Chapter 9 Vegetation and Wetland Resources

9.1 Introduction

This chapter describes the environmental setting, methods of analysis, and impact analysis for vegetation and wetland resources that would potentially be affected by the construction and operation of and maintenance activities for the Project. Vegetation and wetland resources are defined as natural communities, wetlands and non-wetland waters of the United States and of the State, special-status plant species, and invasive plant species. The study area for vegetation and wetland resources consists of areas of disturbance under Alternatives 1, 2, and 3 plus a 300-foot-wide buffer that extends beyond the outermost boundaries of all alternatives.

Tables 9-1a and 9-1b summarize the CEQA determinations and NEPA conclusions for construction and operation impacts, respectively, between alternatives.

Table 9-1a. Summary of Construction Impacts and Mitigation Measures for Vegetation and Wetland Resources

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	**Mitigation Measure VEG-1.1**: Conduct Appropriately Timed Surveys for Special-Status Plant Species Prior to Construction Activities **Mitigation Measure VEG-1.2**: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	LTSM/NE
Impact VEG-2: Substantial adverse effect (i.e., loss or removal) on any riparian habitat or other sensitive natural community			
No Project	NI/NE	-	NI/NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 1	S/SA	**Mitigation Measure VEG-2.1**: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities **Mitigation Measure VEG-2.2**: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities	SU/SA
Alternative 2	S/SA	Same as Alternative 1	SU/SA
Alternative 3	S/SA	Same as Alternative 1	SU/SA
Impact VEG-3: Substantial adverse effect (i.e., loss or removal) on state or federally protected wetlands			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	**Mitigation Measure VEG-3.1**: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities **Mitigation Measure VEG-3.2**: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands **Mitigation Measure VEG-3.3**: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	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			
No Project	NI/NE	-	NI/NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 1	S/SA	**Mitigation Measure VEG-1.2**: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species **Mitigation Measure VEG-2.1**: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities **Mitigation Measure VEG-2.2**: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities **Mitigation Measure VEG-3.1**: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities **Mitigation Measure VEG-3.2**: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands **Mitigation Measure VEG-3.3**: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters **Mitigation Measure VEG-4-1**: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction **Mitigation Measure VEG-4-2** Compensate for Adverse Effects on Oak Woodlands	SU/SA
Alternative 2	S/SA	Same as Alternative 1	SU/SA
Alternative 3	S/SA	Same as Alternative 1	SU/SA
Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan			
No Project	NI/NE	-	NI/NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 1	S/SA	**Mitigation Measure VEG-2.1**: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities **Mitigation Measure VEG-2.2**: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities **Mitigation Measure VEG-3.1**: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities **Mitigation Measure VEG-3.2**: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands **Mitigation Measure VEG-3.3**: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters **Mitigation Measure VEG-4-1**: Avoid and Minimize Potential Adverse Effects on Oak Woodlands **Mitigation Measure VEG-4.2** Compensate for Adverse Effects on Oak Woodlands	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	LTSM/NE
Impact VEG-6: Introduction or increased spread of invasive plant species			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

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

Table 9-1b. Summary of Operations Impacts and Mitigation Measures for Vegetation and Wetland Resources

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	**Mitigation Measure VEG-1.3**: Establish Activity Exclusion Zones Around Special-Status Plants Prior to Vegetation Maintenance Activities	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	LTSM/NE
Impact VEG-2: Substantial adverse effect (i.e., loss or removal) on any riparian habitat or other sensitive natural community			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	**Mitigation Measure VEG-2.3**: Establish Activity Exclusion Zones Around Sensitive Natural Communities Prior to Vegetation Maintenance Activities	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	LTSM/NE
Impact VEG-3: Substantial adverse effect (i.e., loss or removal) on state or federally protected wetlands			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	**Mitigation Measure VEG-3.4**: Establish Activity Exclusion Zones Around Wetlands and Non-Wetland Waters Prior to Vegetation Maintenance Activities	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	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			
No Project	NI/NE	-	NI/NE
Alternative 1	S/SA	**Mitigation Measure VEG-4.3**: Establish Activity Exclusion Zones Around Blue Oak Woodlands in Vegetation Maintenance Areas	LTSM/NE
Alternative 2	S/SA	Same as Alternative 1	LTSM/NE
Alternative 3	S/SA	Same as Alternative 1	LTSM/NE
Impact VEG-5: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan			
No Project	NI/NE	-	NI/NE
Alternative 1	NI/NE	-	NI/NE

