Chapter 32 Other Required Analyses

32.1 Introduction

This chapter describes the following analyses required by CEQA and NEPA:

- growth-inducing impacts (CEQA only) and indirect impacts (NEPA)
- relationship between short-term uses and long-term productivity (NEPA only)
- irreversible environmental impacts (CEQA) and irretrievable resource commitments (NEPA only)
- environmentally superior alternative (CEQA only)

32.2 Growth-Inducing Impacts

32.2.1. Introduction

This section discusses the ways in which the Project could induce growth. Specifically, it discusses how the Project could foster economic or population growth, either directly or indirectly, in the surrounding environment, including the removal of obstacles to growth.

Potential growth-inducing effects as a result of construction and operation of Alternatives 1, 2, and 3 are evaluated qualitatively for different study areas. For construction, the emphasis is on the counties where the majority of construction activities would occur and whether the temporary influx of construction personnel would induce growth. For operation and maintenance of the reservoir, the focus is on the counties where the reservoir would be located and whether permanent employees or visitors would induce growth. For operations related to water supply, the focus is on the service areas of the Storage Partners and whether the change in water supply reliability to these areas would induce growth. Incremental Level 4 water deliveries to CVPIA wildlife refuges would have a highly limited potential to directly or indirectly induce growth because the water would be used to support and enhance water supply reliability for those refuges. Additional water that was available to the wildlife refuges could cause relatively small increases in non-consumptive and consumptive recreation activities but would not result in measurable growth locally or regionally. Therefore, wildlife refuges are not discussed further in this evaluation.

32.2.2. Construction

The study area for evaluating growth-inducing effects related to construction consists of Glenn, Colusa, and Yolo Counties because these would be the areas most likely affected by growth resulting from construction in and around the reservoir inundation area and the Dunnigan Pipeline. Tehama County is not included in this study area because of the limited number of

construction workers required for the installation of the two new pumps at the RBPP and the relatively short construction period. There is no material difference between expected numbers of construction employees needed for Alternatives 1, 2, and 3 because the construction schedule would be the same and the locations would be very similar. Alternatives 1, 2, and 3 would provide additional construction employment opportunities. Construction would result in a slight temporary increase in jobs and population during the construction timeframe (Chapter 25, *Population and Housing*). Construction would require approximately 1,650 construction personnel at the peak of construction, depending on the facility being constructed. This estimate represents approximately 0.6% of the total population in these three counties. Construction workers would be temporary workers and would likely commute to worksites from regional population centers such as Willows, Orland, Williams, and Colusa, as well as from other northern California cities (e.g., Sacramento, Chico, or Redding) when specialty trades or skillsets were not available regionally. Employees filling these jobs would be unlikely to permanently move to the area and would find temporary housing (e.g., hotels, rentals, and trailers) or would commute from outside the region. Any additional need for services would be for a limited period, would not require substantial new supporting infrastructure, and is expected to return to preconstruction levels when construction ends. Implementation of Alternatives 1, 2, and 3 would not result in growth inducement with respect to temporary Project-related construction job growth.

32.2.3. Operation and Maintenance

The study area for evaluating growth-inducing effects related to operation and maintenance of the reservoir includes Glenn and Colusa Counties because these would be the areas that could be affected by growth resulting from operation activities in and around the reservoir. There would be no difference between Alternatives 1, 2, and 3 in recreation opportunities or in the required number of operations and maintenance employees. The Project would involve the same recreation facilities at the same locations (Peninsula Hills, Stone Corral Creek, and the day-use boat ramp). Operation of the recreation areas at Sites Reservoir would attract visitors. Visitors would use the recreational amenities on a short-term basis in a given year but are not expected to permanently relocate to the area.

Growth does not necessarily result from a single project or factor in a community. Local governments primarily manage growth within their jurisdictions; however, other variables also influence the location and timing of growth, such as the availability and cost of developable land; local, state, and national economic cycles; loan interest rates; housing availability; employment opportunities; education opportunities; availability of health care; and natural amenities.

Expected annual increases in recreation expenditures associated with Alternatives 1, 2, and 3 are estimated to be approximately $2.4 million (Impact SOC-2 in Chapter 30, *Environmental Justice and Socioeconomics*). This would result in some direct economic benefit to the local communities and counties. The expenditure would be less than 1% of the GDP in Glenn and Colusa Counties (Bureau of Economic Analysis 2020). Privately owned parcels surround the reservoir in Glenn and Colusa Counties and are mainly designated as foothill agriculture with supporting zoning. The primary uses of these lands are grazing and agricultural. By virtue of this zoning and land use designations any future development would be highly restricted and would ultimately require zoning or land use designation changes reviewed and approved by local

governments. Operation and maintenance of Alternative 1, 2, or 3 would not result in growth inducement.

