitchell Creek and the DA71A Drainage Area (refer to Section 4.6, "Hydrology and Water Quality," for a detailed description of County Drainage Areas) that could overwhelm existing stormwater drainage facilities. Depending on the water quality of the quarry pit lake, uncontrolled discharges could also result in the degradation of water quality in downstream water bodies. The Agriculture Irrigation Alternative would therefore potentially increase the severity of impacts related to hydrology and water quality, geology and soils, and utilities and service systems. Consequently, this alternative was considered but rejected.

6.6.2 Water Storage Alternative

Under the Water Storage Alternative, the proposed reclamation plan would be implemented as described in Chapter 2. However, rather than discharging to a drainage pipeline that conveys flows to the DA71A Drainage Area, water in the proposed quarry lake would be utilized by the Contra Costa Water District as a potable water source for potential water users. The Contra Costa Water District provides potable water to central and eastern Contra Costa County, where the project site is located. The County has rejected this alternative for the following two reasons. First, it is not known whether Contra Costa Water District would be able to augment its supply using water from the quarry pit lake. Adding a water source to potable drinking water supplies requires careful consideration of numerous factors and determining the feasibility of this action is beyond the scope of a reasonable CEQA analysis. Second, if this water were to be used as water source, it would require the development of new water supply infrastructure. The development and

operation of such infrastructure could have significant impacts related to biological resources, hydrology and water quality, geology and soils, utilities and service systems, air quality, greenhouse gas emissions, cultural resources, tribal cultural resources, and transportation, depending on the location, type, and size of the facilities required. For example, a pipeline creek crossing could degrade riparian biological resources, construction adjacent to sensitive receptors could results in health risks due to toxic air contaminants, and disturbance of previously undisturbed areas could damage buried archaeological or tribal cultural resources. For these reasons, this alternative was considered but rejected.

6.6.3 Zero Discharge Dam Alternative

The Zero Discharge Dam Alternative aims to eliminate the need for off-site water discharge from the quarry pit lake by raising embankments to create a dam along the quarry east rim. The development of a dam would allow water levels in the quarry pit lake to rise above the 735 feet msl level proposed under the revised reclamation plan. This would increase the water surface area of the lake such that the lake evaporation rate would meet the rate of inflow into the quarry pit lake. The estimated surface area required to ensure that evaporation rate meets the rate of inflow into the quarry pit lake is 35 acres. To create a lake with this surface area, the dam would need to reach an elevation of 830 feet, which is an increase in height of about 80 feet above the lowest elevation of the native geologic material around the rim of the quarry (750 feet msl).

This alternative would eliminate the need for a drainage pipeline and result in no off-site discharge. This in turn in would eliminate the disturbance of the area along the proposed drainage pipeline alignment and thereby avoid potential impacts to paleontological resources along the alignment. The lack of off-site discharge would avoid potential impacts to water quality in waterbodies downstream of the quarry pit lake (i.e., Mitchell Creek, Mount Diablo Creek, Hastings Slough, Suisun Bay). However, although there would be no discharge from the lake, the water quality of the lake would still require monitoring and treatment as described under the Adaptive Management Program (see Appendix G-3) to avoid potential impacts to wildlife using the lake.

Under the Zero Discharge Dam Alternative, the overburden material generated during mining would largely be used to construct the dam, with any excess placed in the overburden fill areas. This alternative would reduce the footprint of the south overburden fill area relative to the proposed project, and thereby reduce potential impacts to biological resources in that area. However, under this alternative, the dam itself would have a footprint that would potentially disturb areas outside of those that would be disturbed under the proposed project, including the oak woodland areas north of the quarry pit lake. The development of the dam would make the walls of the quarry pit taller, and could make development of a tree screen infeasible, which would also increase the potential severity of aesthetics impacts relative to the proposed project. Furthermore, construction of the dam would increase the duration and number of earthmoving and construction equipment used on the project site relative to the proposed project, thereby substantially increasing the severity of potential impacts related to air quality, noise, and greenhouse gas emissions. Lastly, the proposed dam would have sufficient height and capacity to fall under the jurisdiction of the California Department of Water Resources Division of Safety of Dams (DSoD). This would also create a new dam failure inundation area that would require the development of an inundation map and emergency action plans, and that would subject downstream communities to a substantial new safety and flood hazard. As described in the Hydrology and Water Quality Evaluation (see Appendix G-1) the quarry pit lake proposed under the revised reclamation plan would not be of sufficient height, capacity, or composition to fall under the jurisdiction of the DSoD.

In summary, the Zero Discharge Dam Alternative would decrease the potential impacts to archaeological, tribal cultural, and paleontological resources along the proposed drainage pipeline alignment, and eliminate water quality impacts to downstream water bodies, but would increase the severity of impacts related to biological resources, aesthetics, air quality, noise, greenhouse gas emissions, and hazards relative to the proposed project. In addition, the feasibility of permitting and constructing a dam at this location cannot be reasonably determined at this time. For these reasons, the Zero Discharge Dam alternative was considered but rejected.

6.6.4 Relocation of the South Overburden Fill Area Alternative

The Relocation of the South Overburden Fill Area Alternative would involve the placement of overburden fill materials in the grassland area south of the south overburden fill area proposed under the revised reclamation plan. This alternative would avoid the fill of the ephemeral stream and avoid the removal of the oak trees near the ephemeral stream. Aspects of the proposed project that would occur outside of the South Overburden Fill Area, such as the formation of a quarry pit lake, tree screen, and development of a drainage pipeline between the quarry pit lake and Mitchell Canyon Road, would still take place under this alternative. This alternative would increase impacts related to air quality, noise, and greenhouse gas emissions because it would require hauling overburden materials further from the quarry than under the proposed project. Additionally, this alternative could substantially increase potential impacts related to slope stability because it would involve the placement of overburden fill material in an area of steeper slopes than the south overburden fill area proposed under the revised reclamation plan. Because of the steeper slopes, it may not be possible to develop the overburden fill area to meet the capacity requirements of a fill area and minimum factor a safety requirement for slope stability. Slope stability issues would likely need to be addressed by widening the footprint of the south overburden fill area, which would require encroaching onto oak woodlands and natural drainage channels to the south of the grasslands, resulting in potential impacts to biological resources and riparian areas that would not be impacted under the proposed project (and essentially offsetting the biological benefits that this alternative would have compared to the proposed project). Due to the uncertainty of the feasibility of relocating the south overburden fill area and meeting the minimum factor of safety requirements while avoiding impacts to biological resources and riparian areas, this alternative was considered but rejected.

6.7 PROJECT ALTERNATIVES

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 EIR incorporate changes to the project as proposed that would address certain impact issues associated with the project.

It should be noted that the CEMEX Construction Materials Pacific, LLC. (CEMEX or "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:

- Alternative 1: No Project—Implementation of the Approved Reclamation Plan Alternative;
- Alternative 2: Prohibited Nighttime Reclamation Alternative; and
- Alternative 3: In-kind Replacement for Protected Oaks Alternative.

6.7.1 Alternative 1: No Project—Implementation of the Approved Reclamation Plan Alternative

Description

Under the No Project—Implementation of the Approved Reclamation Plan Alternative, the County would not approve a Reclamation Plan Amendment. Instead, the project site would be reclaimed up to the final phase (Phase 1C) of the approved reclamation plan, consistent with existing operating permit. The plan for the final condition of the project site under the approved reclamation plan is shown in Figure 6-1, "Alternative 1: Approved Reclamation Plan, Final Contour Map." The cross-sections indicated on Figure 6-1 are shown on Figure 6-2, "Alternative 1: Approved Reclamation Plan, Contour Map Cross Sections." Upon completion of Phase 1C, the quarry area would be returned as closely as possible to the natural drainage configuration, as shown on Figure 6-3, "Alternative 1: Approved Reclamation Plan, Phase 1C, Final Drainage Plan."

