Chapter 27
Mineral Resources

This chapter describes the environmental setting and environmental impact area for mineral resources in the study area, analyzes impacts that could result from construction, operation, and maintenance of the project; and provides mitigation measures to reduce the effects of potentially significant impacts. This chapter also analyzes the impacts that could result from implementation of compensatory mitigation required for the project and describes any additional mitigation necessary to reduce those impacts, and analyzes the impacts that could result from other mitigation measures associated with other resource chapters in this Draft Environmental Impact Report (Draft EIR). The mineral resources considered include natural gas fields, natural gas wells, and aggregate (gravel and sand).

27.0 Summary Comparison of Alternatives

Table 27-0 provides a summary comparison of important impacts on mineral resources by alternative. The table presents the CEQA finding after all mitigation is applied. If applicable, the table also presents quantitative results after all mitigation is applied. Mineral resources in the area are fuel and nonfuel mineral resources, specifically natural gas fields, natural gas wells, and aggregate resources (gravel and sand) or mines. Impacts to consider are the extent to which access to, or direct impact upon these resources, occurs.

The project would have no impact on natural gas fields because the project footprint over them is small. The overlying acreages are 61.4 acres for Alternatives 1, 2a, 2b, and 2c; and 33.5 acres for Alternatives 3, 4a, 4b, 4c, and 5 compared to the 33,650 acres and 29,800 acres, respectively, of underlying natural gas fields (see Table 27-4). Thus, access to the natural gas fields from the surface would not be affected. None of the project alternatives would have an impact on active natural gas wells or aggregate mines because there are none within the project footprint. All project alternatives would use aggregate for intakes, maintenance shafts, railroad spurs, park and rides, and roads. For all alternatives, the required amount of aggregate is less than 1% of the estimated 50-year permitted demand in the Sacramento and Stockton-Lodi production areas. Additionally, the aggregate use would be spread over a 12- to 14-year period after project approval. Consequently, there would be no impact on aggregate availability.

Compensatory mitigation would be placed on Bouldin Island and three ponds along Interstate (I-) 5. Some compensatory mitigation would involve permanent or periodic inundation, excavation to allow water entry, or grading to achieve appropriate elevations for habitat restoration. There are no active natural gas wells and two dry and plugged natural gas wells in the locations where compensatory mitigation is anticipated, so there would be no impact on active locally important natural gas wells from site inundation or construction. One of the compensatory mitigation sites would overlie portions of a natural gas field. The percentage of the total area of the individual natural gas field area affected is 1.1%. Based on the small percentage of natural gas field affected and the fact that these small areas are accessible from immediately adjacent areas via directional drilling, there would be no impact on the extraction potential from natural gas fields as a result of constructing or maintaining the proposed compensatory mitigation.

There are no aggregate mines or mineral resource zones (MRZs) within the compensatory mitigation areas. Consequently, there would be no impact on MRZs. Any aggregate requirements for water entry locations or similar sites would be minimal because they are small and require minor aggregate volume. Aggregate use for compensatory mitigation construction would be minor compared to the 50-year permitted demand in the Sacramento and Stockton-Lodi production areas. There would be no impact on aggregate availability.

Table ES-2 in the Executive Summary provides a summary of all impacts disclosed in this chapter.

Table 27-0. Comparison of Impacts on Mineral Resources by Alternative

	Alternative								
Chapter 27 – Mineral Resources	1	2a	2b	2c	3	4a	4b	4c	5
Impact MIN-1: Loss of Availability of Locally Important Natural Gas Wells as a Result of the Project	NI	NI	NI	NI	NI	NI	NI	NI	NI
Impact MIN-2: Loss of Availability of Extraction Potential from Natural Gas Fields as a Result of the Project (percent of natural gas fields affected)	0.18/NI	0.18/NI	0.18/NI	0.18/NI	0.11/NI	0.11/NI	0.11/NI	0.11/NI	0.11/NI
Impact MIN-3: Loss of Availability of Locally Important Aggregate Resources (Mines and MRZs) as a Result of the Project	NI	NI	NI	NI	NI	NI	NI	NI	NI
Impact MIN-4: Loss of Availability of Locally Important Aggregate Resources as a Result of the Project (Imported aggregate as percent of 50-year demand)	1.55/NI	1.93/NI	1.18/NI	1.43/NI	1.42/NI	1.82/NI	1.04/NI	1.29/NI	1.38/NI

NI = no impact.

27.1 Environmental Setting

This section describes fuel and nonfuel mineral resources (natural gas and aggregate resources) within the mineral resources study area that could be affected by construction, operation, and maintenance of the project alternatives (Figure 3-2). Minimal incidental oil is produced during natural gas extraction in the study area; consequently, oil production is not analyzed. The mineral resources study area (the area in which impacts may occur) for natural gas resources includes the project footprint (see Chapter 3, *Description of the Proposed Project and Alternatives*) although the broader Delta area is considered with respect to natural gas production. The study area for aggregate resources includes the project footprint, the areas of additional analysis, and the five aggregate production areas listed in Table 27-1 because aggregate may be purchased within this broader region. The information in this chapter has been extracted from publications by the California Department of Conservation (DOC); California Geological Survey (CGS) (formerly the California Division of Mines and Geology); the DOC CalGEM (California Geology Energy Management Division) [formerly Division of Oil, Gas, and Geothermal Resources]; U.S. Geological Survey (USGS); and the general plans for counties that have land within the study area that could be affected by the project alternatives. Certain topics discussed in this section are related to topics discussed in other chapters of this environmental impact report (EIR). For example, in Chapter 25, *Hazards, Hazardous Materials, and Wildfire*, Impact HAZ-2: *Create a Significant Hazard to the Public or the Environment through Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment* discusses the potential health risks of relocating or capping natural gas wells that are within the construction footprint of the project alternatives. This chapter does not describe the mineral resource setting or potential alternative effects upstream of the project footprint and adjacent area (the Upstream of the Delta Region) or within the State Water Project (SWP) and Central Valley Project (CVP) Export Service Areas (Export Service Areas) because they would not be impacted by project construction. Impacts of the project alternatives in the Export Service Areas are addressed in Chapter 31, *Growth Inducement*.

27.1.1 Study Area

The areas evaluated for potential impacts on mineral resources are within the project footprint. Because the Delta region produces almost no aggregate and contains no MRZs, construction materials that cannot be reused from excavated project materials would need to be imported from nearby sources. Therefore, the study area also includes all land within the five aggregate production areas listed in Table 27-1 that contain MRZs (Section 27.1.2.1, *Aggregate Resources*). The analysis addresses the impacts on aggregate resource demand and the broader region that is a potential source of aggregate resources, as identified by CGS, used for construction of the project. Bentonite clays would be used in slurry walls for levee stability and groundwater cutoffs. That material is readily available commercially and is not discussed further (Marquis 2021:5, 12). Certain project alternatives include proposed electric transmission line corridors to the west or east of the main project footprint. Transmission lines in these areas are not expected to have any effects on natural gas wells, natural gas fields, natural gas distribution pipelines, or aggregate resources. No impact is expected because if any of these resource features occurred in these transmission line alignment areas, they could easily be avoided or accommodated (see Section 27.3.1.2, *Evaluation of Construction Activities*), such that there would be no interference. Accordingly, no further analysis of

impacts related to these resources as a result of constructing or operating and maintaining these proposed transmission corridors is required.