32.2.4. Operation and Water Supply

The study area for evaluating operation and water supply includes the hydrologic regions that would be served by the Project. The evaluation is based on changes in water deliveries as estimated through CALSIM from Project operations that would result in water being available to agricultural users or municipal and industrial (M&I) water users. The amount of water and the timing of its availability would vary, depending on the natural hydrology, reservoir operations, and the availability of conveyance capacity (Chapter 5, *Surface Water Resources*; Appendix 5A, *Surface Water Resources Modeling of Alternatives*).

32.2.4.1. Agricultural Users

Surface deliveries from Sites Reservoir to agricultural users would increase water supply reliability, particularly in Dry and Critically Dry Water Years. Table 32-1 summarizes the potential simulated changes to agricultural deliveries as a result of Sites Reservoir operations under Alternatives 1A, 1B, 2, and 3. As described in Chapter 2, Project Description and Alternatives, Alternative 1 has two options for Reclamation participation and this is reflected in the model as Alternative 1A, exchanges only with Reclamation, and Alternative 1B, limited financial participation by Reclamation. Table 32-2 provides a comparison of the simulated Sites Reservoir agricultural deliveries to total simulated agricultural deliveries in hydrologic regions. As noted in both tables, the simulated agricultural deliveries as a result of the Sites Reservoir are relatively small compared to simulated total Project deliveries.

Table 32-1. Summary of Simulated Sites Reservoir Annual Averages of Agricultural Deliveries (Thousand Acre Feet/Year)

	NAA	ALT 1A	ALT 1B	ALT 2	ALT 3
Sacramento River Hydrologic Region					
Long-Term Annual Average	0	32	31	30	30
Dry and Critically Dry Water Years Annual Average	0	68	67	66	66
San Joaquin/Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)					
Long-Term Annual Average	0	7	13	6	28
Dry and Critically Dry Water Years Annual Average	0	15	29	14	48
San Francisco Bay Hydrologic Region					
Long-Term Annual Average	0	0	0	0	1
Dry and Critically Dry Water Years Annual Average	0	0	1	0	1
All Regions					
Long-Term Annual Average	0	39	44	36	59
Dry and Critically Dry Water Years Annual Average	0	83	97	80	115

Notes:
Long-Term is the average quantity for the period of October 1921–September 2003.
The Dry and Critically Dry Water Years Average is the average quantity for the combination of the State Water Board D-1641 40-30-30 Dry and Critically Dry Water Years for the period of October 1921–September 2003.
All scenarios are simulated at historical climate.
Differences in the delivery volumes presented in this chapter may vary slightly from delivery volumes presented in Chapter 5, *Surface Water Resources*, and Chapter 30, *Environmental Justice and Socioeconomics*, due to rounding during processing of modeling results.
NAA = No Project/No Action Alternative.

Table 32-2. Sites Reservoir Agricultural Deliveries Compared to Total Agricultural Deliveries

	Total Ag Deliveries (TAF/Year)	ALT 1A Percent	ALT 1B Percent	ALT 2 Percent	ALT 3 Percent
Sacramento River Hydrologic Region					
Long-Term Annual Average	2,824*	1	1	1	1
Dry and Critically Dry Water Years Annual Average	2,637*	3	3	3	3
San Joaquin/Tulare Lake Hydrologic Region (not including Friant-Kern Canal water users)					
Long-Term Annual Average	1,413**	0	1	0	2
Dry and Critically Dry Water Years Annual Average	765**	2	4	2	6
San Francisco Bay Hydrologic Region					
Long-Term Annual Average	48	0	0	0	2
Dry and Critically Dry Water Years Annual Average	25	0	4	0	4
All Regions					
Long-Term Annual Average	4,285	1	1	1	1
Dry and Critically Dry Water Years Annual Average	3,427	2	3	2	3

Notes:
Long-Term is the average quantity for the period of October 1921–September 2003.
The Dry and Critically Dry Water Years Average is the average quantity for the combination of the State Water Board D-1641 40-30-30 Dry and Critically Dry Water Years for the period of October 1921–September 2003.
All scenarios are simulated at historical climate
* Total includes CVP Agriculture, CVP Settlement, and SWP Feather River Service Area deliveries as these deliveries primarily supply agricultural users in the Sacramento River Hydrologic Region
** Total includes CVP and SWP Agriculture deliveries as these deliveries primarily supply agricultural users in the Tulare Lake Hydrologic Region.
Ag = Agricultural; Alt = Alternative.

