

## 3.13 Mineral Resources

### 3.13.1 Introduction

This section discusses mineral resources in the study area and evaluates the potential impacts of the types of restoration projects that would be permitted under the Order. (See Section 2.6, *Categories of Restoration Projects in the Order*.)

The environmental setting and evaluation of impacts on mineral resources is based on a review of existing published documents, including city and county general plans; information regarding example projects that are similar to those permitted under the Order; and other information sources listed in Chapter 8, *References*.

No comments specifically addressing mineral resources were received in response to the notice of preparation (NOP). See Appendix B for NOP comment letters.

### 3.13.2 Environmental Setting

The environmental setting for mineral resources covers all nine Regional Board jurisdictions because the Order could be implemented statewide. The extent to which restoration projects permitted under the Order would include any particular action is yet to be determined; therefore, this section presents a general discussion of existing mineral resources in the study area.

The California Geological Survey publishes an annual summary of the state's mineral production (excluding oil, gas, geothermal, and coal). The following information regarding non-fuel mineral resources is based on the California Geological Survey's 2017 annual summary (CGS n.d.).

Based on the U.S. Geological Survey's preliminary data for 2017, California ranked fifth in the U.S. (after Nevada, Arizona, Texas, and Alaska) in the value of non-fuel mineral production, accounting for approximately 4.7 percent of the nation's total. In 2020, the market value of non-fuel mineral production for California was \$4.7 billion (USGS 2021).

California produced more than two dozen different industrial minerals in 2017. California led the nation in the production of diatomite, construction sand and gravel, and was the only producer of boron compounds and rare earth elements. The state ranked second behind Texas for production of Portland cement. Based on data from the California Department of Conservation's Division of Mine Reclamation, about 1,042 mines were active in California during 2017, and of those, 663 reported producing non-fuel minerals. Approximately 5,500 people were employed at these mines and their processing facilities.

#### ***Industrial Minerals***

Industrial minerals accounted for 92 percent of the value of non-fuel minerals produced in California in 2017 (DOC 2019). Construction-grade sand and gravel, Portland cement, and crushed stone—the solid ingredients of concrete—were the top three mineral commodities for the year, in both quantity and value. The building and paving

industries consume large quantities of these construction materials, which together made up 67 percent of the value of California's 2017 minerals market.

### ***Aggregate***

Production of construction aggregate (sand and gravel, crushed stone) in 2017 totaled 151 million tons, valued at \$1.49 billion, down from the revised 2016 numbers. California consumed an average of about 180 million tons of construction aggregate (all grades) per year from 1986 through 2016.

### ***Cement***

In 2017, Portland cement production at nine plants throughout the state totaled 10.6 million tons, valued at \$907 million, a decrease in quantity and value from the revised 2016 figures (DOC 2019). The U.S. Geological Survey's mineral industry surveys indicate that imports of all hydraulic cement types into the San Francisco, Los Angeles, and San Diego ports totaled approximately 1.6 million tons.

### ***Metals***

Metals made up the remaining 8 percent of the value of non-fuel minerals produced in California. Gold dominated California's metals market in 2017, totaling more than 98 percent of the value of the state's metals production (DOC 2019). The quantity and value of 2017 gold production increased 56 percent from 2016.

### ***Crude Oil***

California's oil production for 2018 was 161.8 thousand barrels, a decrease of approximately 7.0 percent from 2017. Onshore and offshore oil production in California decreased from 2017 levels by approximately 9.4 and 2.9 percent, respectively (DOC 2019).

### ***Natural Gas***

In 2018, California's total natural gas total consumption was approximately 2,136,907 million cubic feet. Nearly 29 percent of the natural gas consumed was for electric power, with most remaining consumption falling within three sectors: residential (20 percent), commercial (12 percent), and industrial (36 percent) (EIA 2019).