27.1.2 Existing Mineral Resources in the Study Area

In 2019, California ranked fifth in the nation for nonfuel mineral production, with a market value of $4.49 billion for 13 nonfuel mineral commodities (U.S. Geological Survey 2020:10). California ranks number one in the nation in the production of diatomite and construction sand and gravel; it ranks second in the nation for masonry cement. California was the country's only producer of boron and rare earth metals in 2020. Other minerals produced include gold and silver, common clay, bentonite clay (including hectorite), crushed stone, dimension stone, feldspar, fuller's earth, gemstones, gypsum, iron ore (used in cement manufacture), kaolin clay, lime, magnesium compounds, perlite, pumice, pumicite, salt, soda ash, and zeolites. In 2018, about 739 active mines were producing nonfuel minerals. While a wide variety of minerals are produced within the state, the only minerals produced within the Delta area are natural gas and aggregate. The study area for minerals is the Delta region with natural gas fields and natural gas wells as well as the nearby area that would provide aggregate resources. California construction sand and gravel production had an estimated total value of $1.16 billion for 115 million tons produced in 2018 (Marquis 2021:3). Active mineral commodity producers in the study area are shown on Figure 27-1.

Mineral resources in the state are identified and classified by CGS, which implements the State's Mineral Land Classification Project in compliance with the Surface Mining and Reclamation Act (SMARA) of 1977. The State Mining and Geology Board (SMGB) prioritizes areas for classification and designation through this program. CGS identifies and maps the lands containing significant mineral deposits and classifies the areas into MRZs based on their mineral resource potential. Classification is based on geologic and economic factors without regard to existing land use or land ownership; mineral resource significance is based on whether the land is actively mined under a valid permit or meets established criteria of marketability and threshold value. Aggregate was the first commodity in the state to be classified by CGS into MRZs. Four primary MRZ categories are used in classifying mineral resources (California Department of Conservation, State Mining and Geology Board 2009:4–6).

- **MRZ-1.** Available information indicates that significant mineral resources are not present or little likelihood exists for their presence.
- **MRZ-2a.** Geologic data indicate that significant mineral resources underlie the area. Lands included in this category are of prime importance because they contain known economic mineral deposits.
- **MRZ-2b.** Geologic data indicate that significant mineral resources underlie the area. The area has discovered deposits that are either inferred reserves or deposits that are presently subeconomic as determined by limited sample analysis, exposure, and past mining history. With future advances in technology or changes in economics, the area could be upgraded to MRZ-2a.
- **MRZ-3a.** The area is considered to have a moderate potential for the discovery of economic mineral deposits. Further exploration work could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories.
- **MRZ-3b**. The geologic evidence leads to the plausible conclusion that economic mineral deposits are present in the area and that it is in a geologic setting that appears to be a favorable environment for the occurrence of specific mineral deposits.

- **MRZ-4.** There is a lack of knowledge of the area regarding mineral occurrence.

MRZ-2 is an important classification for land use planning because of the high likelihood for occurrence of substantial mineral deposits in such areas. SMGB may determine that some MRZ-2a or MRZ-2b areas contain mineral resources with statewide or regional significance and initiate a public process for designation. Designated areas are incorporated into state regulations (California Code of Regulations Title 14, Division 2, Chapter 8, Subchapter 1, Article 2). Such designations require that a lead agency's land use decisions involving these areas be made in accordance with its established mineral resource management policies, and they require consideration of the importance of the designated mineral resource to the market region or state as a whole, not just its importance to the lead agency's area of jurisdiction (Public Resources Code, Division 2, Chapter 9, Section 2763).

27.1.2.1 Aggregate Resources

CGS classification reports include an assessment of the quantity, quality, and extent of aggregate deposits for the state including in a study area. Reports include aggregate resource classification and mapping, quantitative calculations of permitted and nonpermitted aggregate resources, calculated 50-year demand for aggregate resources, and an estimate of when the permitted resources will be depleted (Clinkenbeard and Gius 2018:iii). The study uses historical aggregate use on a per capita basis to project future aggregate demand based on population projections by the California Department of Finance through 2060. Fifty-year demand and permitted aggregate resources for the five aggregate study areas are shown in Table 27-1. All regions have permitted aggregate reserves that are higher than the projected 50-year demand. There are six active aggregate mines in the study area (Figure 27-1).

Table 27-1. Comparison of 50-Year Demand to Permitted Aggregate Resources for Aggregate Analysis Areas as of January 1, 2017 [a]

Aggregate Study Area [b]	50-Year Demand (million tons)	Permitted Aggregate Reserves (million tons)	Permitted Aggregate Reserves Compared to 50-Year Demand (percent)
Sacramento-Fairfield P-C Region (includes Yolo County)	295	109	37
Sacramento County	724	327	45
North San Francisco Bay P-C Region	492	263	53
South San Francisco Bay P-C Region	1,320	506	38
Stockton-Lodi P-C Region	409	203	50
Statewide	11,045	7,628	69

Source: Clinkenbeard and Gius 2018:6.

P-C region = production-consumption region.

[a] There are no study areas in this table with less than 10 years of permitted resources.

[b] Aggregate study areas follow either a P-C region boundary or a county boundary. A P-C region includes one or more aggregate production districts and the market area that those districts serve. Aggregate resources are evaluated within the boundaries of the P-C region. County studies evaluate all aggregate resources within the county boundary.