The increase in water supply reliability may allow agricultural users to grow crops more consistently on the same agricultural acreage and reduce the need to fallow land in drought years. Agricultural users may also decide to potentially change the crops they grow and the cropping patterns they use, rather than cropping in a constrained manner during drought years. Surface water deliveries may also be used to avoid groundwater pumping, replenish groundwater aquifers, and/or avoid use of more expensive short-term surface supplies. All of these outcomes are expected to provide some economic benefits and growth associated with agriculture, as identified in Chapter 30. Lastly, the water supplied to hydrologic regions would be spread among Storage Partners, which would result in even less water than identified in Tables 32-1 and 32-2 going to an individual user. The small amount of water delivered by the Project is not expected to induce changes in agricultural production within the service area(s) that would measurably increase the demand for agricultural labor, inputs, and other related goods and services.

32.2.4.2. Municipal and Industrial Users

Alternatives 1, 2, and 3 would generally be operated to store water in wetter years and release the stored water in years when supply is more limited and conveyance capacity in various conveyance facilities (e.g., California Aqueduct) is more available. In general, deliveries to M&I users would generally be greater in Below Normal and Dry Water Years. Table 32-3 summarizes simulated M&I deliveries under all alternatives. Table 32-4 provides a comparison of the simulated Sites Reservoir M&I deliveries to the total simulated M&I deliveries in hydrologic regions.

Table 32-3. Summary of Simulated Sites Reservoir Annual Averages of Municipal and Industrial Deliveries (Thousand Acre Feet/Year)

		Number of Storage Partners	M&I Partners	NAA	ALT 1A	ALT 1B	ALT 2	ALT 3
San Francisco Bay Hydrologic Region		3	Santa Clara Valley Water District, City of American Canyon, Zone 7 Water Agency					
SWP M&I	Long-Term			0	10	10	9	8
	Dry and Critically Dry Water Years			0	24	23	22	19
South Lahontan Hydrologic Region		2	Coachella Valley Water District, Desert Water Agency					
SWP M&I	Long-Term			0	13	12	12	10
	Dry and Critically Dry Water Years			0	33	31	29	24
South Coast Hydrologic Region		4	Metropolitan Water District, San Gorgonio Pass Water Agency, Irvine Ranch Water District, San Bernardino Valley Municipal Water District					
SWP M&I	Long-Term			0	71	66	64	52
	Dry and Critically Dry Water Years			0	179	166	158	130
Total for All Regions								
Total Supplies	Long-Term			0	94	88	85	70
	Dry and Critically Dry Water Years			0	236	220	209	173

Notes:
Long-Term is the average quantity for the period of October 1921–September 2003.
The Dry and Critically Dry Water Years Average is the average quantity for the combination of the State Water Board D-1641 40-30-30 Dry and Critically Dry Water Years for the period of October 1921–September 2003.
All scenarios are simulated at historical climate.
Differences in the delivery volumes presented in this chapter may vary slightly from delivery volumes presented in Chapter 5, *Surface Water Resources*, and Chapter 30, *Environmental Justice and Socioeconomics*, due to rounding during processing of modeling results.
M&I = municipal and industrial; Alt = Alternative.

Table 32-4. Simulated Sites Reservoir Municipal and Industrial Deliveries Compared to Total Municipal and Industrial Deliveries

			Total M&I Deliveries (TAF/Year)	ALT 1A Percent	ALT 1B Percent	ALT 2 Percent	ALT 3 Percent
San Francisco Bay Hydrologic Region							
SWP M&I		Long-Term	194	5	5	5	5
		Dry and Critically Dry Water Years	130	18	18	17	15
South Lahontan Hydrologic Region							
SWP M&I		Long-Term	251	5	5	5	4
		Dry and Critically Dry Water Years	167	20	19	17	14
South Coast Hydrologic Region							
SWP M&I		Long-Term	1,085	7	6	6	5
		Dry and Critically Dry Water Years	721	25	23	4	18
Total							
Total Supplies		Long-Term	1,530	6	6	6	5
		Dry and Critically Dry Water Years	1,018	23	22	21	17

Notes:
Long-Term is the average quantity for the period of October 1921–September 2003
The Dry and Critically Dry Water Years Average is the average quantity for the combination of the State Water Board D-1641 40-30-30 Dry and Critically Dry Water Years for the period of October 1921–September 2003.
All scenarios are simulated at historical climate
M&I = municipal and industrial; Alt = Alternative.