Alternative	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Alternative 2	NI/NE	-	NI/NE
Alternative 3	NI/NE	-	NI/NE
Impact VEG-6: Introduction or increased spread of invasive plant species			
No Project	NI/NE	-	NI/NE
Alternative 1	LTS/NE	-	LTS/NE
Alternative 2	LTS/NE	-	LTS/NE
Alternative 3	LTS/NE	-	LTS/NE

Notes:
NI = CEQA no impact
LTS = CEQA less-than-significant impact
S = CEQA significant impact
LTSM = CEQA less than significant with mitigation
NE = NEPA no effect or no adverse effect
SA = NEPA substantial adverse effect

9.2 Environmental Setting

This section describes the environmental setting for the vegetation and wetland resources in the study area. The environmental setting is composed of the physical setting, vegetation and wetland resource types, sensitive natural communities, wetlands and non-wetland waters, special-status plant species, and invasive plant species.

Appendix 9A, *Special-Status Species*, provides the species lists used to determine the special-status plant species with the potential to occur in the study area, special-status plant table, and species accounts. Appendix 9B, *Vegetation and Wetland Methods and Information*, contains the methods and sources of information for identifying the land cover types in the study area, as well as descriptions of vegetation communities (including sensitive natural communities), wetlands, non-wetland waters, unvegetated land cover types, and invasive plants.

9.3 Physical Setting

The physical setting for the study area is composed of its geography, topography, hydrology, soils, and climate. The geographic subdivisions of California that encompass the study area are the Inner North Coast Ranges District of the Northwestern California Region and the Sacramento Valley Subregion of the Great Central Valley Region, which are both in the California Floristic Province (Baldwin et al. 2012). The study area occurs in the Coast Range foothills surrounding the Antelope Valley and in a long swath of the northwestern Sacramento Valley. The topography of the study area varies from west to east. The west side of the study area is characterized by low rolling foothills and elevations range from approximately 400 to 800 feet above mean sea level (msl) in the hills surrounding Antelope Valley to 200 feet above msl in the Funks Reservoir area. From the Funks Reservoir, the valley gently slopes to the study area's lowest point, which is approximately 30 feet above msl at the eastern edge of the study area, along the Sacramento River south of the town of Dunnigan.

Most of the study area is located in the Sacramento-Stone Corral watershed (Hydrologic Unit Code 18020104) (U.S. Geological Survey 2020). The Sacramento River is the only perennial stream in the study area and crosses the study area at the RBPP and the Sacramento River discharge for the underground Dunnigan Pipeline (Figures 2-2 and 2-6). Streams in the central and eastern parts of the study area include Stone Corral Creek and its tributary Funks Creek, which cross Antelope Valley and drain to the Sacramento Valley (Figure 2-1). Antelope Creek extends north through Antelope Valley and drains to Stone Corral Creek. Wilson Creek and Grapevine Creek are in the western part of the study area. Wilson Creek, which follows the northern half of the South Road alignment, is tributary to Squaw Creek and the East Park Reservoir, which is west of and outside the study area. Grapevine Creek follows the southern half of the South Road alignment. Bird Creek crosses the study area south of the town of Dunnigan (Figure 2-2). The downstream section of Stone Corral Creek, most of Antelope Creek, and Bird Creek are supported by groundwater and sections of these creeks remain inundated or saturated throughout the year. The other named streams in the study area flow primarily during the winter and spring, with some reaches becoming dry during the summer and fall. Streams in the study area support riparian woodland and wetlands. Numerous unnamed intermittent and ephemeral streams also drain the study area, and many are tributary to the named streams. Canals in the study area that carry flow to and from reservoirs include the GCID Main Canal and the TC Canal. Numerous agricultural ditches supply water to orchards, rice fields, row crops, and vineyards in the study area. Additional details of creek hydrology in the study area, as well as hydrology of the Sacramento River, are provided in Chapter 5, *Surface Water Resources.*

The soils in the eastern portion of the study area were formed in flood basins and terraces (Natural Resources Conservation Service 2020a). Most of the soils that formed in the flood basins have been levelled for rice production and are subject to flood control improvements (Natural Resources Conservation Service 2006:16). They are generally clayey, and some have a high sodium content (Natural Resources Conservation Service 2020a). Soils in the western portion of the study area, including Antelope Valley, are on gentle to very steep slopes and most of the soils are clayey (Natural Resources Conservation Service 2020a). Serpentine soils, which occur intermittently in the Coast Ranges, are upslope from the lower elevations and outside the study area. Chapter 12, *Geology and Soils,* provides additional information on soils in the Project construction area.