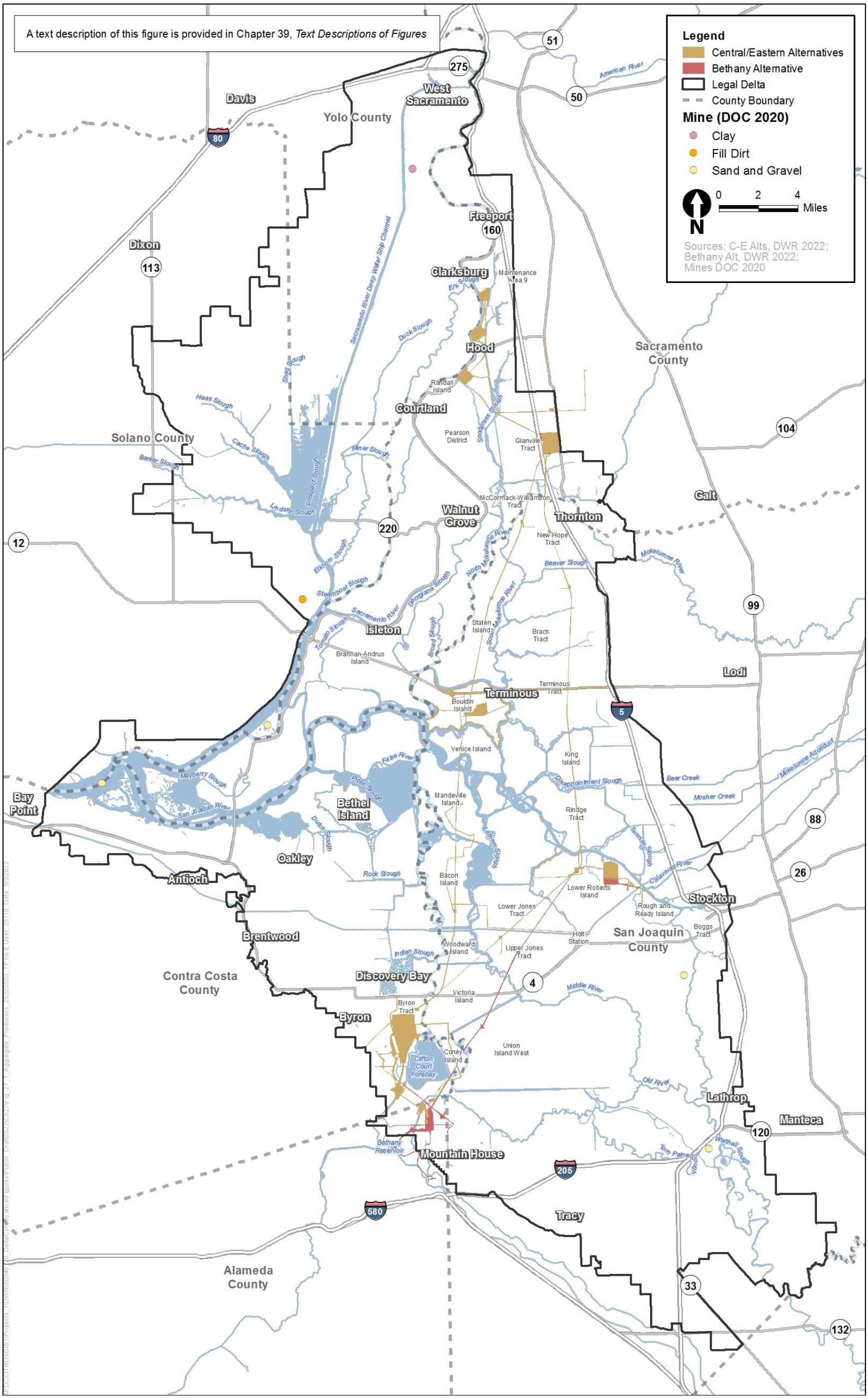

Figure 27-1. Aggregate Producers

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Aggregate demand relates its use for concrete, asphaltic concrete, road and construction base, drain rock, and fill (O'Neal and Gius 2018:vii). Consequently, aggregate production and consumption follows the general trend of population growth and economic conditions (Clinkenbeard and Gius 2018:4; O'Neal and Gius 2018:ix). Additionally, transportation costs are high so that much aggregate use is regional (O'Neal and Gius 2018:ix). Reflecting these influences, the Sacramento region's production reached a peak of approximately 26.3 million tons in 2005 and was approximately 21.5 million tons in 2007, the year before the 2008 recession began (O'Neal and Gius 2018:36). Production declined to 12.6 million tons in 2008, reached a low of 7.3 million tons in 2012, and was approximately 11 million tons and 10.8 million tons in 2015 and 2016, respectively (O'Neal and Gius 2018:36). Aggregate production was approximately 120 million tons in 2017 and 2018 (Marquis 2021:4).

27.1.2.2 Natural Gas Resources

In 2019, California produced 148.2 billion cubic feet of associated gas (i.e., gas that is found with oil) and 17.7 billion cubic feet of nonassociated gas (i.e., gas that is not associated with oil). Most of the state's natural gas fields are in the Sacramento Valley and northern San Joaquin Valley (Figure 27-2). The Rio Vista gas field, discovered in the Delta in 1936, is the largest field producing nonassociated gas in the state, occupying portions of Sacramento, Solano, and Contra Costa Counties. In 2019, this gas field produced 4.6 billion cubic feet of natural gas. Since the 1940s, natural gas supply has been inadequate to meet state demand because of the tremendous growth in population and industry. By the early 1980s, more than 80% of the natural gas used in California was from sources outside the state (Ritzius 1993:15). California's net gas production (associated and nonassociated) for 2019 was 165.9 billion cubic feet, a decrease of 8.1% from 2018. Associated gas production decreased about 13.9 billion cubic feet, and nonassociated gas production decreased about 0.9 billion cubic feet (California Department of Conservation 2020:11). In 2017, about 8% of natural gas used in California was produced within the state (California Public Utilities Commission 2021).

California currently ranks seventh among the 31 oil-producing states. California's oil production for 2019 was 156.4 million barrels, a decrease of approximately 3.3% from 2018. California onshore production decreased approximately 3% from 2018 and offshore production decreased approximately 10.4% from 2018 (California Department of Conservation 2020:7). Although it is an important resource in California, minimal incidental oil production is reported from active wells. Consequently, oil production is not analyzed.

The CalGEM WellSTAR database places oil and natural gas wells into one of six categories: active, canceled, idle, new, plugged, and unknown. The number of natural gas wells in each category by county in the study area is shown in Table 27-2. Table 27-3 shows nonassociated natural gas production and active wells by county for 2014 through 2018. Existing oil, natural gas, and nonfuel mineral resources in the study area are discussed below by county.

Table 27-2. Natural Gas Wells within the Study Area, by County

Well Category	Contra Costa County	Sacramento County	San Joaquin County	Total
Active	2	92	113	207
Canceled (not shown on map)	3	25	9	37
Idle	24	113	71	208
New	0	6	1	7
Plugged	365	499	680	1,544
Unknown	0	1	0	1
Total	394	736	874	2,004

Source: California Department of Conservation 2018.
Note: There are no natural gas wells within the study area in Alameda County.

Table 27-3. Active Natural Gas Wells and Nonassociated Natural Gas Production for Study Area Counties in Thousand Cubic Feet (2014 to 2018)

	2014		2015		2016		2017		2018	
County	Active Wells	Natural Gas (Mcf)	Active Wells	Natural Gas (Mcf)	Active Wells	Natural Gas (Mcf)	Active Wells	Natural Gas (Mcf)	Active Wells	Natural Gas (Mcf)
Alameda	6	0	6	847	6	0	6	0	6	0
Contra Costa	38	369,599	38	333,759	28	130,892	22	81,830	22	80,632
Sacramento	95	7,146,233	92	5,558,920	78	4,281,529	90	3,783,160	87	3,804,460
San Joaquin	144	2,283,516	141	1,829,324	140	1,449,649	134	1,341,882	131	1,129,064
Total	283	9,799,348	277	7,722,850	252	5,862,070	252	5,206,872	246	5,014,156

Sources: California Department of Conservation 2014, 2015, 2016, 2017, 2018.
Mcf = thousand cubic feet.

Alameda County

The northeastern corner of Alameda County is in the study area. There are no active aggregate mines within the study area (Figure 27-1). No mineral resources are in this area. No natural gas fields or oil and natural gas wells are in the Alameda County portion of the study area.

Contra Costa County

No active aggregate mines are in the Contra Costa County portion of the study area (Figure 27-1).

Of the 22 active natural gas wells in Contra Costa County, 2 are in the study area (Tables 27-2 and 27-3). From 2014 to 2018, county natural gas production declined from 369,599 thousand cubic feet (Mcf) to 80,632 Mcf (Table 27-3).