Urban growth does not necessarily result from a single project or factor in a community. Rather, several factors affect the location, size, direction, timing, type, and rate of population growth, depending on the region where a community is located. These factors include local government planning, availability of public services, natural resources, the economic climate, and political and environmental concerns. City and county planning agencies adopt and administer general and specific plans, zoning maps and ordinances, and other planning documents that contain policies and maps to identify the density and type of development that would be allowed in portions of a planning area or jurisdiction. As part of the local government development approval process, wholesale and retail water purveyors provide information on their current and future ability to serve additional water users. However, local jurisdictions, rather than the wholesale or retail water purveyors, ultimately control development approval decisions.

Local governments primarily manage growth within their jurisdictions, and land use decisions affect growth. Availability of water is one of the many variables that land use planning agencies consider when making decisions that might affect growth. Other variables also influence the location and timing of growth. These variables include economic factors such as the availability and cost of developable land; local, state, and national economic cycles; loan interest rates; employment opportunities; and the demand for housing. Political factors that can influence population growth in a community include state and local laws that mandate businesses to comply with rules, regulations, and permitting requirements that address environmental and community concerns. Political decisions also affect growth, such as offering economic incentives to attract businesses to certain communities. Quality-of-life factors such as crime rates, climate, air quality, traffic levels, and commuting distances can also influence the timing and location of population growth, as well as the availability, cost, and quality of community services. These community services include schools, transportation facilities, utilities, recreation facilities, and police and fire protection.

The potential combinations of water supply sources and actual uses would vary among the Sites Storage Partners depending on their individual service area needs. As identified in Tables 32-2 and 32-3, generally more water from Sites Reservoir would be delivered to Storage Partners during Dry and Critically Dry Water Years. Sites Reservoir water would primarily be used by M&I Storage Partners to supplement supplies in Dry or Critically Dry Water Years and help offset the decreased reliability of other water supply sources (e.g., SWP and CVP water supplies) during Dry and Critically Dry Water Years. Storage Partners with urban water management plans and/or water shortage contingency plans (Metropolitan Water District, City of American Canyon, Coachella Valley Water District, Desert Water Agency, Irvine Ranch Water District, San Bernardino Valley Municipal Water District, San Gorgonio Pass Water Agency, Santa Clara Valley Water Agency, and Zone 7 Water Agency) may decide to use Sites Reservoir water as a supply during Dry and Critically Dry Water Years to reduce the need for implementation of other measures (e.g., for demand management) identified in their water shortage contingency plans. Other Storage Partners may elect to use the additional water to assist with groundwater recharge in their local aquifers (with or without a sustainable groundwater management plan). Storage Partners may also substitute their acquisition of higher-cost transfer water in years when surface water was not sufficient to meet their current or anticipated demands or use the water supply to replace water sources that were determined to be unsustainable. The M&I water deliveries identified in Table 32-3 would augment existing limited supplies that are routinely reduced by drier hydrologic conditions or regulatory restrictions because they would be delivered

primarily in Dry and Critically Dry Water Years. This type of water supply and use of water (e.g., in specific water year types to replace sources with decreased supplies) has a limited ability to foster growth because of the duration and frequency under which the water would be provided.

The amount of water available to the individual Storage Partners would be small relative to their portfolios of existing available water supplies. For example, the Metropolitan Water District, the largest Storage Partner in the South Coast Hydrologic Region (i.e., southern California), would receive a long-term average between approximately 28 TAF/year and 39 TAF/year under Alternatives 1A, 1B, 2, or 3 (Table 32-5). This would represent 2 % or less of its 2025 projected normal year supply (2,584,000 AF). Similarly, average water supply provided by Sites Reservoir in Dry and Critically Dry Water Years would be 4% or less of its 2025 multiple dry-year supply (2,364,000 AF).

Table 32-5. Simulated Metropolitan Water District Water Deliveries (TAF/Year)

	ALT 1A	ALT 1B	ALT 2	ALT 3
Long-term Average	38.9	36.1	34.8	28.2
Dry and Critically Dry Water Years Average	97.7	90.8	86.3	71.0

Note: Total south-of-Delta long-term average deliveries would range from 71.3 TAF/year to 97.4 TAF/Year.