California continues to depend on out-of-state imports for nearly 90 percent of its natural gas supply, underscoring the importance of monitoring and evaluating ongoing market trends and outlook. Natural gas has become an increasingly important energy source because the state's power plants rely on this fuel. Natural gas provides the largest portion of California's total in-state capacity and electricity generation (CEC 2021).

### ***Geothermal***

Because of its location on the Pacific "Ring of Fire" and at tectonic plate junctions, California has the largest capacity for geothermal electric generation in the United States. In 2018, the state's geothermal energy produced 11,528 gigawatt-hours of electricity. Combined with another 700 gigawatt-hours of imported geothermal power, geothermal

energy produced 5.91 percent of California's total system power. A total of 43 geothermal power plants operate in California, with an installed capacity of 2,730 megawatts. The largest concentration of geothermal plants is located north of San Francisco, in The Geysers Geothermal Resource Area in Lake and Sonoma Counties (CEC 2019).

### 3.13.3 Regulatory Setting

No federal regulations pertaining to mineral resources are applicable to restoration projects proposed to be permitted under the Order. This section discusses state and regional and local plans, policies, regulations, and laws, and ordinances pertaining to mineral resources.

Future permitted restoration projects that would be implemented under the Order may be subject to the laws and regulations listed below, as well as other local or individual restoration projects requirements, depending on the project location.

#### **State**

The Surface Mining and Reclamation Act of 1975 (California Code of Regulations Title 14, Division 2, Chapter 8, Subchapter 1) requires the State Mining and Geology Board to adopt policies that regulate the operation of surface mines, reclamation of mined lands, and conservation of mineral resources.

In accordance with the Surface Mining and Reclamation Act, the State of California established the Mineral Land Classification System to help identify and protect mineral resources in areas that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction. Protected mineral resources include construction materials, industrial and chemical mineral materials, metallic and rare minerals, and non-fluid mineral fuels. Economically significant mineral deposits are classified based on the known and inferred mineral resource potential of the land using the California Mineral Land Classification System, which includes the following four mineral resource zones (MRZs):

- ◆ *MRZ-1*: Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.
- ◆ *MRZ-2*: Areas where adequate information indicates that significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- ◆ *MRZ-3*: Areas containing mineral deposits, the significance of which cannot be evaluated.
- ◆ *MRZ-4*: Areas where available information is inadequate for assignment to any other zone.

#### **Regional and Local**

The study area encompasses multiple counties with multiple cities throughout California. Each county and city has local regulations and a general plan with goals and

policies that guide development and encourage the provision and protection of mineral resources.

### **3.13.4 Impacts and Mitigation Measures**

#### ***Methods of Analysis***

Mineral resource impacts from the types of restoration projects permitted under the Order are evaluated in the terms of how typical construction and operation of project components could impact the loss of availability of locally or regionally important mineral resources. However, the precise locations and detailed characteristics of potential future individual restoration projects are yet to be determined. Therefore, this mineral resource analysis focuses on reasonably foreseeable changes from implementation of the types of projects and actions that might be taken in the future consistent with the level of detail appropriate for a program-level analysis.

Permanent impacts are considered those that would result from indefinite environmental conditions created by projects permitted under the Order (e.g., new infrastructure such as pumps would be located indefinitely in one location, resulting in the removal of a mineral resource from the facility's footprint). Temporary impacts are considered those that would be temporary in nature (e.g., construction-related activities).

The approach to assessing mineral resources was to identify and review existing environmental studies, data, model, results, and other information for projects that are consistent with those identified in Section 2.6, *Categories of Restoration Projects in the Order*, and Section 2.7, *Typical Construction, Operation, and Maintenance Activities and Methods*. Additionally, this analysis is based on mineral resource maps that were prepared by the California Geological Survey using the California Mineral Land Classification System.