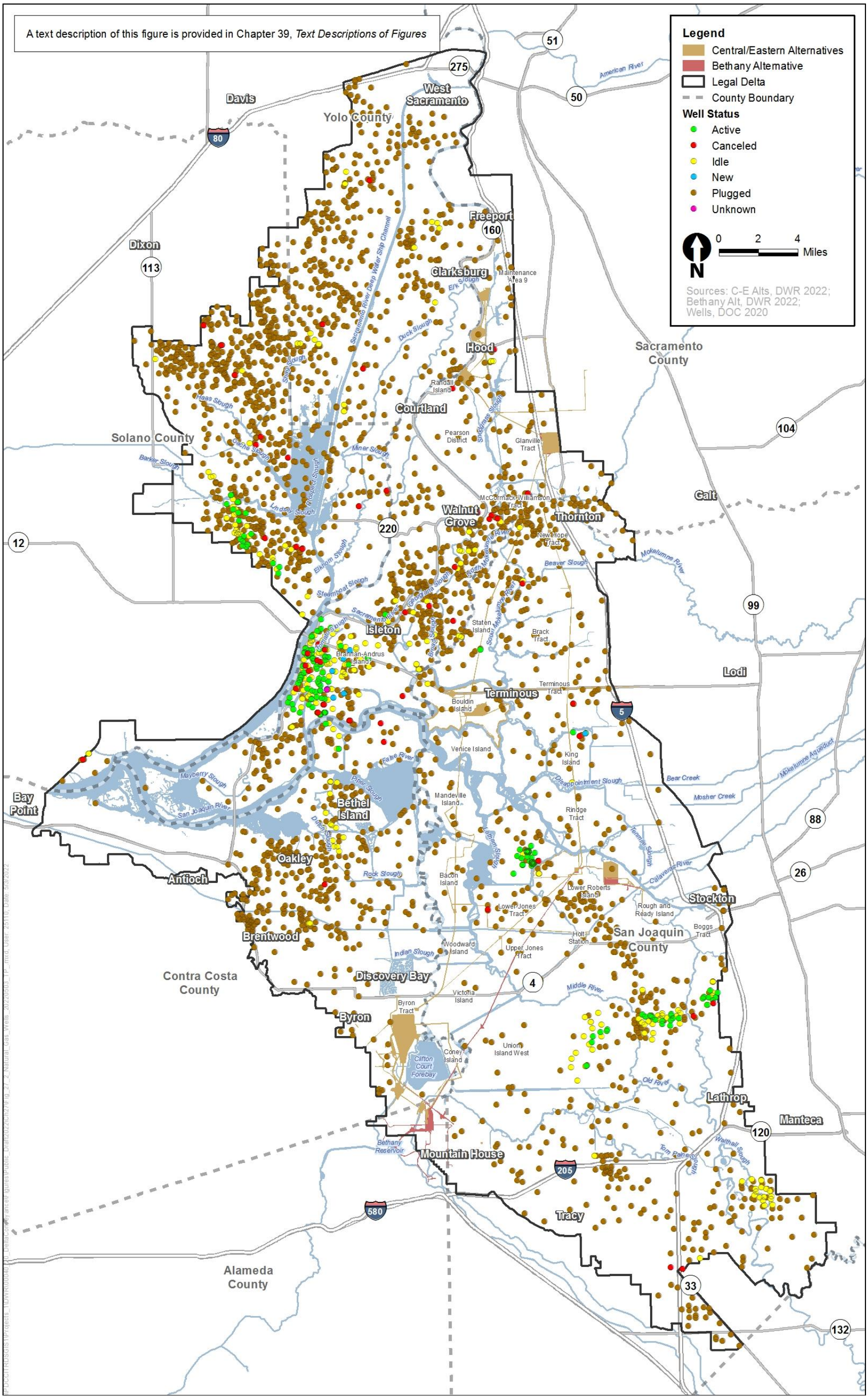

Figure 27-2. Natural Gas Wells in the Delta

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Sacramento County

The northern and central parts of the study area encompass a portion of Sacramento County, including the city of Sacramento. According to the *Sacramento County General Plan* (County of Sacramento 2017:12), mineral resources in the county include sand and gravel, clay, gold, silver, peat, topsoil, lignite, natural gas, and petroleum. Resources in the Sacramento County portion of the study area include oil and natural gas. The county's natural gas production is mostly from the Rio Vista gas field (Figure 27-2).

There are 92 active natural gas wells in the study area; 87 active wells are in Sacramento County (Tables 27-2 and 27-3). From 2014 to 2018, county natural gas production declined from 7,146,233 Mcf to 3,588,446 Mcf (Table 27-3).

In the Sacramento County portion of the Delta, there are no MRZ-2 areas or areas of active mineral production (O'Neal and Gius 2018:Plate 1). An MRZ-2 for Portland cement concrete grade aggregate has been designated in an area east of the Delta and several mines are in southeastern Sacramento near Highway 16 (O'Neal and Gius 2018:Plate 1). There are no active mines within the Sacramento County portion of the study area (Figure 27-1).

San Joaquin County

Mineral resources within San Joaquin County consist primarily of sand and gravel aggregate, with limited mining of peat, gold, and silver (County of San Joaquin 2016:3.4–3.8). The Delta area west of Stockton is designated MRZ-1 (Smith and Clinkenbeard 2012:Plate 1). There are areas of MRZ-2 and MRZ-3 to the south of Stockton and to the south of Tracy, including active mines (Smith and Clinkenbeard 2012:Plates 1 and 2). Two active permitted production operations in San Joaquin County in the study area are identified on Figure 27-1.

San Joaquin County has also long been an active site for natural gas extraction. As early as 1854, when a water well drilled in Stockton yielded water and gas, there has been interest in the County's gas fields. Most of the gas is extracted from fields in the Delta (County of San Joaquin 2016:2-7). There are 113 active natural gas wells in the study area out of the 131 active wells in San Joaquin County (Tables 27-2 and 27-3). From 2014 to 2018, county natural gas production declined from 2,283,516 Mcf to 1,129,064 Mcf (Table 27-3). Additionally, PG&E operates the McDonald Island underground natural gas storage facility west of Stockton.

27.2 Applicable Laws, Regulations, and Programs

The applicable laws, regulations, and programs considered in the assessment of project impacts on mineral resources are indicated in Section 27.3.1, *Methods for Analysis*, or the impact analysis, as appropriate. Applicable laws, regulations and programs associated with state and federal agencies that have a review or potential approval responsibility have also been considered in the development of CEQA impact thresholds or are otherwise considered in the assessment of environmental impacts. A listing of some of the agencies and their respective potential review and approval responsibilities, in addition to those under CEQA, is provided in Chapter 1, *Introduction*, Table 1-1. A listing of some of the federal agencies and their respective potential review, approval, and other responsibilities, in addition to those under NEPA, is provided in Chapter 1, Table 1-2.

27.3 Environmental Impacts

This section describes the direct and cumulative environmental impacts associated with mineral resources that would result from project construction, operation, and maintenance of the project. It describes the methods used to determine the impacts of the project and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (i.e., avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts are provided. Indirect impacts are discussed in Chapter 31, *Growth Inducement*.

27.3.1 Methods for Analysis

This section describes the qualitative and quantitative methods used to evaluate fuel and nonfuel mineral-related impacts of the project alternatives within the study area. These impacts would be associated with construction, operation, and maintenance of the project and implementation of the compensatory mitigation.