For the past 20 years, populations have increased in the counties that would primarily receive M&I water from Sites Reservoir, while M&I water deliveries have experienced declines or constraints during this period. For example, exports to the South Coast Hydrologic Region have generally decreased since 2011 and from the historically higher deliveries that occurred from 2005 through 2011 (California Department of Water Resources 2019). Actual SWP historical water deliveries between 1996 and 2018 have ranged from less than 500 TAF in 2014 to more than 3,500 TAF in 2005 and 2006 (California Department of Water Resources 2019). However, population growth experienced a positive increase from 2000 to 2019. In addition, overall population is projected to increase from 2020 to 2040 regardless of Project implementation (Table 32-7). In other words, population would continue to increase despite Sites Reservoir water being made available to various Storage Partners. As such, Sites Reservoir would not induce population growth, which is expected to occur under the continuation of existing conditions (i.e., No Project Alternative).

Table 32-6. Population Growth from 2000 to 2020

Counties	2000 Population	2019 Population	Percent Change Over the Past 20 years
Napa, Santa Clara, Alameda, and Contra Costa	4,199,421	4,866,098	+ 14%
Los Angeles, Kern, Ventura, Riverside, Imperial, San Diego, Orange, and San Bernardino	19,991,484	23,041,762	+15%

Sources: U.S. Census Bureau 2001, 2020.

Table 32-7. Projected Population Growth from 2020 to 2040

Counties	2020 Population	2030 Population	2030 Percent Increase	2040 Population	2040 Percent Increase
Napa, Santa Clara, Alameda, and Contra Costa	4,922,617	5,277,958	+7.2	5,578,538	+13.3
Los Angeles, Kern, Ventura, Riverside, Imperial, San Diego, Orange, and San Bernardino	23,290,485	24,271,057	+4.2	24,851,085	+6.7

Source: California Department of Finance 2021.

Alternatives 1, 2, and 3 are not likely to have a direct or indirect effect on growth given the expected primary use of the water as a substitute for other supplies during Dry and Critically Dry Water Years. Furthermore, Alternatives 1, 2, and 3 are not likely to result in a direct or indirect increase in population or employment because of the absence of a discernable link between water delivery and population growth. Therefore, the Project is not growth-inducing and would not induce secondary growth impacts.

32.3 Relationship Between Short-Term Uses and Long-Term Productivity

NEPA (42 United States Code [U.S.C.] § 4332; 40 Code of Federal Regulations [C.F.R.] § 1502.16) requires that an EIS include a discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. CEQA similarly prompts consideration of qualitative factors as well as short-term and long-term benefits and costs of a project. This chapter describes how the Project would affect the short-term use and the long-term productivity of the environment. For the purposes of this discussion, "short-term" refers to the temporary phase of Project construction, and "long-term" refers to the operational life of the Project and beyond.

All Project alternatives entail construction activities that would result in short-term construction-related impacts such as interference with local traffic and increased emissions of greenhouse gases and other pollutants, ambient noise levels, dust generation, and disturbance of wildlife. Construction would increase demand for construction and technical services and entail temporary applications of labor, fuels, construction materials and energy/power. These impacts would generally be temporary and would occur only during construction. They are not expected to alter the long-term productivity of the natural environment.

The Project alternatives will also have certain long-term impacts:

- All alternatives include improvements to existing facilities (e.g., GCID system upgrades and new pumps at RBPP).

- All alternatives include the demolition of numerous structures and roads within the Sites Reservoir inundation area. The relocation of the residents of Sites prior to construction and the demolition of existing structures in the inundation area would result in the loss of this community and represent a long-term effect related to cultural resources and tribal cultural resources.
- All Project alternatives would result in long-term improved conditions for aquatic biological resources through increases in operational flexibility, particularly during Dry and Critically Dry Water Years and would improve the survival of anadromous fish and enhance the Delta ecosystem.
- All Project alternatives would provide water to Incremental Level 4 water supply for wildlife refuges.
- All Project alternatives would result in the benefit of climate change resiliency for various resources, including fisheries and habitat and would improve the survival of anadromous fish and enhance the Delta ecosystem, as well as provide resiliency to water supply.
- The Project alternatives would also increase water supply reliability to storage partners, particularly during Dry and Critically Dry Water Years, thus supporting the long-term productivity of the Storage Partners' service areas.
- The Project alternatives would also provide long-term recreational opportunities in Glenn and Colusa Counties and northern California.
- All Project alternatives provide long-term flood protection downstream of the reservoir on Stone Corral Creek in Colusa County.
- Project alternatives would entail an overall increase in long-term energy use.

The Authority and Reclamation would comply with all federal, state, and local laws, ordinances, regulations, and standards to minimize impacts on the environment during its long-term operation and maintenance, as demonstrated by the inclusion of the BMPs in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, and the mitigation measures in this RDEIR/SDEIS. The long-term benefits of the Project, as identified above include increased water supply reliability, long-term improved aquatic biological resources, long-term recreational opportunities, long-term flood protections, long-term improvements to existing infrastructure, would outweigh short-term adverse but mitigable effects.