The climate in the study area is characterized by hot, dry summers and cool, relatively wet winters, depending on the water year type. Data from two weather stations, one north (Stony Gorge Reservoir, California) and one east (Colusa 2 SSW, California) of the study area, were reviewed for temperature and precipitation averages (Natural Resources Conservation Service 2020a, 2020b). The average high temperatures range from between 95.2°F and 94°F in July to between 55.2°F and 55.6°F in January, and the average low temperatures range from between 32.4°F and 36.6°F in December to between 59.1°F and 60.3°F in July. The average annual precipitation is from 16.37 to 22.51 inches, with precipitation falling mostly as rain with less than 1 inch of snow, primarily between October and May (Natural Resources Conservation Service 2020b, 2020c).

9.3.1 Vegetation and Wetland Resource Types in the Study Area

The study area and vicinity are predominantly vegetated by natural and agricultural vegetation. Property access restrictions to most of the Project area precluded field investigations of vegetation and wetland resources in the study area since the preparation of the 2017 Draft EIR/EIS, as described in Chapter 3, *Environmental Analysis*. The information on the types and extent of vegetation and wetland resources in the study area presented in this RDEIR/SDEIS is primarily based on the results from previous surveys of approximately 75% of the study area conducted between 1998 and 2003 (California Department of Water Resources 2000a, 2000b; Sites Project Authority and U.S. Bureau of Reclamation 2017) and on the interpretation of recent high-resolution aerial imagery of the entire study area.

Based on desktop mapping from aerial imagery, 28 mapped land cover types were identified in the study area, as shown in Figure 9B-1 and listed in Table 9B-1, which also provides acreage estimates for each type (Appendix 9B). All land cover type acreages are preliminary and subject to revision based on pedestrian surveys once access has been granted to the study area. Wetland and non-wetland water types are subject to further revision pending field review and verification prior to construction by the U.S. Army Corps of Engineers (USACE), State Water Resources Control Board (State Water Board), and California Department of Fish and Wildlife (CDFW).

The most abundant plant community in the study area is annual grassland, with areas of oak savanna and blue oak woodlands becoming more common as elevations increase from east to west and eventually transition to chamise and foothill pine in the westernmost part of the study area. Upland riparian woodland and wetlands are present along most of the major creeks including Antelope Creek, Funks Creek, Grapevine Creek, and Stone Corral Creek. Open water types in the study area include Funks Reservoir, GCID Main Canal, TC Canal, Salt Pond, and small ponds. Seasonal wetlands are located in grasslands and topographic lows where clay soils are present. To the east, agricultural areas containing rice and orchards are the most abundant land cover type.

9.3.2 Sensitive Natural Communities

Sensitive natural communities are habitats that are considered sensitive because of their high species diversity, high productivity, unusual nature, limited distribution, or declining status. Local, state, and federal agencies consider these habitats important and generally require compensation for loss of sensitive communities. The California Natural Diversity Database (CNDDB) contains a current list of rare natural communities throughout the state (California Department of Fish and Wildlife 2020). CDFW and U.S. Fish and Wildlife Service (USFWS) consider certain habitats, such as riparian and wetland communities, important to wildlife. The acreages and rarity ranks for the sensitive natural communities identified in the study area are shown in Tables 9B-1 and 9B-2, respectively (Appendix 9B).

Sensitive natural communities in the study area include upland riparian and three sensitive natural communities that could be present within areas mapped as annual grassland, foothill pine, and oak savanna. Upland riparian is the only sensitive natural community specifically mapped in the study area. Upland riparian in the study area may be classified as either Fremont cottonwood forest (S3), Goodding's willow – red willow riparian woodland and forest (S3), and/or California

rose briar patches (G3 S3).[1] This riparian community may also function as shaded riverine aquatic (SRA) cover for fish species, as described in detail in Chapter 11, *Aquatic Biological Resources*, for Impact FISH-1 under "Loss of Riparian Vegetation (Including SRA Cover) and Increased Water Temperature."

Three other common upland vegetation types that are mapped in the study area and identified as having the potential to contain sensitive natural communities are (1) annual grassland with potential for California brome–blue wildrye prairie (G3, S3), gum plant patches (G2, G3, S2, S3), needlegrass–melic grass grassland (G3, S3), and white-tip clover swales (G3?, S3?); (2) foothill pine with potential for foothill pine-herbaceous association (Provisional Alliance); and (3) oak savanna with potential for valley oak woodland and forest (G3, S3).