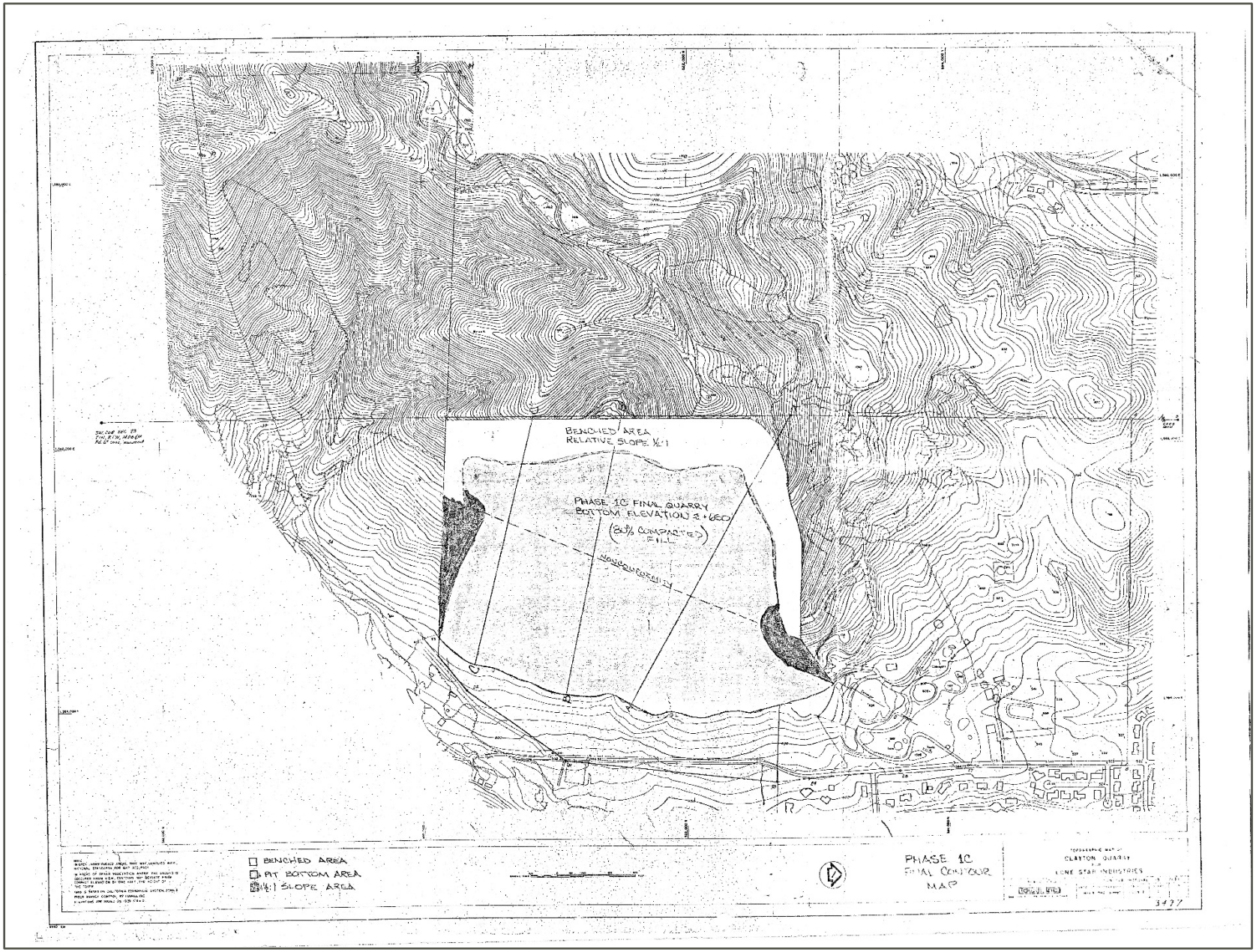
Under this alternative, mining of the quarry pit beyond the bottom elevation of 500 feet above msl specified in the approved reclamation plan would not occur. Unlike the proposed project, Alternative 1 would not result in the creation of a quarry lake and would not leave the east rim intact. Instead, the east rim of the quarry would be excavated over time and overburden fill materials would eventually be pushed into the quarry excavation such that a relatively flat reclaimed area with a slight slope toward the east would exist. The applicant submitted a study titled, "Preliminary Estimate of Air and Greenhouse Gas Emissions for the 1983 Reclamation Plan Backfill" (see Appendix D-3) that estimated the annual emissions associated with the quarry backfill, which indicated it could take up to four years to accomplish the backfill, with hundreds of thousands of off-road truck trips. The final elevation of the backfilled quarry pit area would be about 650 feet msl, as shown on Figures 6-1 and 6-2. Rather than a diversion control structure as included in the proposed project, drainage from the site would flow overland across the site, as shown on Figure 6-3. No tree screen or berms would impede the views of the exposed quarry pit and benches under this alternative. The end use would remain open space.

Table 6-1, "Comparison of Proposed Project to Approved Reclamation Plan," offers a comparison between major features of the 1983 approved reclamation plan and the proposed project. Alternative 1 would meet project objectives 9 and 10 but would not meet the remaining project objectives (1 through 8 and 11).

Impact Analysis

Aesthetics

Visual simulations of Alternative 1 compared to the proposed project from four locations (see Section 4.1, "Aesthetics and Visual Resources," for additional details) are provided in Figure 6-4, "Alternative 1 and Proposed Project: View from Mount Diablo State Park, Looking Northwest," Figure 6-5, "Alternative 1 and Proposed Project: View from Clayton Community Park, Looking West," Figure 6-6, "Alternative 1 and Proposed Project: View from Marsh Creek Road, Looking West," and Figure 6-7, "Alternative 1 and Proposed Project: View from Marsh Creek Road and Easley Drive, Looking Southwest."



SOURCE: Lone Star Industries 1982; compiled by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Alternative 1: Approved Reclamation Plan, Final Contour Map