32.4 Irreversible or Irretrievable Resource Commitments

32.4.1. Introduction

The State CEQA Guidelines require a discussion of the potentially significant irreversible environmental changes that would be caused by implementation of the Project. State CEQA Guidelines Section 15126.2(c) states that:

"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."

NEPA (Section 101(2)(c)(v) of NEPA; 40 C.F.R. § 1502.16) requires that the environmental analysis identify "any irreversible and irretrievable commitment of resources which would be involved in the action should it be implemented." However, NEPA and CEQ's NEPA regulations do not define these resources or describe how this requirement should be applied.

Reclamation and other federal agencies have interpreted irreversible and irretrievable commitments to generally refer to the use of nonrenewable resources and the associated impacts of that use. Reclamation defines the irreversible commitment of resources to be the result of the use or destruction of a specific resource (e.g., minerals extraction or the destruction of cultural resources) that either cannot be replaced or for which restoration would be time- and resource-intensive. Reclamation defines the irretrievable commitment of resources as the loss of production or use of natural resources representing opportunities that are foregone for the period that a resource cannot is devoted to the project (e.g., land conversion to new uses or levee construction that disconnects floodplains from rivers) (Bureau of Reclamation 2012).

What follows is a discussion of particular commitments of resources associated with the Project alternatives that are irreversible and/or irretrievable. Also discussed is the potential for irreversible damage to result related to a potential environmental accident.

32.4.2. Commitments of Resources

All Project alternatives entail similar commitments of resources for the purpose of examining irreversible and irretrievable commitments; therefore, the following discussion applies to all three of these alternatives. The Project would result in the irreversible and irretrievable commitment of the following resources during construction, operation, and maintenance:

- Construction materials, including such resources as wood, rock, soil, and metal
- Energy expended in the form of electricity, gasoline, diesel fuel, oil, and lubricants for construction equipment, construction vehicles, and construction worker vehicles that would be needed for Project construction, operation, and maintenance
- Permanent changes in land use at Project facility locations, including the conversion of prime agricultural land to other uses, and the inundation of land to form Sites Reservoir
- Permanent changes in the visual resources and landscape character of lands where Project facilities would be located
- Permanent loss of cultural resources in the community of Sites and surrounding area
- Effects on biological resources and cultural resources at Project facility locations

Some of the materials that would be used for the Project are nonrenewable resources and are considered irretrievably and irreversibly committed because reuse is either not possible or is highly unlikely. Nonrenewable resources expended for the Project nonetheless account for only a

minimal portion of the region's such resources, and the use of these nonrenewable resources would not cause scarcity or otherwise affect the availability of these resources to meet other needs in the region. These resources are discussed in further detail below.

32.4.2.1. Construction Materials

Construction would require materials that are considered to be non-renewable or slowly renewable resources including wood, cement, sand, gravel, other rock and earthen materials, and metal materials. Some materials for dam construction would be obtained onsite from the inundation area footprint, and some materials would be imported to the Project area from existing offsite commercial facilities as described in Chapter 13, *Mineral Resources*. All materials would be irretrievably committed toward the Project construction.

32.4.2.2. Energy Consumption

Construction would result in the consumption of energy (considered a commitment of nonrenewable energy resources) that would primarily be in the form of fossil fuels including fuel oil, natural gas, and gasoline for construction personnel vehicles and other equipment. In addition, nonrenewable energy resources would be required to manufacture and transport equipment and materials that would be assembled at the Project facility sites (e.g., tunnels, pumps, pipelines). The Authority and Reclamation would require that Project construction contractors use the best available engineering techniques, construction and design practices, and equipment operating procedures during construction of the Project facilities in support of efficient energy and fuel use (Appendix 2D). In addition, operation and maintenance would require the consumption of electricity that could otherwise be available to other power customers and would add to the overall electrical demand in California as described in Chapter 17, *Energy*. Operation and maintenance would also require fossil fuels, including fuel oil and gasoline for maintenance trips and equipment maintenance.

32.4.3. Potential Environmental Accidents

CEQA also prompts a discussion of the potential for irreversible environmental damage caused by an accident associated with a project. Construction of Alternatives 1, 2, and 3 would result in the use, transport, storage, and disposal of hazardous wastes as identified in Chapter 27, *Public Health and Environmental Hazards*. The Authority and Reclamation would require all construction, operation, and maintenance activities to comply with applicable federal, state, and local laws related to hazardous materials, which would significantly reduce the likelihood and severity of potential accidents that could cause irreversible environmental damage as a result of Project construction, operation, and maintenance.