#### ***Thresholds of Significance***

In accordance with Appendix G of the State CEQA Guidelines, an impact related to mineral resources is considered significant if the types of projects that would be permitted under the Order would do either of the following:

- ◆ Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state
- ◆ Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan

#### ***Impacts and Mitigation Measures***

Table 3.13-1 summarizes the impact conclusions presented in this section for easy reference.

As part of the State Water Board or Regional Board's issuance of a NOA for a restoration project under the Order, compliance with the general protection measures and mitigation measures listed below would be required when applicable to a given project. Not all general protection measures and mitigation measures would apply to all

restoration projects. The applicability of the general protection measures and mitigation measures would depend on the individual restoration activities, project location, and the potentially significant impacts of the individual restoration project. Implementation of the mitigation measures would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, appropriate Regional Board, or other authorizing regulatory agency.

**Table 3.13-1  
Summary of Impact Conclusions—Mineral Resources**

Impact Statement	Construction Activities	Constructed Facilities and Operations and Maintenance
<b>3.13-1:</b> Implementing restoration projects permitted under the Order could result in the loss of availability of a known mineral resource.	LTSM	LTSM
<b>3.13-2:</b> Implementing restoration projects permitted under the Order could result in the loss of availability of a locally important mineral resource recovery site.	LTSM	LTSM

SOURCE: Data compiled by Environmental Science Associates in 2019 and 2020

NOTE: LTSM = less than significant with mitigation

**Impact 3.13-1: Implementing restoration projects permitted under the Order could result in in the loss of availability of a known mineral resource.**

**Effects of Project Construction Activities, Constructed Facilities (Natural or Artificial Infrastructure), and Operations and Maintenance of those Facilities**

Construction of restoration projects, constructed facilities (natural or artificial infrastructure), and operations and maintenance of those facilities permitted under the Order (e.g., new setback levees and floodway widening) could affect mineral resources designated by the California Geological Survey as resources of regional and statewide importance (MRZ-2), depending on the projects’ locations and proximity to mineral resources. Active, permitted mines may be present, and development of the proposed restoration projects could substantially deplete already inadequate aggregate resources. Construction-related demand could exceed the availability of mineral resource supplies. For example, constructing setback levees and widening floodways would require large quantities of construction aggregate, which could limit the ability of other aggregate users in the area to obtain and use aggregate. Therefore, this impact would be **potentially significant**. The Order does not include any general protection measures applicable to this impact.

As part of the State Water Board or Regional Board’s issuance of a NOA for a restoration project under the Order, compliance with Mitigation Measure MIN-1 would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, appropriate Regional Board, or other authorizing regulatory agency.

***Mitigation Measure MIN-1: Minimize Potential Impacts from Loss of a Known Mineral Resource***

The following measures shall be implemented during construction of restoration projects permitted under the Order:

- ◆ Project proponents shall ensure land use compatibility between existing mineral resource extraction activities and restoration projects.
- ◆ An adequate buffer (to be determined on an individual project basis in coordination with appropriate regulatory agencies) shall be maintained between future projects and designated MRZ-2 sectors.
- ◆ Project proponents shall ensure that future land use changes in designated mineral resource extraction areas recognize mineral resource extraction as a compatible use.
- ◆ The use of construction aggregate shall be limited to local sources with sufficient capacity to meet the needs of both restoration projects and future local development, to the extent possible.
- ◆ Project construction shall use recycled aggregate where possible, to decrease the demand for new aggregate.

Implementing Mitigation Measure MIN-1, or equally effective mitigation measures, would reduce the potentially significant impacts of restoration projects permitted under the Order to a **less-than-significant** level.

**Impact 3.13-2: Implementing restoration projects permitted under the Order could result in the loss of availability of a locally important mineral resource recovery site.**

**Effects of Project Construction Activities, Constructed Facilities (Natural or Artificial Infrastructure), and Operations and Maintenance of those Facilities**

Construction of restoration projects, constructed facilities (natural or artificial infrastructure), and operations and maintenance of those facilities permitted under the Order could result in the loss of availability of a locally important mineral resource recovery site, if the restoration project's construction or resulting infrastructure would occur on or near mineral recovery sites that have been identified in local general plans, specific plans, or other land use plans. Many producing natural gas wells lie within delineated natural gas fields and a permitted mining operations are present in the study area.