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

DRAFT EIR

Figure 6-1

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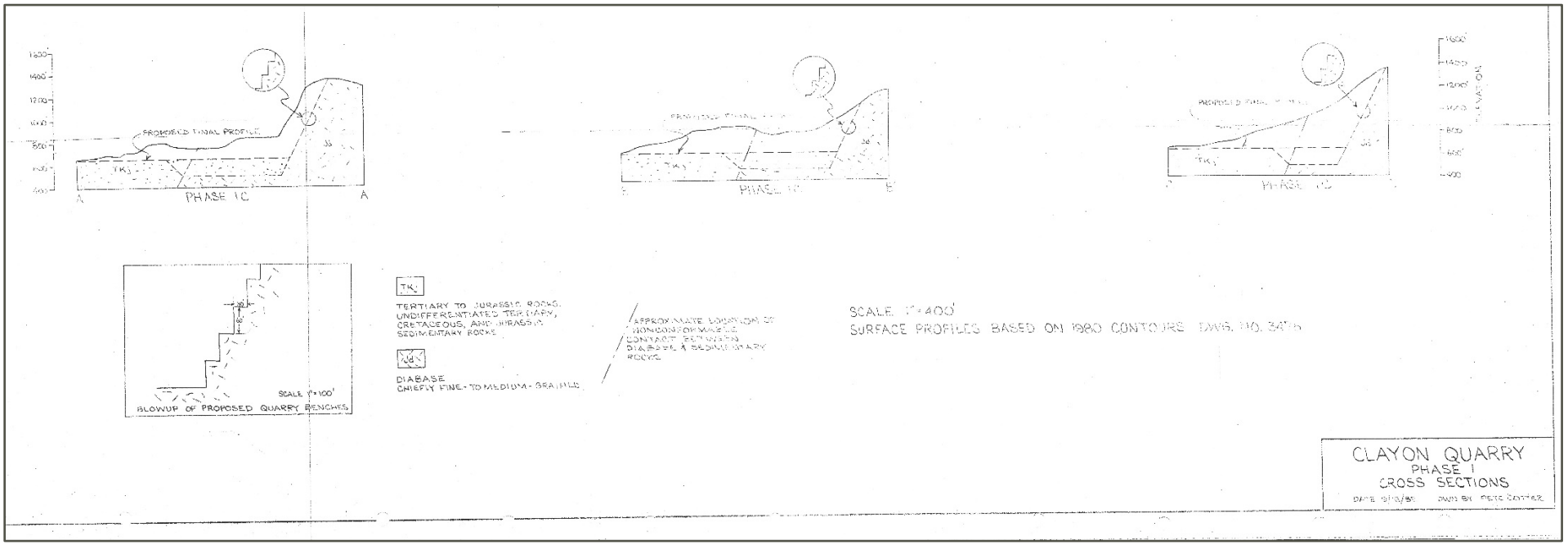

SOURCE: Lone Star Industries 1982; modified by Benchmark Resources in 2021

NOTES:

1. Figure is not to scale,
2. Cross section locations are shown on Figure 6.1,

Alternative 1: Approved Reclamation Plan, Contour Map Cross Sections

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

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Figure 6-2

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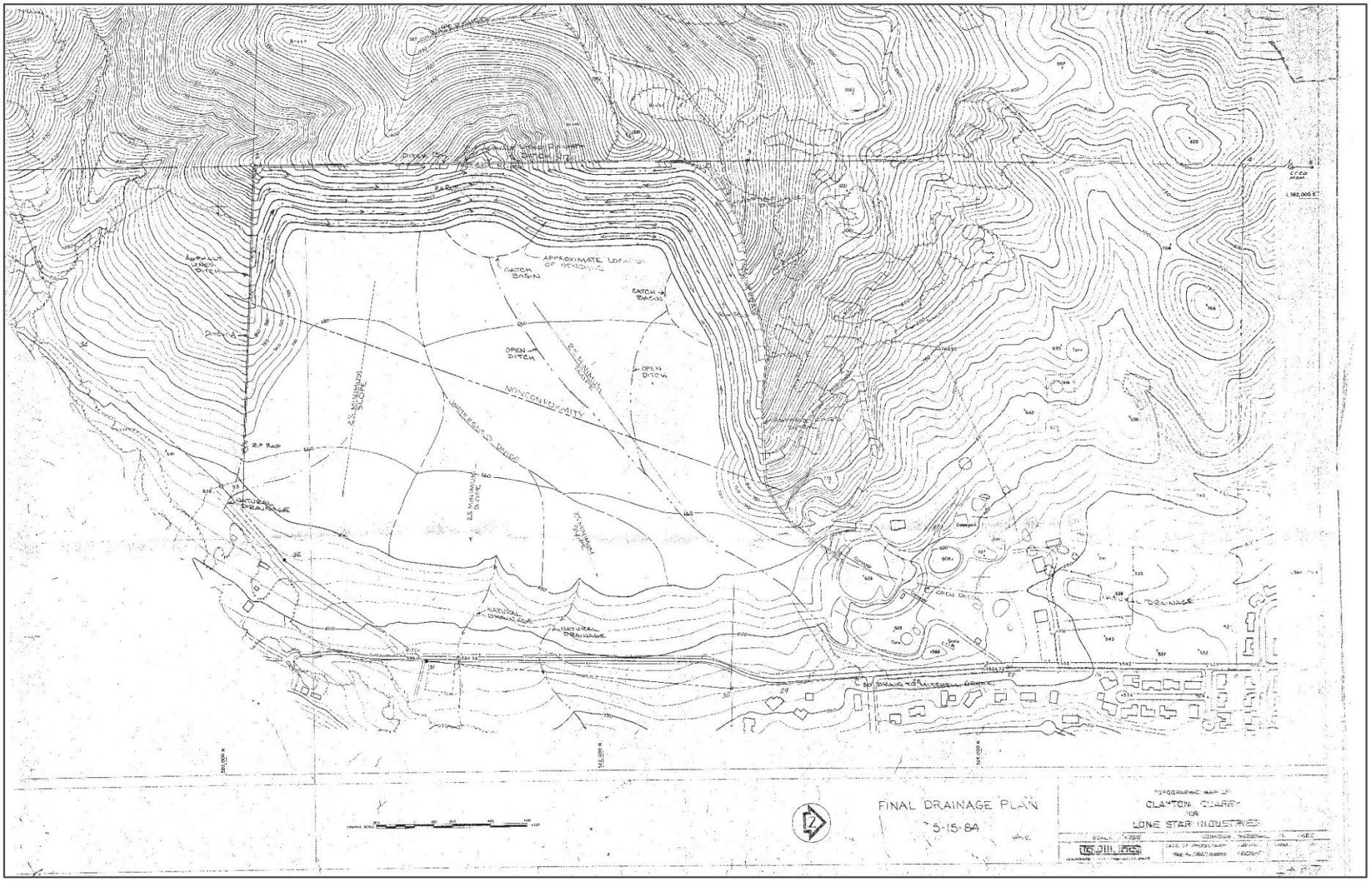

SOURCE: Lone Star Industries 1984; modified by Benchmark Resources in 2021

NOTE: Figure is not to scale.

Alternative 1: Approved Reclamation Plan, Phase 1C, Final Drainage Plan

CLAYTON QUARRY RECLAMATION PLAN AMENDMENT

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Figure 6-3

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Final Conditions: 1983 Plan Implementation Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; modified by Benchmark Resources in 2021

Alternative 1 and Proposed Project:
View from Mount Diablo State Park, Looking Northwest
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 6-4

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Final Conditions: 1983 Plan Implementation Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; modified by Benchmark Resources in 2021

Alternative 1 and Proposed Project:
View from Clayton Community Park, Looking West
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 6-5

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Final Conditions: 1983 Plan Implementation Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; modified by Benchmark Resources in 2021

Alternative 1 and Proposed Project:
View from Marsh Creek Road, Looking West
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 6-6

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Final Conditions: 1983 Plan Implementation Photograph Date: 10.13.2015

Final Conditions: 2017 Plan Proposal

SOURCE: Compass Land Group 2018; modified by Benchmark Resources in 2021

Alternative 1 and Proposed Project:
View from Marsh Creek Road and Easley Drive, Looking Southwest
CLAYTON QUARRY RECLAMATION PLAN AMENDMENT
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Figure 6-7

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TABLE 6-1
COMPARISON OF PROPOSED PROJECT TO APPROVED RECLAMATION PLAN

Reclamation Feature	1983 Approved Reclamation Plan	Proposed Project
Elevations	Mining floor elevation: 500 feet msl Reclamation floor elevation: 650 feet msl	Mining floor elevation: 110 feet msl Reclamation floor elevation: 110 feet msl
End uses	Not specified.	Open space, which would provide for the quarry pit to slowly fill with stormwater to form a quarry lake with a controlled outflow.
Total area disturbed by mining and reclamation	Approximately 184 acres	Approximately 190 acres
Quarry pit area	Approximately 154 acres	Approximately 85 acres
Quantity and type of mineral to be mined (from time of application):	Diabase: quantity noted as confidential Knoxville: quantity noted as confidential	Diabase: 23.8 million tons Knoxville: 4.6 million tons Total: 28.4 million tons
Termination date:	Anticipated 120 years from 1981, or year 2101	Anticipated 47 years from 2021, or year 2068
Quarry pit backfill:	Required to minimum floor elevation 650 feet msl, with minimum pit floor slope gradient of 2%.	Not required, although CEMEX may place overburden in the pit floor as part of reclamation.
East Rim:	Mined and eliminated to facilitate backfill	Left intact with tree screen.