9.3.3 Wetlands and Non-Wetland Waters

Wetlands and non-wetland waters in the study area are subject to regulation as waters of the United States and waters of the state that fall in the jurisdictions of the USACE and the State Water Board, respectively. Riparian wetlands and non-wetland waters may also be regulated by CDFW. The wetland and non-wetland water resources regulated by these agencies may vary because of differences in federal and state laws and regulations. The regulations relating to wetlands and non-wetland waters are described in Chapter 4, *Regulatory and Environmental Compliance: Project Permits, Approvals, and Consultation Requirements*.

Wetland types identified in the study area that are potentially subject to federal and/or state regulations include forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland. These wetland types are described in Appendix 9B. The forested wetland and scrub-shrub wetland types are riparian habitats that may also function as SRA cover for fish species, as described for Impact FISH-1 in Chapter 11, *Aquatic Biological Resources*.

Non-wetland waters identified in the study area that are potentially subject to federal and/or state regulations include pond, reservoir, ephemeral stream, intermittent stream, and perennial stream. Based on current federal and state definitions, canals and ditches in the study area may not be regulated as non-wetland waters. Non-wetland water types are described in Appendix 9B. The acreages of wetlands and non-wetland waters presented are preliminary, as the aquatic resources delineation has not been completed with onsite surveys or jurisdictional review by the USACE and State Water Board.

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[1] Rarity Ranks (G = full natural ranges within and outside California; S = within California)

G2: Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3: Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

S2: Imperiled – Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.

S3: Vulnerable – vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

? - inexact numeric rank because of insufficient samples over the full expected range of the type, but existing information points to this rank.

9.3.4 Special-Status Plant Species

For the purpose of this RDEIR/SDEIS, special-status plant species are defined as those in one or more of the following categories.

- Species listed or proposed for listing as threatened or endangered under the Endangered Species Act (ESA) (50 Code of Federal Regulations 17.12, and various notices in the Federal Register [FR]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (85 FR 73164, November 16, 2020).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 California Code of Regulations 670.5).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code 1900 et seq.).
- Plants with a California Rare Plant Rank (CRPR) of 1 or 2, which are plants considered by CDFW and California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Native Plant Society 2020).
- Plants with a CRPR of 3 or 4, which are plants identified by CDFW and CNPS about which more information is needed to determine their status, and plants of limited distribution and may be included as special-status species on the basis of local significance or recent biological information.

Table 9A-2 (Appendix 9A) lists the 51 special-status plant species that are known to occur in or within 5 miles of the study area, which encompasses a distance that reasonably includes special-status plants that may occur in the Project area. An additional 22 species known to occur more than 5 miles from the study area are also in Table 9A-2. These 22 species were included because they were in the 2017 Draft EIR/EIS or in the CNPS Inventory of Rare and Endangered Plants (2020) search area, which extends slightly beyond 5 miles. Table 9A-2 contains the special-status plant species identified from the CNDDB records query (California Department of Fish and Wildlife 2021), CNPS Inventory of Rare and Endangered Plants (2020) search, USFWS species list (U.S. Fish and Wildlife Service 2021), 2017 Draft EIR/EIS (Sites Project Authority and U.S. Bureau of Reclamation 2017), and from review of species distribution and habitat requirements data. Please refer to Table 9A-2 for the scientific names of the special-status plant species and their habitat requirements.

Surveys for special-status plant species were conducted between 1998 and 2003 in parts of the study area (California Department of Water Resources 2000a; Sites Project Authority and U.S. Bureau of Reclamation 2017), but not all parts of the study area were included in these surveys and more recent surveys have not been performed due to almost complete lack of access to the study area, as most of the land is privately held. Therefore, all species identified as present in the study area vicinity were evaluated for their potential to occur in the study area itself, based on the known range of each species and their habitat associations, as well as the previous survey data. The following subsections focus on the two federally and/or state listed species with potential to occur in the study area. As indicated in Table 9A-2 (Appendix 9A), 40 of the special-status species are not known to be present in the study area and have low potential to occur in the study

area. These 40 species are not discussed further. The other special-status plant species in Table 9A-2 have moderate to high potential to occur in the study area and are addressed in Section 9.5.

9.3.4.1 Keck's Checkerbloom

Keck's checkerbloom (also referred to as Keck's checkermallow) is listed as endangered under ESA (65 FR 7764, February 16, 2000); it is not listed under CESA. The species was thought to be restricted to three sites in Fresno and Tulare Counties at the time of its listing, and critical habitat for the species is located in those counties (68 FR 12875–12880, March 18, 2003). Subsequent taxonomic studies have concluded that the species also occurs in the southern Inner North Coast Ranges in Colusa, Napa, Solano, and Yolo Counties (Hill 2015). There are 50 occurrences, five of which are within 8 miles of the study area. Keck's checkerbloom grows in grasslands and on grassy slopes in blue oak woodland, generally on clay soils, and sometimes on soils derived from serpentinite. Grasslands, blue oak woodland, and oak savanna in the study area are potential habitat for this species.