27.3.1.1 Process and Methods of Review for Mineral Resources

The potential for construction and the physical footprint of the project to directly or indirectly affect fuel and nonfuel mineral resource availability and extraction was evaluated. The evaluation process involved reviewing the location of the associated resources (aggregate mines, natural gas wells, natural gas fields) with respect to the project facilities, the associated footprint, and considering how the facilities alter access to the resources, and the amount of the resources available for use.

Operational impacts are evaluated in a similar manner.

27.3.1.2 Evaluation of Construction Activities

The project alternatives' footprints could prevent physical access to mineral resources such as aggregates or natural gas. Such an effect would result if the facilities covered an underlying resource such that it was no longer available. For example, if intakes or tunnel shafts were placed over an underlying aggregate resource, that portion of the resource would no longer be accessible. Similarly, if a tunnel were placed over an existing active natural gas well it could reduce access to the underlying natural gas resource. This analysis entailed use of geographic information system (GIS) data to quantify the number of oil and natural gas wells, areal extent of natural gas fields, designated mineral zones, and individual mineral commodity producers affected by the footprints of all components of the project alternatives, including conveyance-related activities.

Construction of new electrical transmission facilities could conflict with existing natural gas wells or natural gas distribution pipelines. Because of the minimal size of power pole footprints, the relative ease of relocating natural gas distribution lines, and the flexibility of relocating power pole locations, no significant impacts are anticipated. Similarly, underground transmission lines could readily be routed around natural gas wells or beneath natural gas distribution lines. Additionally, transmission lines are often along existing roads or would be placed adjacent to proposed facilities which have no impact on natural gas wells (see Section 27.3.3, *Impacts and Mitigation Approaches*) therefore the potential to intersect existing natural wells is minimal, and, if encountered could be avoided. Consequently, this issue is not addressed further.

27.3.1.3 Evaluation of Operations

Operational impacts on mineral resources could result from the use of aggregate for maintenance actions. For example, aggregate would be used for road maintenance; and riprap used for erosion control on levees, stream banks, and structure foundations would need replacing over time. These volumetric needs are evaluated on a qualitative basis. In general, however, operation of the conveyance facilities involves the movement of water in the constructed facilities; these actions would not impact availability of mineral resources.

27.3.2 Thresholds of Significance

This chapter analyzes the impacts on mineral resources from construction and operation of the project alternatives. The chapter looks at whether the alternatives would cause:

- Loss of availability of a known mineral resource that would be of value to the region or the state—for the purposes of this analysis, loss of availability of a known mineral resource would occur when a nonrenewable mineral resource is completely used or access is blocked. For natural gas resources, an impact is considered significant if a substantial amount of access to a natural gas field is blocked or a substantial number of natural gas wells are removed. For aggregate resources, an impact is considered significant when use of the resource would result in a substantial depletion (loss of availability) of construction-grade aggregate in the study area, which would cause remaining supplies to be inadequate for future development based on 50-year demand estimates, and thereby substantially contribute to the need for new aggregate development.
- Loss of availability of a locally important mineral resource recovery site delineated by a local general plan, specific plan, or other land use plan.

This analysis focuses on construction impacts related to natural gas wells, natural gas fields, aggregate mine sites, or MRZs.

27.3.2.1 Evaluation of Mitigation Impacts

CEQA also requires an evaluation of potential impacts caused by the implementation of mitigation measures. Following the CEQA conclusion for each impact, the chapter analyzes potential impacts associated with implementing both the Compensatory Mitigation Plan (CMP) and the other mitigation measures required to address with potential impacts caused by the project. Mitigation impacts are considered in combination with project impacts in determining the overall significance of the project. Additional information regarding the analysis of mitigation measure impacts is provided in Chapter 4, *Framework for the Environmental Analysis*.

27.3.3 Impacts and Mitigation Approaches

27.3.3.1 No Project Alternative

As described in Chapter 3, *Description of the Proposed Project and Alternatives,* CEQA Guidelines Section 15126.6 directs that an EIR evaluate a specific alternative of "no project" along with its impact. The No Project Alternative in this Draft EIR represents the circumstances under which the project (or project alternative) does not proceed and considers predictable actions, such as projects, plans, and programs, that would be predicted to occur in the foreseeable future if the Delta

Conveyance Project is not constructed and operated. This description of the environmental conditions under the No Project Alternative first considers how mineral resources could change over time and then discusses how other predictable actions could affect mineral resources.

Future Mineral Resources Conditions

For mineral resources, future conditions are not anticipated to substantially change compared to existing conditions because mineral resource policies and resulting uses are not expected to change if the project (or project alternative) does not proceed. However, indirect impacts on mineral resources within the Delta may occur under the No Project Alternative as the result of sea level rise and continuing seismic risk to Delta levees. These changes could result in land inundation reducing access to mineral resources. Temporary inundation would temporarily restrict access until levees or other water barriers were constructed or repaired. If permanently inundated, access to aggregate resources could be reduced. Direct vertical access to natural gas resources could be reduced via permanent land inundation. However, in such a circumstance, the underlying natural gas resource could be accessed via directional drilling, so there would be no impact to potential production.

Predictable Actions by Others

A list and description of actions included as part of the No Project Alternative are provided in Appendix 3C, *Defining Existing Conditions, No Project Alternative, and Cumulative Impact Conditions*. As described in Chapter 4, *Framework for the Environmental Analysis,* the No Project Alternative analyses focus on identifying the additional water supply–related actions public water agencies may opt to follow if the Delta Conveyance Project does not occur.

Public water agencies participating in the Delta Conveyance Project have been grouped into four geographic regions. The water agencies within each geographic region would likely pursue a similar suite of water supply projects under the No Project Alternative (Appendix 3C).

Many of these projects, such as construction of desalination plants or water recycling facilities, would involve construction of facilities by individual public water agencies to ensure local water supply reliability for its constituents. These facilities would require aggregate or potentially have a surface footprint that would affect existing aggregate localities, oil and natural gas wells or access to underlying oil and natural gas fields.

Desalination projects would most likely be pursued in the northern and southern coastal regions. The southern coastal regions would likely require larger and more desalination projects than the northern coastal region to replace the water yield that otherwise would have been supplied by the Delta Conveyance Project. These projects would be sited near the coast. Groundwater recovery (brackish water desalination) would involve similar types of ground disturbance but could occur across the northern inland, southern coastal, southern inland regions and in both coastal and inland areas, such as the San Joaquin Valley. Grading and excavation at the desalination and groundwater recovery plant sites would be necessary for construction of foundations, and trenching would occur for installation of water delivery pipelines and utilities. Construction would require some amount of aggregate for building foundations, concrete in walls or associated project roads. The surface footprint of these facilities could be located over existing aggregate resources, oil and natural gas wells, or underlying oil and natural gas fields. Such footprints would have the potential to cause abandonment of those resources at the specific location.

The northern and southern coastal regions are also most likely to explore constructing groundwater management projects. The southern coastal region would require more projects than the northern coastal region under the No Project Alternative. Groundwater management projects would occur in association with an underlying aquifer but could occur in a variety of locations and their footprint could affect a variety of aggregate, oil, and natural gas resources (wells and underlying fields). Construction activities for each project could require excavation for the construction of the recharge basins, conveyance canals, and pipelines and drilling for the construction of recovery wells (with completion intervals between approximately 200 and 900 feet below ground surface). The greatest use of aggregate use for such facilities would most likely be to construct and maintain access roads and would therefore be minimal.