Source: Appendix B-1.
Notes: msl = above mean sea level

Alternative 1 would not develop a screening berm between the existing processing plant site and residential communities to the north. Therefore, under this alternative, there would be no visual barrier between the processing plant site and residential community to the north. Furthermore, the duration of mining would extend until 2101 rather than 2068 (Table 6-1), therefore, the processing plant facilities would remain highly visible for a longer duration.

Under Alternative 1, the east quarry rim would be removed as part of mining, and a tree screen would not be developed. Therefore, as shown on Figure 6-4 through 6-7, a greater portion of the quarry rock face would be visible from all key observation points under Alternative 1 than under the proposed project.

Similar to the proposed project, Alternative 1 would require the use of construction equipment and security lighting that would introduce glare or light levels that could adversely impact nighttime views in the area. With implementation of Mitigation Measure 4.1-4, which limits reclamation activities to daytime hours, the proposed project light and glare impacts would be less than significant. Alternative 1 does not include mitigation that limits reclamation activities to daytime hours, so light and glare impacts would remain potentially significant.

Air Quality and Greenhouse Gas Emissions

Alternative 1 would involve moving approximately 6,918,000 cubic yards of overburden fill material into the quarry pit. The movement of this volume of materials would substantially increase the emission of criteria air pollutants and greenhouse gas emissions relative to the proposed project. As previously stated, the applicant submitted a study in 2018 that estimated the annual emissions associated with the quarry backfill over an anticipated period of four years (see Appendix D-3), as

shown in Table 6-2, "Alternative 1: Annual Criteria Air Pollutants and Precursor Emissions Analysis," and Table 6.3, "Alternative 1: Annual Greenhouse Gas Emissions."

TABLE 6-2
ALTERNATIVE 1: ANNUAL CRITERIA AIR POLLUTANTS AND PRECURSOR EMISSIONS ANALYSIS (TONS/YEAR)

Alternative 1 Year	ROG	NO_X	PM_{10} (Exhaust)	$PM_{2.5}$ (Exhaust)
Year 1 Backfill Emissions	1.0	18.8	1.1	0.9
Year 2 Backfill Emissions	1.4	24.9	1.4	1.2
Year 3 Backfill Emissions	0.7	12.4	1.0	0.7
Year 4 Backfill Emissions	0.1	2.4	0.3	0.2
Highest Year Alternative 1 Emissions	**1.4**	**24.9**	**1.4**	**1.2**
BAAQMD CEQA Significance Thresholds	10	10	15	10

Source: Appendix D-3.
Notes:
1. BAAQMD thresholds from Table 4.2-2, "Annual Criteria Air Pollutants and Precursor Emissions Analysis," in Section 4.2, "Air Quality." Operational-related annual thresholds are used since there are no published construction-related annual thresholds.
2. Compare to Table 4.2-4, "Annual Criteria Air Pollutants and Precursor Emissions Analysis" in Section 4.2.

TABLE 6-3
ALTERNATIVE 1: ANNUAL GREENHOUSE GAS EMISSIONS (METRIC TONS/YEAR)

Alternative 1 Year	CO_2	CH_4	N_2O	CO_2e
Year 1 Backfill Emissions	3,599.4	1.1	0.0	3,627.5
Year 2 Backfill Emissions	4,680.4	1.5	0.0	4,717.8
Year 3 Backfill Emissions	2,349.6	0.7	0.0	2,368.3
Year 4 Backfill Emissions	458.0	0.1	0.0	461.6
Total Alternative 1 Emissions	**11,087.4**	**3.4**	**0.0**	**11,175.2**

Source: Appendix D-3.
Notes:
1. Compare to Table 4.5-2, "Greenhouse Gas Emissions Analysis," in Section 4.5, "Greenhouse Gas Emissions."

The 2018 study also notes a total of 11,087.4 MT/CO_2 over the course of four years (see Appendix D-3). As shown in Tables 6-2 and 6-3, emissions would be substantially more than under the proposed project (see Table 4.2-4, "Annual Criteria Air Pollutants and Precursor Emissions Analysis," in Section 4.2, "Air Quality," and Table 4.5-2, "Greenhouse Gas Emissions Analysis," in Section 4.5, "Greenhouse Gas Emission"). Alternative 1 could also result in a conflict with the BAAQMD's 2017 Clean Air Plan, particularly regarding NO_x emissions, and could also result in a significant health risk to workers on the project site and residences, schools, and hospitals in the vicinity of the project site (BAAQMD 2017). Odors from construction equipment used in reclamation would dissipate rapidly with distance, similar to the proposed project.

Biological Resources

As shown on Figure 2-1, "Revised Reclamation Plan Overview," and Figure 2-3, "Approved 1983 Reclamation Plan," in Chapter 2, Alternative 1 and the proposed project would disturb similar areas, and therefore disturb similar habitat and special-status plant and wildlife species, including the ephemeral creek and the oak tree habitat located on the project site. In fact, under Alternative 1 there would be substantially greater impact to the oak woodland habitat to the east of the quarry as almost all of the oak trees would need to be removed to accomplish a quarry backfill. Consequently,

Alternative 1 would also potentially conflict, without the incorporation of mitigation, with local policies and ordinances protecting biological resources. Similar to the proposed project, Alternative 1 would not be subject the Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) because mining is not a covered activity under these plans (Contra Costa County 2014; East Contra Costa County Habitat Conservation Plan Association 2006). The implementation of Mitigation Measures 4.3-1a through 1l, 4.3-3, and 4.3-6a through 4.3-6i would reduce proposed project impacts related to biological resources to less than significant. Under Alternative 1, no mitigation would be required, and impacts to biological resources would remain potentially significant.

Geology and Soils

As shown on Figure 2-1 and Figure 2-3 in Chapter 2, Alternative 1 and the proposed project would disturb similar areas, and therefore the potential risks of fault rupture and seismic ground shaking would be similar to the proposed project. Alternative 1 would involve excavation to 500 feet msl rather than 110 feet msl. Therefore, the quarry pit would be shallower. Similar to the proposed project, the risks of landslides and unstable slopes would be limited by the use of benches in the quarry. The eastern slopes of the quarry pit would be limited to a 1h:1v (horizontal to vertical). The geotechnical evaluation for the proposed project (see Appendix F) indicates that the western slopes of the quarry pit meet the minimum factors of safety for slope stability.

The majority of the project site has a low potential for liquefaction, lateral spreading, and seismically-induced settlement to occur. The only area with documented potential for liquefaction to occur is located at the north overburden fill area which is being currently stabilized and would be revegetated under the revised reclamation plan. Alternative 1 does not proposed to develop structures within the eastern portions of the project site, and therefore would not expose structures or people to risk from unstable soils.