The botanical surveys of parts of the study area were conducted prior to Keck's checkerbloom being listed and before it was identified in northern California. Consequently, these surveys identified all checkerbloom plants in the area as fringed checkerbloom (*Sidalcea diploscypha*) (California Department of Water Resources 2000a), a common species that is similar in appearance to Keck's checkerbloom. Consequently, any potential occurrences of Keck's checkerbloom in the survey area were not mapped.

A species habitat model developed for Keck's checkerbloom can be used to predict locations of suitable habitat in the study area. A species habitat model was developed based on the land cover mapping and includes annual grassland, blue oak woodland, and oak savanna communities where the soil map unit Cibo-Ayar-Altamont also occurs. This map unit includes soils with high clay content that represent potentially suitable microhabitat for Keck's checkerbloom.

9.3.4.2 Palmate-Bracted Bird's Beak

Palmate-bracted bird's-beak is federally listed as endangered (51 FR 23769, July 1, 1986). It is also state listed as endangered under CESA. This species was listed under the name *Cordylanthus palmatus* but is now known as *Chloropyron palmatum.* No critical habitat has been designated for this species. The species is known from 25 occurrences, eight of which are extirpated (i.e., destroyed) or possibly extirpated (California Department of Fish and Wildlife 2021). These occurrences are present at widely separated locations in the Central Valley, ranging from Glenn County to Fresno County. Three occurrences are present within 5 miles of the study area. Habitat for this annual, hemiparasitic species is chenopod scrub and alkaline grasslands, and it is associated with salt grass (*Distichlis spicata*) and alkali heath (*Frankenia salina*) as host plants (California Native Plant Society 2021, Yolo Habitat Conservancy 2018). Palmate-bracted bird's-beak was not found in the study area in previous survey efforts (California Department of Water Resources 2000a). However, there is potential for this species to occur in alkali seasonal wetlands in the current study area. A species habitat model developed for palmate-bracted bird's-beak can be used to predict where suitable habitat is present in the study area. A species habitat model was developed based on the land cover mapping and includes seasonal wetlands and intermittent streams where Capay soils are present. Capay soils are generally alkaline.

9.3.5 Invasive Plant Species

The California Invasive Plant Council defines invasive species as plants that are not native to an environment, and once introduced they establish, quickly reproduce and spread, and cause harm to the environment, economy, or human health. Table 9B-5 (Appendix 9B) lists species of invasive plant species that have been observed in the study area or are documented from Glenn or Colusa Counties and occur in land cover types similar to those in the study area (California Invasive Plant Council 2021, CalFlora 2021). Thirty-two of these species were identified in the study area during botanical resource surveys conducted between 1998 and 2003 (California Department of Water Resources 2000a; Sites Project Authority and U.S. Bureau of Reclamation 2017). Nearly all plant communities in the study area support invasive plant species, although some have more extensive invasive plant infestations than others. Annual grassland in the inundation area supports invasive grass species such as ripgut and other bromes, hedgehog dogtail, and medusahead, as well as invasive forbs such as yellow star-thistle, which is widespread (Sites Project Authority and U.S. Bureau of Reclamation 2017). Italian thistle, bull thistle, and other nonnative thistles are common in the grassland understory of oak woodland at the edges of the Sites Reservoir inundation area. Ruderal areas by roads in grassland understory of blue oak woodlands can become infested with milk thistle, olive, California burclover, cutleaf geranium, and invasive thistles and mustards. Edges of agricultural fields, ranches or homesteads, and roadsides through agricultural areas are also vulnerable to infestations of many invasive species. Wetlands in the study area may support hyssop loosestrife and Himalayan blackberry. Upland riparian habitat may support tree-of-heaven, giant reed, and tree tobacco. Please refer to Table 9B-5 for the scientific names of invasive plant species.

9.4 Methods of Analysis

The methods for analysis of impacts on vegetation and wetland resources are organized into direct and indirect impacts. Direct impacts are those effects that would be directly caused by Project construction and operation even if it took time for the resulting effect to develop (e.g., filling of the reservoir over a 20-year period). Indirect impacts are those that would occur either later in time or at a distance from the area where direct impacts would occur but are reasonably foreseeable, such as erosion and alteration of existing hydrology. Direct and indirect impacts may be either permanent or temporary. Impacts on vegetation and wetland resources are generally considered temporary where they would be restored to preconstruction conditions within 1 year. The study area and land cover mapping area for vegetation and wetland resources includes a 300-foot-wide buffer outside of the temporary and permanent impact areas. The buffer was selected to provide flexibility for minor final design changes in the Project footprint, while still providing an adequate area to assess direct and indirect impacts of the Project. The buffer area was assessed for potential temporary and indirect impacts on vegetation and wetland resources.