Water recycling projects could be pursued in all four regions. The northern inland region would require the fewest number of wastewater treatment/water reclamation plants, followed by the northern coastal region, followed by the southern coastal region. The southern inland region would probably have the greatest number of water recycling projects to replace the anticipated water yield that it otherwise would have received through the Delta Conveyance Project because other water supply project options are not as likely to occur when compared to the other geographic regions. These projects would be located near water treatment facilities. Construction techniques for water recycling projects would vary depending on the type of project (e.g., for landscape irrigation, groundwater recharge, dust control, industrial processes) but could require earth moving activities, grading, excavation, and trenching and building construction. There would be aggregate use for building foundations and associated roads. Their footprint could affect a variety of underlying aggregate, oil, and natural gas fields, as well as existing oil and natural gas wells.

Water efficiency projects could be pursued in all four regions and involve a wide variety of project types, such as flow measurement or automation in a local water delivery system, lining of canals, use of buried perforated pipes to water fields, and additional detection and repair of commercial and residential leaking pipes. These projects could occur anywhere in the regions, and most would involve little aggregate use. It is likely these types of water supply projects would occur in previously disturbed areas, so they are unlikely to interfere with existing underlying aggregate, oil or natural gas fields or existing oil and natural gas wells.

As detailed above, all project types across all regions would involve relatively typical construction techniques (i.e., no large-scale tunnels or deep soil mixing) and buildings and would be required to conform with the requirements of CEQA and/or state and local regulations protecting mineral resources.

27.3.3.2 Impacts of the Project Alternatives on Mineral Resources

Impact MIN-1: Loss of Availability of Locally Important Natural Gas Wells as a Result of the Project

All Project Alternatives

All nine alternatives (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, 4c, and 5) described in Chapter 3, *Description of the Proposed Project and Alternatives*, have similar impact levels and are discussed together.

Project Construction

The physical footprint of the project alternatives varies with the three alignments (central, eastern, and Bethany Reservoir), different numbers of intakes (one, two, or three), and small differences in total acreage. With respect to natural gas well impacts, the route, intake, and acreage variations result in minimal differences between the project alternatives. No alternative intersects any known active natural gas well, so route, acreage, or number of intake variations do not change those impacts. Additionally, during the design phase, field investigations would be conducted to identify unknown natural gas wells, as described in Chapter 3, Section 3.15.2.6, *Location of Buried Groundwater and Natural Gas Wells*. Further, field investigations would be conducted during construction, as described in Section 3.15.3.2, *Construction Monitoring*.

Field investigations for project construction, which primarily would occur within the project construction footprint and extend beyond it in some locations, would have no impact on natural gas wells. Field investigations at any given site are temporary and likely to last a few days to a few weeks. As no project alternative would have an impact on natural gas wells, field investigations along any of the alignments would similarly have no impact on natural gas wells.

Operations and Maintenance

Operation and maintenance under all project alternatives would occur within the same footprint as construction. As no project alternatives would have an impact on natural gas wells due to construction, operations would similarly not impact any natural gas wells.

CEQA Conclusion—All Project Alternatives

The locations of producing natural gas wells within the study area are shown on Figure 27-2. No known active wells would be displaced by the project construction footprint of any of the project alternatives. Because no known producing wells within the construction footprints would be permanently abandoned, construction of any project alternative would not result in reduced natural gas production and would not affect any locally important natural gas wells.

Operations and maintenance would occur at locations of permanent facilities, which lie within the construction footprint analyzed above. As none of the project alternatives would have an impact on natural gas fields due to construction, operations would similarly not affect any natural gas fields. Consequently, there would be no impact on locally important natural gas wells as a result of operations and maintenance of the project.

There would be no impact from construction or operations and maintenance of any of the project alternatives. Therefore, there would be no impact for any of the project alternatives.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F, *Compensatory Mitigation Plan for Special-Status Species and Aquatic Resources*, does not act as mitigation for impacts on mineral resources from project construction or operations, its implementation could result in impacts on mineral resources.

Compensatory mitigation would be located at Bouldin Island, three ponds along Interstate (I-) 5, and undetermined tidal wetland and channel margin restoration sites in the North Delta Arc region

(Appendix 3F). The potential impact at Bouldin Island, the I-5 ponds, and in the North Delta Arc region with respect to natural gas wells would be site inundation. Within the four known locations, there are no active natural gas wells; there are two natural gas wells, but they are dry and plugged. There would be no impacts on natural gas wells. Therefore, with respect to the Bouldin Island and I-5 sites, the project alternatives combined with compensatory mitigation implementation would not change the overall impact conclusions.

As described in Appendix 3F, compensatory mitigation could occur via tidal wetland or channel margin restoration within the North Delta Arc, but it cannot be known at this time whether these sites would overlie gas fields. However, the acreages affected at these sites would be small compared to the large size of the natural gas fields in the study area, and the number of wells potentially affected would likely be small. Therefore, the project alternatives combined with compensatory mitigation would not change the overall impact conclusion of no impact.

Other Mitigation Measures

Other mitigation measures proposed would not have impacts on locally important natural gas wells because none of the project alternatives intersect an active natural gas well. Therefore, implementation of mitigation measures is unlikely to result in the loss of availability of locally important natural gas wells, and there would be no impact.

Overall, loss of availability of locally important natural gas wells related to compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the no impact conclusion.

Impact MIN-2: Loss of Availability of Extraction Potential from Natural Gas Fields as a Result of the Project

All Project Alternatives

All nine alternatives have similar impact levels and are discussed together with respect to this impact category.

Project Construction

The project crosses over natural gas fields, but the acreage affected is very small compared to the large size of the underlying natural gas fields; accordingly, the variation by alternative is small.

Field investigations for project construction, which primarily would occur within the footprint and extend beyond it in some locations, would have no impact on natural gas fields for any alternative. Also, field investigations at any given site are temporary and likely to last a few days to a few weeks.

Operations and Maintenance

Operations and maintenance would occur at locations of permanent facilities, which lie within the construction footprint analyzed above. As shown in Table 27-4, the project footprint would require only a small acreage, and a small percentage of natural gas fields underlie the project.

Table 27-4. Acres of Natural Gas Field Affected by Alternatives

Alternatives	Acres of Associated Natural Gas Fields Underlying Project Area	Acres Affected	Percent Acres Affected
1, 2a, 2b, 2c	33,650	61.4	0.18
3, 4a, 4b, 4c, 5	29,800	33.5	0.11

CEQA Conclusion—All Project Alternatives

Under all project alternatives the area of underlying natural gas fields that would be covered by the project range from 61.4 acres (Alternatives 1, 2a, 2b, and 2c) to 33.5 acres (Alternatives 3, 4a, 4b, 4c, and 5) (Table 27-4). The areas covered by these alternatives are compared to 33,650 acres or 29,800 acres (Table 27-4) of underlying natural gas fields intersected by the project footprint. The area of the individual natural gas fields affected ranges in size from 683 acres to 15,747 acres. The area of natural gas fields covered by the project ranges from 0.11% to 0.18%. Operations and maintenance would occur at locations of permanent facilities, which lie within the construction footprint analyzed above. Additionally, directional drilling from an individual natural gas well can extend to a large radius from the well so that a large area of natural gas fields is available. Consequently, there would be no loss of availability of extraction potential from natural gas fields as a result of any of the project alternatives.