The geotechnical evaluation for the proposed project (see Appendix F) notes that differences between the geotechnical characterization and geologic models described in that report and the actual geotechnical and geologic conditions encountered as the east side of the quarry pit is mined should be anticipated. Under both Alternative 1 and the proposed project, the differing geotechnical characteristics could lead to unanticipated risks related to slope stability. Mitigation Measure 4.4-4 requires continuous slope stability monitoring during mining. Under Alternative 1, no mitigation would be required, and impacts related to slope stability would remain potentially significant.

Paleontological Resources

The quarry pit area under Alternative 1 would disturb approximately 154 acres, while the proposed project would disturb approximately 85 acres. The additional 69-acre area disturbed by Alternative 1 would be located primarily within the Knoxville formation, as the quarry pit would be expanded to the east. Numerous fossils have been documented in the Knoxville formation in Contra Costa County and throughout the State. Therefore, the potential to disturb paleontological resources would be greater under Alternative 1. Mitigation Measure 4.4-11, requires notification of workers and contractors on the site regarding the potential presence of paleontological resources on the project site, requires that excavation activities be halted should a paleontological resource be encountered, and requires the curation of any substantial find. This mitigation reduces the proposed project impacts to less than significant. Under Alternative 1, no mitigation would be required, and impacts to paleontological resources would remain potentially significant.

Hydrology and Water Quality

As summarized in Table 6-1, Alternative 1 and the proposed project would disturb similar areas, but the reclaimed quarry pit under Alternative 1 would consist of a partial backfill using Knoxville marine sediment whereas the reclaimed quarry pit under the proposed project would be contained in stable bedrock. Neither Alternative 1 nor the proposed project would intercept a groundwater basin nor involve the use of local groundwater supplies or the development of impervious surfaces that could interfere with groundwater recharge.

Similar to the proposed project, Alternative 1 would be required to comply with the National Pollutant Discharge Elimination System (NPDES) program either by incorporating coverage under the Industrial General Permit through an amendment to the existing site-specific industrial activities Storm Water Pollution Prevention Plan (SWPPP) or by filing a Notice of Intent and SWPPP for compliance under the Construction General Permit. This would generally ensure that water quality degradation would not occur as a result of activities implemented under Alternative 1. Unlike the proposed project, Alternative 1 would not result in the creation of a quarry lake and would not leave the east rim intact. Instead of a quarry lake, Alternative 1 would backfill the quarry pit with all overburden materials to an elevation of about 650 feet msl, as shown on Figures 6-1 and 6-2.As a result, Alternative 1 would have a higher potential to result in discharges of polluted water during the post-reclamation period because the backfilled quarry would drain by sheet flow runoff directly toward Mitchell Creek (whereas the proposed project would detain peak flows in the quarry pit). With appropriate controls such as implementation of a SWPPP, Alternative 1 should not have the potential to conflict with the Water Quality Control Plan (Basin Plan) (RWQCB 2017).

The Hydrology and Water Quality Evaluation for the proposed project (see Appendix G-1) also evaluated the hydrologic conditions that would occur under the approved reclamation plan. As indicated by the markings on the drainage plan on Figure 6-3, four distinct watershed areas were identified for the reclaimed condition. These sub-watersheds are labeled i through iv on the drainage plan. Watersheds i, ii, and iii would consist of approximately 85 acres that drain to Mitchell Creek through existing natural drainages and culverts under roads. Watershed iv would consist of approximately 135 acres that would have drained to Mitchell Creek through the DA71A Drainage Area on Mitchell Canyon Road and Diablo Downs Drive. Similar to the proposed project and existing conditions, runoff from the northern watershed that contains the processing plant area would continue to convey runoff from the northern watershed to existing man-made drainage courses in DA96.

The estimated discharges from sub-watersheds i through iv through natural drainages are shown in Table 6-4, "Peak Runoff under the Approved Reclamation Plan," and compared to existing conditions and those under the proposed project. Runoff to Mitchell Creek would decrease slightly under both Alternative 1 and the proposed project relative to existing conditions. However, runoff to the DA71 and DA71A Drainage Area would increase substantially under Alternative 1. The Hydrology and Water Quality Evaluation (see Appendix G-1) and the DA71A Drainage Area runoff estimates (see Appendix G-4) indicate that the existing capacity of the DA71A storm drain system within the 15-inch reinforced concrete pipeline to which the drainage pipeline would connect is about 18 cubic feet per second (cfs).

TABLE 6-4
PEAK RUNOFF UNDER THE APPROVED RECLAMATION PLAN

Storm Frequency	Peak Runoff (cubic feet per second)							
	Watersheds Draining to Mitchell Creek						*Watersheds Draining to DA71A Drainage Area*	
	Waterhsed i (12 Acres)	Watershed ii (19 Acres)	Watershed iii (54 Acres)	Total to Mitchell Creek under Alternative 1 (85 Acres)	Total to Mitchell Creek under Existing Conditions	Total to Mitchell Creek under the Proposed Project	Watershed iv (135 Acres)	Proposed Discharge from Quarry Pit lake under the Proposed Project
10-Year, 24-hour	10	15	50	**75**	76	74	150	4.2
20 Year, 1-hour	12	19	65	**95**	96	91	185	2.3
100-Year, 24-hour	17	27	95	**140**	146	131	270	5.5

Source: Appendix G-1.
Notes: Watersheds i through iv are shown on Figure 6-3.

The runoff rates from watershed iv would exceed this capacity by over 150 to 250 cfs. This would result in downstream flooding within the DA71A drainage area and would also substantially increase potential erosion and siltation in Mitchell Creek relative to existing conditions and the conditions that would occur under the proposed project. The potential for on-site erosion and sedimentation to occur under Alternative 1 would be controlled by the planting of natural grasses and wildflowers.

Noise

Alternative 1 would involve moving approximately 6,918,000 cubic yards of overburden fill material into the quarry pit. The movement of this volume of materials would substantially increase noise generated along local area roadways. In addition, substantial noise and vibration would be generated on the project site by earthmoving equipment used to grade and compact the fill material. The duration of reclamation activities under Alternative 1 would be substantially longer and therefore the duration of exposure of nearby sensitive receptor to noise and vibration from earthmoving activities would also be substantially longer.

Land Use

As described above, the severity of potential impacts related to aesthetics, air quality and greenhouse gas emissions, biological resources, geology and soils, paleontological resources, hydrology and water quality, and noise would be substantially greater under Alternative 1 than the proposed project. Correspondingly, Alternative 1 has the potential to conflict with the policies and goals of some local planning documents. These include potential conflicts with Goal 7-O, 7-Q, and 7-U related to Drainage and Flood Control of the *Contra Costa County Public Facilities and Services Element*; conflicts with Goal 8-A and Policies 8-3, 8-6, 8-21, 8-28, of the *Contra Costa County Open Space Element*; conflicts with the Contra Costa County Tree Protection and Preservation Ordinance; and the Contra Costa County Climate Action Plan.

6.7.2 Alternative 2: Prohibited Nighttime Reclamation Alternative

Description

Under Alternative 2: Prohibited Nighttime Reclamation Alternative, reclamation would be the same as the proposed project except all project-related reclamation, including construction of the control outlet structure, overburden fill areas, screening berm, and grading for final reclamation would only be permitted to take place during operating hours of 7:00 a.m. to 7:00 p.m. Monday through Friday and 8 a.m. to 5 p.m. Saturday and Sunday. Some nighttime lighting of project facilities would still be required for security and safety purposes under this alternative; however, reclamation construction lighting and reclamation-related traffic traveling to and from the project site would be prohibited between the hours of 7 p.m. and 7 a.m. Monday through Friday and 5 p.m. and 8 a.m. Saturday and Sunday. The current operational mining activities would not be subject to this restriction.