32.4.4. Commitment of Future Generations to Similar Uses

Removing existing graves in the inundation area, inundating tribal cultural resources, and permanently altering the existing landscape and visual character and quality of Antelope Valley are irreversible. Similarly, the changes in land use from grazing and agriculture to water supply infrastructure, and modifications to existing habitat for special-status species are considered irreversible and irretrievable. The action alternatives would result in a long-term commitment of lands for Project purposes, which would commit future generations to these proposed uses at the Project facility sites.

32.5 Environmentally Superior/Environmentally Preferable Alternative

The CEQA Guidelines (Sections 15126.6(a) and (d)), require that an EIR describes "a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" and that the EIR includes "sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison."

The RDEIR/SDEIS evaluates the potential environmental effects of:

- No Project Alternative
- Alternative 1: 1.5-MAF reservoir, bridge, release to the CBD, and Reclamation investment of up to 7% of the Project costs
- Alternative 2: 1.3-MAF reservoir, South Road, partial release to the CBD, discharge to the Sacramento River, and no Reclamation investment
- Alternative 3: 1.5-MAF reservoir, bridge, release to the CBD, and Reclamation investment of up to 25% of the Project costs

The RDEIR/SDEIS has been prepared in accordance with both NEPA and CEQA, with Alternatives 1, 2, and 3 analyzed at an equal level (consistent with NEPA standards). The Executive Summary includes Table ES-2, which summarizes all of the potential effects of the alternatives, including those that are less than significant. Table 32-8 provides a comparative summary of just the significant environmental effects of each alternative, both before and after implementation of proposed mitigation.

CEQA directs a lead agency to identify an environmentally superior alternative from among the alternatives evaluated. The CEQA Guidelines (Section 15126.6 (e)(2)) require that if "the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." It should be noted that the identification of the preferred alternative is independent of the identification of the environmentally superior alternative and that CEQA does not require an agency to select the environmentally superior alternative (CEQA Guidelines Sections 15042 and 15043).

As shown in Table 32-8, the No Project Alternative results in no significant impacts under CEQA. Implementation of Alternatives 1, 2, and 3 would result in the same impact determinations for most environmental resources with many of the significant and unavoidable effects associated with the reservoir footprint. Substantial differences in impact determinations are related to the construction of the South Road instead of a bridge crossing and the TRR facilities. While implementation of Alternative 2 would result in a slightly smaller reservoir footprint, impacts associated with the proposed construction of the South Road would result in significant and unavoidable transportation and land use effects that would not occur under

Alternatives 1 and 3. Alternatives 1 and 3 would result in the same level of impacts for all resources but would differ from Alternative 2 due to the potential for significant and unavoidable impacts on paleontological resources due to construction of the TRR East facility. As a result, Alternatives 1 and 3 would be considered environmentally superior to Alternative 2 at this time.

Pursuant to 40 C.F.R. Section 1505.2(b) of the Council on Environmental Quality regulations, Reclamation will identify the environmentally preferable alternative in the Record of Decision.

Table 32-8. Summary of Significant Impacts of Each Alternative Before and After Implementation of Mitigation Measures

Impact	CEQA/NEPA Finding				CEQA/NEPA Finding with Mitigation			
	No Project	Alt 1	Alt 2	Alt 3	No Project	Alt 1	Alt 2	Alt 3
Impact WQ-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during construction *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/AE	**SU**/SA	**SU**/SA
Impact WQ-2: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water quality during operation *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/AE	**SU**/SA	**SU**/SA
Impact VEG-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, on plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact VEG-2: Substantial adverse effect (i.e., loss or removal) on any riparian habitat or other sensitive natural community (C*onstruction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Impact VEG-2: *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact VEG-3: Substantial adverse effect (i.e., loss or removal) on state or federally protected wetlands *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact VEG-4: Conflict with any local policies or ordinances protecting vegetation resources (including wetlands and non-wetland waters), such as a tree preservation policy or ordinance *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Impact VEG-4: *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact WILD-1: Substantial adverse effect (i.e., loss or	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA

Impact	CEQA/NEPA Finding				CEQA/NEPA Finding with Mitigation			
	No Project	**Alt 1**	**Alt 2**	**Alt 3**	**No Project**	**Alt 1**	**Alt 2**	**Alt 3**
removal), either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. *(Construction and Operation)*								
Impact WILD-2: Substantial interference with the movement of a native resident or migratory or wildlife species or with established native resident or migratory wildlife corridors or impediment of the use of native wildlife nursery sites *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Impact WILD-3: Conflict with any local policies or ordinances protecting wildlife resources *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact WILD-4: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact FISH-1: Construction effects on fish and aquatic biological resources *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact FISH-2: Operations effects on winter-run Chinook salmon *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact FISH-3: Operations effects on spring-run Chinook salmon *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact FISH-4: Operations effects on fall-run/late fall–run Chinook salmon *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact FISH-5: Operations effects on Central Valley steelhead *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE

Impact	CEQA/NEPA Finding				CEQA/NEPA Finding with Mitigation			
	No Project	**Alt 1**	**Alt 2**	**Alt 3**	**No Project**	**Alt 1**	**Alt 2**	**Alt 3**
Impact FISH-8: Operations effects on delta smelt *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact FISH-9: Operations effects on longfin smelt *(Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact GEO-7: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	LTSM/NE	**SU**/SA
Impact LAND-1: Physical division of an established community *(Construction and Operation)*	NI/NE	LTS/NE	S/SA	LTS/NE	NI/NE	LTS/NE	**SU/**SA	LTS/NE
Impact AG-1: Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use *(Operation)*	NI	S	S	S	NI/NE	**SU**	**SU**	**SU**
Impact AG-2: Conflict with existing zoning for agricultural use or a Williamson Act contract *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Impact AG-3: Conversion of Farmland, as designated under the federal Farmland Protection Policy Act, to nonagricultural use *(Operation)*	NE	SA	SA	SA	NI/NE	SA	SA	SA
Impact TRA-5: Substantially affect school bus travel *(Operation)*	NI/NE	LTS/NE	S/SA	LTS/NE	NI/NE	LTS/NE	**SU**/SA	LTS/NE
Impact AQ-1: 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 during construction, or conflict with or obstruct implementation of the applicable air quality plan *(Construction)*	NI	S	S	S	NI	**SU**	**SU**	**SU**

Impact	CEQA/NEPA Finding				CEQA/NEPA Finding with Mitigation			
	No Project	**Alt 1**	**Alt 2**	**Alt 3**	**No Project**	**Alt 1**	**Alt 2**	**Alt 3**
Impact AQ-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 during operation, or conflict with or obstruct implementation of the applicable air quality plan *(Operation)*	NI	S	S	S	NI	**SU**	**SU**	**SU**
Impact AQ-4b: Expose sensitive receptors to substantial pollutant concentrations—localized criteria pollutant emissions *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SAE	NI/NE	LTSM/NE	LTSM/NE	LTSM/NE
Impact CUL-1: Cause a substantial adverse change in the significance of a historical resource pursuant to California Code of Regulations Section 15064.5 *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU/**SA
Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations Section 15064.5 *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Impact CUL-3: Disturb any human remains, including those interred outside of formal cemeteries *(Construction and Operation)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA

Impact	CEQA/NEPA Finding				CEQA/NEPA Finding with Mitigation			
	No Project	**Alt 1**	**Alt 2**	**Alt 3**	**No Project**	**Alt 1**	**Alt 2**	**Alt 3**
Impact TCR-1: Substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or other local register or that the lead agency has determined to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. *(Construction and Operation)*	NI	S	S	S	NI	**SU**	**SU**	**SU**
Impact VIS-1: Substantially degrade the existing visual character or quality of public views of the site and its surroundings *(Construction)*	NI/NE	S/SA	S/SA	S/SA	NI/NE	**SU**/SA	**SU**/SA	**SU**/SA
Effect EJ-1: Disproportionate and Adverse Effects on Minority Populations *(Construction and Operation)*	NE	SA	SA	SA	NE	SA	SA	SA
Effect EJ-2: Disproportionate and Adverse Effects on Low-Income Populations *(Construction and Operation)*	NE	SA	SA	SA	NE	SA	SA	SA

Notes:
Alt = alternative; NI = CEQA no impact; NE = NEPA no effect or no adverse effect; S = CEQA significant impact; SA = NEPA substantial adverse effect; SU = CEQA significant and unavoidable; AE = NEPA adverse effect; LTSM = CEQA less than significant with mitigation; LTS = CEQA less-than-significant impact.

32.6 References

32.6.1. Printed References

Bureau of Economic Analysis. 2020. Gross Domestic Product (GDP) by County and Metropolitan Area. Available: https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1&acrdn=5. Accessed: January 21, 2021.

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