Climate change is likely to alter temperature and hydrologic patterns in the Sacramento Valley. Heat waves are expected to become longer and affect larger areas, with higher daytime and nighttime temperatures and fewer cooling days. The Sacramento Valley will likely see increased precipitation during winter storms, more extreme floods, and greater floodplain vulnerability. On the dry extreme, the region will experience increased dryness and more extreme droughts.

Changes in temperature and precipitation patterns and extremes could modify habitats and plant communities as some plant species become unable to survive in the new conditions. Climate change considerations and vegetation and wetland resources are discussed in Chapter 28, *Climate Change*.

9.4.1 Construction

Direct, permanent impacts on natural communities, wetlands, and non-wetland waters were assessed using the estimated amount of land cover that would be converted by Project construction. Construction impacts include both construction of new facilities, upgrades of existing GCID system components, and filling of the reservoir. Temporary impacts on natural communities, wetlands, and non-wetland waters were calculated using the estimated amount of land cover that would be temporarily disturbed during Project construction but would be restored to pre-Project conditions within 1 year of completion. Temporarily affected areas that would ultimately be inundated by the Sites Reservoir were included in the permanent impact area to avoid double counting acreages, and because these areas would ultimately be permanently affected. The impact analysis assumed that the conditions on parcels of land surrounding the perimeter of the reservoir would be maintained similar to existing conditions (e.g., as grazing lands). In addition, temporary impacts on special-status plants from ground disturbance, even if followed by restoration, would constitute a permanent impact, unless the particular species benefits from disturbance. Although the temporary construction areas would be returned to original conditions, as required by BMP-10 and BMP-36 described in Appendix 2D, *Best Management Practices, Management Plans, and Technical Studies*, the sensitivity of many special-status plants to specific soil and hydrologic conditions could prevent re-establishment after disturbance.

Impacts on vegetation and wetland resources were calculated using geographic information system (GIS) software. The Project footprint and associated temporary impact areas, as defined at the time of preparation of this RDEIR/SDEIS, were overlaid on the land cover mapping data to quantify the permanent and temporary impacts associated with the construction of the Project facilities.

Impacts on occurrences of special-status plants known to occur in the study area were based on previous survey results and CNDDB occurrence data. Special-status plant species not previously observed during surveys of the study area but that are identified as having potential to occur in the study area were also included in the impact analysis (Table 9A-2). The full extent of impacts on special-status plants is currently unknown because recent botanical surveys for special-status plants have not been conducted throughout the study area. The analysis assumes that potential suitable habitat for palmate-bracted bird's-beak and Keck's checkerbloom, the two species for which habitat models were created, is occupied. This approach is conservative and overestimates the potential effects. Once land access is obtained, surveys would be conducted to determine the exact locations of these and all other special-status plants. The extent of impacts on other special-status plants for which there are no habitat models cannot be calculated based on the current available data; therefore, the impact assessment is qualitative.

The following assumptions and alternative details regarding specific Project components were applied to the impact analysis:

- Construction of the TC Canal diversion at the RBPP and the TC Canal intake at the Dunnigan Pipeline would not affect any areas of natural communities, wetlands, or non-wetland waters because the construction footprints at these two locations contain only ruderal and developed land cover types. These areas are not considered further in this analysis.
- Staging areas for all Project components would be temporarily affected, unless a part of the Project footprint overlaps the staging area, where impacts would be considered permanent.
- Temporary impacts from the use of coffer dams in Stone Corral and Funks Creeks during dam construction are included in the impacts shown in Tables 9-2b and 9-4b.
- Impacts from construction of TRR East are included in the impacts shown in Tables 9-2a and 9-2b for Alternatives 1 and 3. Impacts from construction of TRR West are included in the impacts shown in Tables 9-4a and 9-4b for Alternative 2.
- Impacts in the north-south transmission line and the east-west transmission line alignments would be permanent at the locations of new high-voltage electrical transmission lines to power the regulating reservoirs and at an access road that would be maintained along the selected alignment. Only one of the two north-south transmission line alignments described in Chapter 2 would be constructed, and specific locations for the transmission line towers are currently unknown. For this analysis, impact acreages were somewhat overestimated by including the footprints of both alignments. For each north-south transmission line alignment, the permanent impact areas shown in Tables 9-2a and 9-4a include a 15-foot-wide unpaved maintenance road in the middle of each alignment and up to 16 towers in each alignment placed roughly parallel to existing transmission lines outside of the alignments. Permanent impacts additionally include vegetation clearing of approximately 50 feet around each tower (total diameter of 100 feet per tower). The remaining areas of the two transmission line alignments are included in the temporary impacts shown in Tables 9-2b and 9-4b.
- Quarries located outside the inundation area would be regraded and allowed to revegetate at the bottoms, but they would not return to pre-Project conditions.
- Offsite borrow or aggregate areas would be in existing commercial facilities and would not impact land cover.
- All dams and saddle dams are part of the Project footprint, and impacts in the footprint would be considered permanent.
- The inundation area would replace natural communities, wetlands, and non-wetland waters with open water. Alternatives 1 and 3 would permanently flood a larger area than Alternative 2.
- Installation of the Dunnigan Pipeline for Alternatives 1, 2, and 3 would require temporary ground disturbance for pipeline installation.
- The footprints for the Peninsula Hills, Stone Corral Creek, and day-use boat ramp/parking recreation areas represent the total area that could be used for recreation activities. Only part of each footprint would experience a permanent loss of vegetation for the construction of camp sites, picnic areas, hiking trails, potable water source, utility