Alternative 2 would meet all of the proposed project objectives.

Impacts

Aesthetics and Noise

Under Alternative 3, aesthetics and noise impacts would be similar to the proposed project, with the exception that the potential of nighttime reclamation activities to generate substantial light, glare, and noise would be avoided.

Air Quality, Geology and Soils, Greenhouse Gas, Hydrology and Water Quality

Alternative 2 and the proposed project would have similar impacts related to air quality, geology and soils, greenhouse gas, hydrology and water quality, and land use.

Biological Resources

Alternative 2 would decrease the severity of potential impacts to special-status wildlife species on the project site and its vicinity because limiting of reclamation activities to daytime hours would reduce the potential injury or mortality to wildlife because wildlife would be easier to see and avoid during the daytime. Additionally, it would provide for quieter hours at night, which would reduce the potential for wildlife disturbance relative to the proposed project during nighttime and early morning hours.

6.7.3 Alternative 3: In-kind Replacement for Protected Oaks Alternative

Description

Alternative 3, In-kind Replacement for Protected Oaks Alternative, would be the same as the proposed project except the 77 protected trees, consisting primarily of blue oak and valley oak trees, that would be removed would be replaced with in-kind species at a 3:1 ratio instead of the proposed 400 foothill pines.

Alternative 3 would meet all of the proposed project objectives.

Impacts

Aesthetics

The east quarry rim would be retained and would shield a portion of the quarry rock face, similar to the proposed project. The oak trees that would be planted under Alternative 3 are characteristic of the existing native vegetation on the site and would therefore be more consistent with the aesthetics of the site and surrounding areas than the pine trees proposed under the revised reclamation plan. Replacement oak trees would be planted in lieu of the 400 foothill pines, but would still form a tree screen on the quarry east rim and could also be placed within other areas of overburden fill placement. Blue oak trees grow to a height of about 50 to 65 feet and take approximately 50 to 65 years to mature (Urban Forest Ecosystem Institute 2021a). Valley oak trees grow to a height of about 50 to 70 feet and take approximately 15 to 35 years to mature (Urban Forest Ecosystem Institute 2021b). Foothill pine trees grow to a height of about 60 to 80 feet and take about 20 to 25 years to mature (Urban Forest Ecosystem Institute 2021c). Therefore, the visual benefits of the tree screen could be generally reduced relative to the proposed project by the use of blue and valley oak instead of pine trees because the maximum height of the oak trees is similar to the minimum height of the foothill pine trees. Furthermore, the visual benefits of the oak trees, particularly of blue oak trees, would develop more slowly relative to the pine trees, as the oak trees could take up to 10 to 40 years to reach their mature height. Lastly, replacing removed oaks with the same species at a 3:1 ratio would require substantially more spacing between trees, resulting in fewer trees able to comprise the tree screen at the top of the quarry east rim relative to the proposed project. However, replacement with in-kind species at a 3:1 ratio would provide a more natural appearance than under the proposed project. Consequently, the visual benefits of the oak tree screen under Alternative 3 would be similar or greater than the foothill pine tree screen under the proposed project.

Air Quality, Geology and Soils, Greenhouse Gas Emission, Hydrology and Water Quality, and Noise

Alternative 3 and the proposed project would have similar impacts related to air quality, geology and soils, greenhouse gas, hydrology and water quality, and noise.

Biological Resources and Land Use

Alternative 3 would replace the 77 protected trees that would be removed under the proposed project with the same species, which would result in the development of native habitat similar to that which currently exists on the project site, which would potentially benefit wildlife on the project site.

Wildfire

As described in the "Aesthetics" section above, replacing removed oaks with the same species at a 3:1 ratio would require substantially more spacing between trees, resulting in fewer trees able to comprise the tree screen at the top of the quarry east rim. As a result, remaining trees would need to be planted along the slopes, which would exacerbate wildfire risk by providing additional fuel and possibly creating a connection between the two Very High Fire Hazard Severity Zones (VHFHSZs) adjacent to but on opposite ends of the project site. The pine tree screen under the proposed project would not create a connection because foothill pines have narrower canopies and may be more densely positioned. Consequently, all of the pine trees can be aligned in a single horizontal line at the top of the east rim of the future quarry lake, which would create a low hazard buffer between the VHFHSZs. Consequently, Alternative 3 would result in increased wildfire risk relative to the proposed project.

6.8 COMPARISON OF ALTERNATIVES

The focus of the alternatives analysis in this EIR 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). No significant and unavoidable impacts (when either no feasible mitigation is available or when available mitigation would not reduce the impact to below the threshold of significance) would occur under the proposed project.

Table 6-5, "Alternatives Impact Comparison Summary," 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 EIR (if the impact without mitigation is deemed less than significant, no mitigation is needed, and the table simply lists less than significant (LS)). Table 6-5 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.

Mitigation measures applicable to project impacts for Alternatives 2 and 3 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. However, mitigation measures applicable to the project would not apply to Alternative 1 (No Project – Implementation of Approved Reclamation Plan) because this alternative involves the implementation of an existing approved reclamation plan that is not subject to further environmental review and new mitigation.

TABLE 6-5
ALTERNATIVES IMPACT COMPARISON SUMMARY

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]		
		1 (No Project)	*2 (No Nighttime)*	*3 (Oak Tree)*
AESTHETICS AND VISUAL RESOURCES				
Impact 4.1-3: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings	LS	+	=	-/=
Impact 4.1-4: Creation of a New Source of Substantial Light and Glare That Would Adversely Affect Day or Nighttime Views in the Area	PS/LS	=/+	-/=	=
AIR QUALITY				
Impact 4.2-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	LS	+	=	=
Impact 4.2-2: 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	LS	+	=	=
Impact 4.2-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LS	+	=	=
Impact 4.2-4: Result in Other Emissions Adversely Affecting a Substantial Number of People	LS	=	=	=
BIOLOGICAL RESOURCES				
Impact 4.3-1: Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species due to Ground Surface Disturbance and Vegetation Removal	PS/LS	=/+	-/=	-/=
Impact 4.3-2: Have an Adverse Effect, Directly or Indirectly, on Habitat for Special-Status Plant or Wildlife Species due to Exposure to Quarry Pit Lake Water	PS/LS	-/=	=	=
Impact 4.3-3: Have an Adverse Effect on Riparian Habitat or Other Sensitive Natural Communities	PS/LS	=/+	=	-

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]		
		1 (No Project)	*2 (No Nighttime)*	*3 (Oak Tree)*
Impact 4.3-4: Have an Adverse Effect on Protected Wetlands	PS/LS	=/+	=	=
Impact 4.3-5: Interfere with Native Resident or Migratory Fish or Wildlife Species Movement, Corridors, or Nursery Sites	PS/LS	=/+	-/=	=
Impact 4.3-6: Conflict with Local Policies or Ordinances Protecting Biological Resources	PS/LS	=/+	=	-
Impact 4.3-7: Conflict with Provisions of an Adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other Local or Regional Plan Protecting Biological Resources	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	=	=	=
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 Potential Substantial Adverse Effects, as Result of Seismically-Induced Liquefaction, Lateral Spreading, and Settlement	LS	=	=	=
Impact 4.4-4: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Rockfalls and Landslides within the Quarry	PS/LS	=/+	=	=
Impact 4.4-5: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Overburden Fill Areas	LS	=	=	=
Impact 4.4-6: Exposure of People or Structures to Potential Substantial Adverse Effects, Including the Risk of Loss, Injury, or Death, as a Result of Landslides within the Plant Site Area	LS	=	=	=
Impact 4.4-7: Result in Substantial Soil Erosion or the Loss of Topsoil	LS	=	=	=