Based on the small percentage of natural gas fields areas affected and because these small areas are accessible from immediately adjacent areas, there would be no impact on the extraction potential from natural gas fields as a result of constructing or operating the project alternatives.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F does not act as mitigation for impacts on mineral resources from project construction or operations, its implementation could result in impacts on mineral resources.

As described in Appendix 3F, compensatory mitigation would be located at Bouldin Island, three existing ponds along I-5, and undetermined tidal wetland or channel margin restoration sites (Appendix 3F). The impact on availability of extraction potential from natural gas fields could occur as a result of recreating aquatic habitats that would prevent access to underlying natural gas fields from these locations. Within the four known locations, one location overlies portions of one natural gas field. The Bouldin Island mitigation sites overlies 101 acres, or 1.1%, of the 9,505-acre River Island Natural Gas Field. This is small percentage of the natural gas field acreage. Additionally, the affected acreage of this natural gas field is a narrow finger extending from the larger portion of the natural gas field. Thus, natural gas wells from the adjacent larger portion of the natural gas fields can access these narrow fingers via short directional drilling extents. Therefore, with respect to the Bouldin Island and I-5 sites, the project alternatives combined with compensatory mitigation implementation would not change the overall impact conclusions. Additional compensatory mitigation could occur via tidal wetland or channel margin restoration within the North Delta Arc, but it cannot be known at this time whether these sites would overlie gas fields. However, the acreages affected at these sites would be small compared to the large size of the natural gas fields in

the study area. Therefore, the project alternatives combined with compensatory mitigation would not change the overall impact conclusion of no impact.

Other Mitigation Measures

Some mitigation measures would involve in-water work that would have the potential to prevent access to underlying natural gas fields. The mitigation measures with potential to result in temporarily preventing access to underlying natural gas fields are Mitigation Measures AQUA-1a: *Develop and Implement an Underwater Sound Control and Abatement Plan,* AQUA-1b: *Develop and Implement a Barge Operations Plan, and* AQUA-1c: *Develop and Implement a Fish Rescue and Salvage Plan*.

A small percentage of natural gas field areas would be affected. These small areas are accessible from immediately adjacent areas and directional drilling would allow the remaining portion of the natural gas fields to continue to be accessed such that a large area of natural gas fields is available. Therefore, implementation of mitigation measures is unlikely to prevent access to underlying natural gas fields and the impact of loss of availability of extraction potential from natural gas fields would not be substantial.

Overall, loss of availability of extraction potential from natural gas fields impacts for construction of compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the no impact conclusion.

Impact MIN-3: Loss of Availability of Locally Important Aggregate Resources (Mines and MRZs) as a Result of the Project

All Project Alternatives

The alternatives have different routes and footprint acreage variations; however, they do not intersect any existing mines and there are no identified MRZs within the footprints. Consequently, all alternatives have similar impact levels and are discussed together with respect to this impact category.

Project Construction

There are no permitted resource extraction mines (including aggregate mines) and no identified MRZs in the footprint of any of the project alternatives.

Field investigations for project construction primarily would occur within the footprint, and extend beyond it in some locations, of each alternative. As no project alternative would have an impact on resource extraction mines, field investigations along any of the alignments would similarly have no impact on resource extraction mines.

Operations and Maintenance

The operation of the water conveyance facilities under all project alternatives would include moving water within the constructed infrastructure. Significant impacts would only occur if operations prevented access to a locally important aggregate resource site; this is not expected to occur because there are no aggregate mines or MRZs in the area where the project would operate. Accordingly, operation of these project alternatives would not block access to existing mines or identified MRZs and there would be no impact. Routine facilities maintenance activities would not

cover or block access to existing mines or identified MRZs because there are no aggregate mines or MRZs in the area where the project alternatives would operate. Operations and maintenance would not increase the existing project footprint so they cannot have any effect even if aggregate mines or MRZs did exist.

CEQA Conclusion—All Project Alternatives

None of the project alternatives would have an impact on the availability of aggregate resource sites because there are no aggregate mines or MRZs in the area where the alternatives would be constructed or would be operated. There would be no impact on the availability of locally important aggregate resources from construction, operations, or maintenance of any of the project alternatives.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F does not act as mitigation for impacts on mineral resources from project construction or operations, its implementation could result in impacts on mineral resources.

As described in Appendix 3F, compensatory mitigation would be located at Bouldin Island, three ponds along I-5, and undetermined tidal wetland or channel margin restoration sites (Appendix 3F). The compensatory mitigation sites at Bouldin Island and the I-5 ponds do not overlie locally important aggregate resources (mines or MRZs). Therefore, with respect to the Bouldin Island and I-5 sites, the project alternatives combined with compensatory mitigation implementation would not change the overall impact conclusions. Additional compensatory mitigation could occur via tidal wetland or channel margin restoration within the North Delta Arc, but it cannot be known at this time whether these sites would overlie aggregate mines or MRZs. However, it is unlikely land designated as an MRZ-1 would be selected for channel margin or tidal habitat restoration because few new mines are permitted along water ways and existing mines would already have restoration plans in place. Therefore, the project alternatives combined with compensatory mitigation would not change the overall impact conclusion of no impact.

Other Mitigation Measures

Other mitigation measures proposed would not have impacts on locally important aggregate resources (mines or MRZs) because there are no aggregate mines or MRZs in the area where the project alternatives would be constructed or would be operated. Therefore, implementation of mitigation measures is unlikely to result in the loss of availability of locally important aggregate resources (mines or MRZs), and there would be no impact.

Overall, loss of availability of locally important aggregate resources (mines or MRZs) related to compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the no impact conclusion.

Impact MIN-4: Loss of Availability of Locally Important Aggregate Resources as a Result of the Project

All Project Alternatives

All of the project alternatives would require large amounts of aggregate for construction of the water conveyance and support facilities. Consequently, all alternatives have similar impact levels and are discussed together with respect to this impact category.

Project Construction

The principal aggregate demands would be for concrete at the intakes, shafts, pumping plants, and ground improvement; riprap; and base material for railroad spurs, park-and-ride lots, and roads. The aggregate requirements by alternative are displayed in Table 27-5 including their percentage of 50-year permitted aggregate amount and percentage of 50-year aggregate demand. For all project alternatives, the latter two values are between 1.04% and 1.93% and 0.49% and 0.9%, respectively, of the reported values for the Sacramento County and the Stockton-Lodi aggregate production areas (Table 27-1). Additionally, the required imported materials would be used over a period of approximately 12 to 14 years, thereby spreading the impact on available aggregate supplies over time.

Field investigations for project construction would primarily occur within the project footprint, and extend beyond it in some locations, of each alternative. Field investigations would require no aggregate so there would be no impact on aggregate availability.