connections, kiosks (at Peninsula Hills and Stone Corral Creek Recreation Areas), and toilets.

- New road construction would result in permanent loss of existing vegetation in the entire construction disturbance area, and improvements to existing roads would affect only the area to the edges of the right-of-way. The exact locations of the realigned Huffmaster Road, new Comm Road South, and new South Road are not yet finalized. Therefore, corridors have been used to identify potential direct and indirect impacts. For example, on the South Road a 400-foot-wide conceptual road alignment plus a 300-foot-wide buffer has been identified to allow for design flexibility. Because the final South Road corridor is unknown, the entire corridor was assumed to be permanently affected for the purposes of the impact analysis. Within the corridors, the actual permanent impact area would be only the footprint of roads and shoulders with additional temporarily affected areas for construction staging and equipment movement.

The Authority will implement the following BMPs, which are described in Appendix 2D. These BMPs are considered part of the Project and are incorporated into the analysis of potential construction and operation impacts on vegetation and wetland resources.

- BMP-10, Salvage, Stockpiling, and Replacement of Topsoil and Preparation of a Topsoil Storage and Handling Plan, requires evaluation of topsoil for salvaging suitability and storage and handling plans when topsoil cannot be used without stockpiling.
- BMP-12, Development and Implementation of Stormwater Pollution Prevention Plan(s) (SWPPP) and Obtainment of Coverage under Stormwater Construction General Permit (Stormwater and Non-stormwater), requires development and use of erosion control measures, sediment control measures, construction materials management measures, waste management measures, non-stormwater control measures, and post-construction stormwater management measures.
- BMP-13, Development and Implementation of Spill Prevention and Hazardous Materials Management/Accidental Spill Prevention, Containment, and Countermeasure Plans (SPCCPs) and Response Measures, requires site-specific plans with measures to minimize effects from spills of hazardous or petroleum substances during construction and operation/maintenance.
- BMP-33, Implementation of a Worker Environmental Awareness Program (WEAP), requires training of all construction crews and contractors on protection and avoidance of biological, cultural, archaeological, paleontological, and other sensitive resources.
- BMP-35, Development and Implementation of Construction Best Management Practices and Monitoring for Fish, Wildlife, and Plant Species Habitats, and Natural Communities, requires a construction monitoring plan for sensitive biological resources and in-water construction activities, use of exclusion fencing around sensitive biological resources, and measures for construction personnel to protect wildlife.
- BMP-36, Control of Invasive Plant Species during Construction, requires identification of invasive plant infestations, describes measures for handling removed invasive plants during construction, and includes returning areas of temporary disturbance to original grade and revegetating them with native species to control invasive plant species.

9.4.2 Operation

Operation of the Project would not involve additional earthmoving or substantial disturbance of new areas beyond those that would be disturbed during construction, therefore, acreages due to operation were not calculated for the purposes of analysis of impacts on vegetation and wetland resources. The operation phase would include primarily changes in water diversions to and from Sites Reservoir, routine tasks to maintain the facilities after construction according to operations and maintenance plans to be developed, and energy generation and use. Energy generation and use is not anticipated to affect vegetation or wetland resources.