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]		
		1 (No Project)	*2 (No Nighttime)*	*3 (Oak Tree)*
Impact 4.4-8: 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	PS/LS	=/+	=	=
Impact 4.4-9: 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 4.4-10: Directly or indirectly Destroy a Unique Geological Feature	LS	=	=	=
Impact 4.4-11: Directly or indirectly Destroy a Unique Paleontological Resource	PS/LS	+	=	=
GREENHOUSE GAS EMISSIONS				
Impact 4.5-1: Gas emissions generated by reclamation activities could have a significant impact on global climate change.	PS/LS	+	=	=
Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations.	LS	+	=	=
HYDROLOGY AND WATER QUALITY				
Impact 4.6-1: Violate Water Quality Standards or Waste Discharge Requirements or Substantial Degradation of Surface Water or Groundwater Quality	PS/LS	-/=	=	=
Impact 4.6-2: Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge such that the Project May Impede Sustainable Groundwater Management of the Basin	LS	=	=	=
Impact 4.6-3: Substantially Alter Drainage Patterns in a manner which would result in Erosion or Siltation within Areas that Drain to the Northern Watershed	LS	=	=	=
Impact 4.6-4: Substantially Alter Drainage Patterns in a manner which would result in Erosion or Siltation within the Quarry, Mitchell Creek, and Transitional Watershed Areas	LS	+	=	=
Impact 4.6-5: Substantially Alter Drainage Patterns in a manner which would result in On-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System	LS	=	=	=
Impact 4.6-6: Substantially Alter Drainage Patterns in a manner which would result in Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System	LS	+	=	=

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives[2, 3]		
		1 (No Project)	*2 (No Nighttime)*	*3 (Oak Tree)*
Impact 4.6-7: Substantially Alter Drainage Patterns in a manner which would result in Uncontrolled Discharges from the Quarry Pit Lake and Thereby result in On- Or Off-Site Flooding or Exceed the Capacity of the Existing Storm Drainage System	PS/LS	-/=	=	=
Impact 4.6-9: In Flood Hazard, Tsunami, or Seiche Zones, Risk Release of Pollutants Due To Project Inundation	LS	=	=	=
Impact 4.6-10: Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	PS/LS	-/=	=	=
LAND USE				
Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations	LS	+	=	-
NOISE				
Impact 4.8-1: Generation of a Substantial Temporary or Permanent Increase in Ambient Noise Levels in the Vicinity Of The Project Site in Excess of Standards Established in the Local General Plan or Noise Ordinance, or Applicable Standards of Other Agencies	PS/LS	+	-/=	=
Impact 4.8-2: Generate Excessive Groundborne Vibration or Groundborne Noise from Reclamation Activities	LS	+	=	=
WILDFIRE[5]				
Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby, expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	LS	=	=	+

Source: Compiled by Benchmark Resources in 2021.

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—Implementation of the Approved Reclamation Plan Alternative; Alternative 2: Prohibited Nighttime Reclamation Alternative; Alternative 3: In-kind Replacement for Protected Oaks 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 with and without mitigation implementation are designated with "/" between notations. E.g., "=/+" means the alternative would have similar impacts as the unmitigated proposed project and greater impacts than the mitigated proposed project. "-/=" means the alternative would have fewer impacts than the unmitigated proposed project and similar impacts to the mitigated proposed project.
5. Wildfire impacts were scoped out a potentially significant impact in the Initial Study, See Appendix A-4, "Initial Study." This impact is discussed in the Section 6.7.3, "Alternative 3: In-kind Replacement for Protect Oaks Alternative" and this table because there would be potentially greater wildfire impacts under Alternative 3 compared to the proposed project.

6.9 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—Implementation of the Approved Reclamation Plan Alternative would result in new and greater impacts than the proposed project and Alternatives 2 and 3.

Based on the analysis above, the County concludes that Alternative 3, In-Kind Replacement for Protected Oaks Alternative, is the environmentally superior alternative for the following reasons:

- Replacement of impacted trees with the same or similar native trees;
- More natural appearing tree replacement regime; and
- Greater consistency with County General Plan requirements regarding the preservation of natural vegetation and planting of native trees and shrubs.

The alternatives analysis and conclusions reached regarding the environmentally superior alternative do not determine the ability of Alternative 3 to be an economically viable option for the Applicant.

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7—OTHER CEQA TOPICS

7.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires the consideration of a range of issues extending beyond analysis of project-specific impacts. This section of the Draft EIR 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),
- significant unavoidable adverse impacts (Section 15126. 2[c]),
- irreversible/irretrievable commitment of resources (Section 15126.2[d]), and
- 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.

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 EIR 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 EIR 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-4, "Initial Study").

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measures 4.3-1a, 4.3-1b, 4.3-1c, 4.3-1d, 4.3-1e, 4.3-1f, 4.3-1g, 4.3-1h, 4.3-1i, 4.3-1j, 4.3-1k, 4.3-1l, 4.3-3, 4.3-6a, 4.3-6b, 4.3-6c, 4.3-6d, 4.3-6e, 4.3-6f, 4.3-6g, 4.3-6h, and 4.3-6i (see Section 4.3), CUL-1, and CUL-2 (see Appendix A-4).

Level of Significance After Mitigation: Less than significant.

Impact 7-2: Impacts that are Individually Limited but Cumulatively Considerable

Section 4.2, "Air Quality," and Chapter 5, "Cumulative Impacts," of this EIR evaluate the proposed project's potential impacts to air quality, including an evaluation of potential cumulatively considerable increases of criteria pollutants. As described in Section 4.2 and Chapter 5, the modeling results from the *Air and Greenhouse Gas Emissions Study* (see Appendix D-1) indicate that project criteria pollutant emissions are below applicable Bay Area Air Quality Management District's (BAAQMD) thresholds of significance for CEQA for all model years. The project would not exceed the applicable significance thresholds for health risks (see Impact 4.2-3 in Section 4.2); therefore, the project would not result in a cumulatively significant health risk impact. 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, and the *Air and Greenhouse Gas Emissions Study* notes the existing permitted use of the site is below this threshold. Also, as described in the air quality cumulative analysis provided in Section 5.3.2, "Air Quality," reclamation emissions are not considered new cumulatively considerable emissions because the project involves amendments to an existing reclamation plan, which do not implicate an increase in TACs or PM2.5 above baseline conditions. Therefore, none of the cumulative projects would generate significant TAC emissions, odors, or fugitive dust affecting the same population as the project. Therefore, the project would not result in a cumulatively significant TAC, odor, or nuisance air quality impacts. Therefore, the project's potential criteria pollutant impacts would be less-than-significant.

Section 4.5, "Greenhouse Gas Emissions," and Chapter 5, of this EIR evaluate the proposed project's potential impacts regarding greenhouse gas emissions. According to the California Air Pollution Control Officers Association (CAPCOA), "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective" (CAPCOA 2008). A project's GHG emissions typically would be small in comparison to the State or global GHG emissions and, consequently, they would, in isolation, have no significant direct impact on climate change. It is global GHG emissions in their aggregate that contribute to climate change, not any single source of GHG emissions alone. Therefore, the analysis of a project's GHG emissions is inherently a cumulative impact analysis. Project-related GHG emissions would contribute to long-term GHG emissions of other projects.