Table 27-5. Amounts of Imported Aggregate Materials for Project by Alternative

Alternative	Imported Aggregate (tons)	Imported Aggregate (million tons)	Imported Aggregate as Percent of 50-Year Permitted Aggregate	Imported Aggregate as Percent of 50-Year Aggregate Demand
1	8,199,270	8.2	1.55	0.72
2a	10,253,556	10.25	1.93	0.90
2b	6,252,984	6.25	1.18	0.55
2c	7,554,231	7.55	1.43	0.67
3	7,506,593	7.51	1.42	0.66
4a	9,664,521	9.66	1.82	0.85
4b	5,507,700	5.51	1.04	0.49
4c	6,834,089	6.83	1.29	0.60
5	7,313,293	7.31	1.38	0.65

Source: Delta Conveyance Design and Construction Authority 2022:3.

Operations and Maintenance

The operation of the water conveyance facilities under all project alternatives would include moving water within the constructed infrastructure. No aggregate resources are required for operations so there would be no impact. Only small amounts of aggregate and riprap would be required for periodic maintenance of levees, stream banks, access roads, and Southern Forebay interior

embankment. The demand for these materials could be easily met by locally permitted aggregate sites (Table 27-1).

CEQA Conclusion—All Project Alternatives

Because the regional aggregate available to meet the regional 50-year demand would have minimal use toward construction, maintenance, and operations for any of the project alternatives, there would be no impact causing the need for new aggregate resource development.

Consequently, there would be no impact for all project alternatives.

Mitigation Impacts

Compensatory Mitigation

Although the CMP described in Appendix 3F does not act as mitigation for impacts on mineral resources from project construction or operations, its implementation could result in impacts on mineral resources.

Small amounts of aggregate could be required for various components of the compensatory mitigation at the I-5 ponds, Bouldin Island, and unspecified channel margin and tidal habitat within the North Delta Arc. As shown in Table 27-1, substantial amounts of aggregate resources are available that could provide the required materials. Therefore, the project alternatives combined with compensatory mitigation would not change the overall impact conclusion of no impact.

Other Mitigation Measures

Other mitigation measures proposed would not have impacts on locally important aggregate resources because aggregate resources would not be required for implementation of mitigation measures. Therefore, implementation of mitigation measures is unlikely to result in the loss of availability of locally important aggregate resources, and there would be no impact.

Overall, loss of availability of locally important aggregate resources related to compensatory mitigation and implementation of other mitigation measures, combined with project alternatives, would not change the no impact conclusion.

27.3.4 Cumulative Analysis

The cumulative effects analysis for mineral resources addresses the potential for the alternatives to act in combination with other past, present, and probable future projects or programs to create a cumulatively significant impact on natural gas and aggregate resources. Implementation of the proposed project and other local and regional projects, as presented in Table 27-6, could contribute to regional impacts and hazards associated with minerals. These programs and projects have been drawn from a compilation of past, present, and reasonably foreseeable programs and projects included in Appendix 3C, *Defining Existing Conditions, No Project Alternative, and Cumulative Impact Conditions*. This cumulative analysis considers projects or programs that could affect mineral resources and, where relevant, occur on the same schedule as the Delta Conveyance Project.

Table 27-6. Cumulative Impacts on Mineral Resources from Plans, Policies, Programs, and Projects

Program/Project	Agency	Status	Description of Program/Project	Impacts on Mineral Resources
Sites Reservoir	DWR	Planning phase	Construct reservoir in Coast Range west of Maxwell.	Use of aggregate materials for construction. Inundation of areas with limited natural gas potential.
Yolo Bypass Wildlife Area Land Management Plan	CDFW	Ongoing	The Yolo Bypass Wildlife Area comprises approximately 16,770 acres of managed wildlife habitat and agricultural land within the Yolo Bypass.	This program could, but is unlikely to, reduce access to natural gas wells as well as aggregate resources.
Lower Sherman Island Wildlife Area Land Management Plan	CDFW	Ongoing	The Lower Sherman Island Wildlife Area occupies roughly 3,100 acres, primarily marsh and open water, at the confluence of the Sacramento and San Joaquin Rivers in the western Sacramento–San Joaquin River Delta.	This program could, but is unlikely to, reduce access to natural gas wells as well as aggregate resources.
Dutch Slough Tidal Marsh Restoration Project	DWR	Planning phase	Wetland and upland habitat restoration in area used for agriculture.	Inundation and covering over much of 1,166-acre site could reduce access to natural gas wells as well as aggregate resources.
Delta Levees Flood Protection Program	DWR	Ongoing	Levee rehabilitation projects in the Delta.	This project could utilize limited aggregate resources.
Cache Slough Area Restoration	DWR	Currently under study	Restoration of lands within the Cache Slough Complex located in the Delta.	The project could reduce access to natural gas wells and aggregate resources.
Delta Water Supply Project (Phase 1)	City of Stockton	Completed	This project consists of a new intake structure and pumping station adjacent to the San Joaquin River; a water treatment plant along Lower Sacramento Road; and water pipelines along Eight Mile, Davis, and Lower Sacramento Roads.	This project is approximately 106 acres with minimal potential to reduce access to natural gas wells as well as aggregate resources.
Delta Dredged Sediment Long-Term Management Strategy	USACE	Ongoing	Maintaining and improving channel function, levee rehabilitation, and ecosystem restoration.	Involves dredging and reuse of dredged materials where possible. Minor addition of available aggregate when materials are reused. No effect on natural gas.
California EcoRestore	California Natural Resources Agency	Initiated in 2015	This program will accelerate and implement a suite of Delta restoration actions for up to 30,000 acres of fish and wildlife habitat by 2020.	Could reduce access to natural gas fields from site inundation.

CDFW = California Department of Fish and Wildlife; DWR = California Department of Water Resources; USACE = U.S. Army Corps of Engineers.

27.3.4.1 Cumulative Impacts of the No Project Alternative

The cumulative No Project Alternative scenario would include projects listed in Table 27-6 and would include other projects that could have effects on natural gas resources and aggregate resources. Generally, these other projects would have a minimal footprint and would not require moving existing active natural gas wells. Even if certain plan actions block vertical access to natural gas fields, directional drilling could provide access to these fields. A variety of smaller or routine projects in the project area and the broader region will use aggregate resources. However, projects in the cumulative No Project Alternative scenario are currently being supplied by the permitted aggregate sources and similarly are within the available permitted regional aggregate production areas (Table 27-1). Projects under the cumulative No Project Alternative scenario would also have to undergo independent environmental analysis and would also be subject to existing regulations over mineral resources, which require identifying and conserving mineral resources.

27.3.4.2 Cumulative Impacts of the Project Alternatives

Construction and operation of the water conveyance facility under all project alternatives would have no impact on mineral resources by restricting or eliminating access to natural gas and aggregate deposits. Construction activities would consume some aggregate resources but not to the level that would substantially diminish local supplies. Operation and maintenance of the project alternatives would not impact access to natural gas or aggregate resources or deplete aggregate supplies because operations would primarily involve moving water within the constructed infrastructure. Projects listed in Table 27-6 and Appendix 3C could potentially have a cumulative impact on mineral resources as a result of construction of operations in terms of inundating natural gas wells and use of aggregate resources. However, because all project alternatives would have no impact on natural gas wells and no impact on aggregate resources, none of the alternatives would have a cumulatively considerable contribution to impacts on mineral resources. Accordingly, none of the project alternatives would result in a cumulatively significant impact, nor would any alternative contribute to a cumulatively considerable impact on mineral resources.