Restoration projects have the potential to affect mineral resource recovery sites, including productive oil and natural gas wells and active mining sites, depending on the projects' specific locations and characteristics at the time they are implemented. For example, constructing setback levees and widening floodways could temporarily or permanently affect mining operations (i.e., leave the mining operation no longer feasible) if the projects were constructed at the locations of these existing resource recovery sites.

Impacts on mineral extraction sites would be temporary if the effects would be limited to the construction period. The impacts would be permanent if project facilities would be placed in an area where a resource recovery site exists and the extraction site would experience a permanent loss of availability. However, the specific locations and scale of future permitted restoration projects are yet to be determined. Therefore, the risk related to the loss of an important mineral resource recovery site cannot be determined. The factors necessary to identify the risk include the locations of the new facilities relative to known mineral resource recovery sites delineated on a local general plan, specific plan, or other land use plan.

Implementing restoration projects that would be permitted under the Order could result in the loss of an important mineral resource recovery site. Therefore, this impact would be **potentially significant**. The Order does not include any general protection measures applicable to this impact.

As part of the State Water Board or Regional Board' issuance of a NOA for a restoration project under the Order, compliance with Mitigation Measure MIN-2 would be required when applicable to a given project. Implementation of this mitigation measure would be the responsibility of the project proponent(s) under the jurisdiction of the State Water Board, appropriate Regional Board, or other authorizing regulatory agency.

***Mitigation Measure MIN-2: Minimize Potential Impacts from the Loss of a Locally-Important Mineral Resource Recovery Site***

The following measures shall be implemented during and after construction of restoration projects permitted under the Order:

- ◆ Access to existing, active mineral resource extraction sites that have been identified in local general plans, specific plans, or other land use plans shall be maintained both during and after project construction.
- ◆ Projects shall implement the most current recommendations identified in the California Department of Conservation (DOC) Geologic Energy Management Division (formerly Division of Oil, Gas, and Geothermal Resources) construction site well review program (DOC 2021), such as:
  - Identify all existing natural gas well sites and oil production facilities in or near the project area.
  - Identify any oil or natural gas well within 100 feet of any navigable body of water or watercourse perennially covered by water or any officially recognized wildlife preserve as a “critical well” (California Code of Regulations Title 14, Chapter 4, Article 2, Sections 1720[a][2][B] and 1720[a][2][C]). DOC requires that “critical wells” include equipment capable of meeting more stringent blowout prevention requirements than noncritical wells, based on pressure testing and ratings.
  - Identify safety measures to prevent unauthorized access to equipment.
  - Include safety shutdown devices on oil and natural gas wells and other equipment, as appropriate.

- Notify DOC of new oil or natural gas wells or changes in oil or natural gas well operations or physical conditions, receive written approval of the changes from DOC, and receive written notification of DOC's inspection of new or changed equipment. The approvals will be related primarily to the ability to:
  - Protect all subsurface hydrocarbons and freshwater.
  - Protect the environment.
  - Use adequate blowout prevention equipment.
  - Use approved drilling and cementing techniques.
- If any plugged/abandoned or unrecorded oil and natural gas wells are uncovered during construction, notify DOC, complete remedial well plugging actions, and avoid constructing any structures over the abandoned oil and natural gas wells.
- If oil and natural gas wells are under the jurisdiction of or a lease from the State Lands Commission, provide additional plans and environmental documentation as required before modifying the oil or natural gas wells.

Implementing Mitigation Measure MIN-2, or equally effective mitigation measures, would reduce the potentially significant impacts of restoration projects permitted under the Order to a **less-than-significant** level.