As discussed in Section 4.5, modeled GHG emissions are at only about 45 percent of the operational threshold and emissions will cease when reclamation is complete; therefore, the proposed project is not expected to generate a cumulatively considerable contribution of GHG emissions. However, 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 are conservatively evaluated as a potentially significant impact. Mitigation Measures 4.5-1a through 4.5-1g are provided to reduce the impacts to a less than significant level.

Therefore, the proposed project would not result in a cumulatively significant GHG emissions impact.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measures 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, 4.5-1e, 4.5-1f, and 4.5-1g.

Significance After Mitigation: Less than significant.

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 EIR and the Initial Study (see Appendix A-4).

The EIR 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. Applicable mitigation measures are referenced below.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: Implement Mitigation Measures 4.1-4, 4.4-4, 4.5-1a, 4.5-1b, 4.5-1c, 4.5-1d, 4.5-1e, 4.5-1f, 4.5-1g, 4.6-1a, 4.6-1b, 4.6-1c, 4.6-4a, 4.6-4b, 4.6-7, 4.8-1.

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 D-1, "Air and Greenhouse Gas Emissions Study." These activities would be similar to the use under the approved reclamation plan, with the exception that the project would eliminate the need to backfill the quarry and thus drastically reduce off-road truck trips, heavy equipment operation, and air and GHG emissions associated with reclamation activity.

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.

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 heavy off-road equipment, trucks, worker traffic, and haul trips to conduct reclamation activities at the site.

As described in Section 4.5, "the proposed project would implement mitigation measures 4.5-1a through 4.5-1g (see Section 7.2, above) 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.

Furthermore, many of the state and local plans regarding energy efficiency (e.g., the Contra Costa County Climate Action Plan) 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.

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 requires that electrical service providers, such as PG&E, achieve 60 percent of energy provided from renewable sources by 2030 (CPUC 2021). By 2045, all retail sellers must procure 100 percent of their retail sales from California Renewable Portfolio Standard-eligible resources (CPUC 2021). According to California Public Utility Commission, in 2019 PG&E provided 31 percent of its energy from renewable sources (CPUC 2020). Because the project will obtain some electricity from PG&E or another supplier which must comply with the California Renewable Portfolio Standard, 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 activity.

As described in Section 4.5, the proposed project would implement Mitigation Measures 4.5-1d, "Alternative Fuel Plan," and 4.5-1g, "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 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(c) 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(c):

> 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 implementing a drainage plan that provides for formation of a quarry lake with a controlled outflow, grading, revegetation, construction of a screening berm, and removal of mining facilities, structures, and equipment. Nonrenewable and limited resources consumed during project construction and operation would include oil, diesel fuel, gasoline, metal, plastic, lumber (used in concrete forms), aggregate materials, 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. In addition, a reclamation plan for the site is mandated under SMARA. The project site would be reclaimed to allow for a post-mining land use of open space.

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 EIR and summarized in Table ES-2, "Summary of Project Impacts and Mitigation Measures."

7.5 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.

8—LIST OF PREPARERS

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9—REFERENCE AND RESOURCES

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10—ACRONYMS AND GLOSSARY

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µg	micrograms
µm	micrometers
A-2	General Agricultural District land use designation
AADT	annual average daily trips
AB	assembly bill
ABAG	Association of Bay Area Governments
APN	Assessor Parcel Number
Application No. CDLP15-02031	2015 Application
ATCM	Airborne Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BART	Bay Area Rapid Transit
Basin Plan	San Francisco Bay Basin (Region 2) Water Quality Control Plan
Bay Area	San Francisco Bay Area
BCDC	San Francisco Bay Conservation and Development Commission
BLM	Bureau of Land Management
BMPs	best management practices
BO	biological opinion
BRA	Biological Resources Assessment
C	Celsius
CAAQS	California ambient air quality standards
CalEEMod	California Emissions Estimator Model
CalEPPC	California Exotic Pest Plant Council
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAFÉ	corporate average fuel economy

CAIT	Climate Analysis Indicators Tool
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CARE	California Air Risk Evaluation Program
CCAA	California Clean Air Act of 1988
CCAR	California Climate Action Registry
CCCFCWCD	Contra Costa County Flood Control and Water Conservation District
CCR	California Code of Regulations
CCWD	Contra Costa Water District
CDFG	California Department of Fish and Game (former)
CDFW	California Department of Fish and Wildlife
CEQ	White House Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CEMEX	CEMEX Construction Materials Pacific, LLC
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
Conservation Plan Association	East Contra Costa County Habitat Conservation Plan Association

County	Contra Costa County
CPUC	California Public Utilities Commission
CWA	Clean Water Act
DA	Contra Costa County Drainage Area
dB	decibels
dBA	A-weighted decibels
DBH	trunk diameter at breast height
DCD	Contra Costa County Department of Conservation and Development
DDT	Dichlorodiphenyltrichloroethane
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DSoD	California Department of Water Resources Division of Dam Safety
DWR	California Department of Water Resources
ECCC HCP/NCCP	East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan
EIR	environmental impact report
EISA	Energy Independence and Security Act of 2007
EPA	U.S. Environmental Protection Agency
°F	Fahrenheit
FESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
Flood Control District	Contra Costa County Flood Control District
FTA	Federal Transit Administration
GHG	greenhouse gases
GIS	geographic information system
GPS	Global Positioning System
GVWR	Gross Vehicle Weight Rating
GWP	global warming potential

H_2O	water vapor
HCP	Habitat Conservation Plan
HDPE	High-density polyethylene
HFCs	Hydrofluorocarbons
HI	hazard index
hp	horsepower
HRA	health risk assessment
IAQ	Indoor Air Quality
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
KOP	key observation point
LCFS	Low Carbon Fuel Standard
LDAMDV	light duty auto – medium duty vehicle
Ldn	day-night average noise level
Leq	equivalent noise level
LOS	Level of Service
LSA	LSA Associates, Inc.
LUP	Land Use Permit
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Levels
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
MM5	5^{th} generation mesoscale model
MMRP	mitigation monitoring and reporting program
MMT	million metric tons
$MMTCO_2E$	million metric tons of CO2E
mph	miles per hour
MPO	Metropolitan Planning Organizations

MRZs	Mineral Resource Zones
msl	above mean sea level
Mt.	Mount
Mw	Moment Magnitude
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAS	National Academy of Sciences
NCAR	National Center for Atmospheric Research
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NF_3	nitrogen trifluoride
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOA	notice of availability
NOAA	National Oceanic and Atmospheric Administration
NOC	notice of completion
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWPR	Navigable Waters Protection Rule
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OPR	Governor's Office of Planning and Research
OSHA	Occupational Health and Safety Act
PCB	Polychlorinated biphenyl
PCC	Portland Cement Concrete
PDA	Priority Development Areas

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
R	Range
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
SB	Senate Bill
SCS	sustainable communities strategy
SF_6	hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SGMA	Sustainable Groundwater Management Act
SIC	Standard Industrial Classification
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide

SVP	Society of Vertebrate Paleontologists
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T	Township
TACs	toxic air contaminants
TDS	total dissolved solids
TMDL	Total maximum Daily Load
TPF	tree protection fencing
tpy	tons per year
UCMP	UC Berkeley Museum of Paleontology
USDA	United States Department of Agriculture
USACOE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	Vibration decibels
VDECS	Verified Diesel Emission Control Strategies
VMT	vehicle-miles traveled
WCI	Western Regional Climate Action Initiative
WDR	Waste Discharge Requirement
yr	year
ZEV	zero emission vehicle

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BENCHMARK RESOURCES

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