Operation of the Project would not substantially affect vegetation and wetland resources in areas downstream of the Project conveyance to Sacramento River facilities, including Yolo and Sutter Bypasses. Based on observations during North Delta Flow Actions (Davis pers. comm 2021), the comparable August – October habitat flows may cause limited inundation of low-elevation parcels in the upper Yolo Bypass (north of the Interstate 80 causeway). The intent of the releases from Sites Reservoir to the Yolo Bypass during this period would be to transport nutrients and food resources for fish species into the Delta. If the water releases from Sites inundate Yolo Bypass floodplain areas, which include areas that may support wetlands, the food resources for fish would remain on the floodplain and fail to move into the Delta. As such, Sites Reservoir would be operated to maintain flows within the existing Toe Drain, Tule Canal, and other channels, and adjustments in operations would be coordinated between the Authority and parcel owners using the existing Yolo Bypass monitoring network. Therefore, flows in the August – October period would remain in the existing channels, and no impacts on vegetation and wetland resources outside of channels within the Yolo Bypass are anticipated. The areas downstream of the conveyance to Sacramento River would not be affected by operation of the Project and are not discussed further. Details of the hydrologic modeling results are described in Chapter 5; Chapter 7, *Fluvial Geomorphology*; Chapter 11, *Aquatic Biological Resources*; and Appendix 11M, *Yolo and Sutter Bypass Flow and Weir Spill Analysis*.

Maintenance would include vegetation control and grazing around all facilities, recreation areas, and a 100-foot buffer around the facilities. These activities would affect undeveloped land where sensitive natural communities, wetlands and non-wetland waters, or special-status plants could occur. The completion and implementation of the Land Management Plan (LMP), which is described in Section 2D.7, are incorporated into the analysis of potential operation impacts on vegetation and wetland resources. This plan would address management and maintenance activities on all non-recreation land resources held in fee or easement (including the Project buffer) by the Authority, including vegetation maintenance and rodent control. The plan would include general measures and practices when working in or near special-status plant populations, sensitive natural communities, wetlands, and non-wetland waters and specify when exclusion practices would be required during operation and maintenance activities to avoid impacts.

Impacts that could result during operation of recreation areas were also considered because public use of recreation areas could affect areas that support special-status plants, sensitive natural communities, or wetlands and non-wetland waters. The development and implementation of a Recreation Management Plan, which is described in Section 2D.8, are incorporated into the impact analyses for vegetation and wetland resources. This plan would address management

activities and specify when exclusion practices would be required on all Project recreation lands and areas.

9.4.3 Thresholds of Significance

An impact on vegetation and wetland resources (including non-wetland waters) would be considered significant if the Project would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any 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.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS.
- Have a substantial adverse effect on state or federally protected wetlands or non-wetland waters (including, but not limited to, marsh, vernal pool, stream) through direct removal, filling, hydrological interruption, or other means.
- Conflict with any local policies or ordinances protecting vegetation resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.
- Introduce or increase the spread of invasive plant species.

9.5 Impact Analysis and Mitigation Measures

Impact VEG-1: Substantial adverse effect (i.e., loss or removal), either directly or through habitat modifications, of plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

No Project

Because the No Project Alternative would not construct or operate new facilities, there would be no temporary impacts on special-status plants from temporary construction staging or other disturbance or permanent impacts from placement of facilities that would remove special-status plants. In addition, under the No Project Alternative, operations of the existing facilities, such as the TC Canal, RBPP, and GCID Main Canal, would continue. The owner/operators of these facilities would operate within the conditions and requirements of existing permits and agreements meant to protect special-status plant species. Furthermore, activities that currently occur within the study area such as grazing or other rural agricultural activities would continue to occur and may result in effects to special-status plant species but would do so in the context of existing regulations, requirements, and activities.

Significance Determination

The No Project Alternative would not result in a substantial adverse effect, either directly or through habitat modifications, on special-status plant species. The No Project Alternative would have no impact or effect on special-status plants.

Alternatives 1 and 3

The extent of permanent and temporary impacts on land cover types associated with Alternatives 1 and 3 was quantified as described in Section 9.4, and is shown in Tables 9-2a and 9-2b. All land cover type acreages are preliminary and subject to revision based on pedestrian surveys once access has been granted to the study area, particularly for the wetland and non-wetland water types, which are subject to change pending field review and verification by the USACE and State Water Board.

Table 9-2a. Alternatives 1 and 3 Acreages of Permanent Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	0	0	0	0	0	0	0	0	0	<1	0	0	<1	0	0
Regulating Reservoirs and Conveyance Complex	19	0	2	0	1	0	0	<1	0	0	0	0	<1	<1	1	<1	<1	<1	0
Sites Reservoir Inundation Area	11,271	159	<1	<1	<1	0	2	38	0	0	282	36	0	6	256	3	184	22	46
Inlet/Outlet Works	23	0	0	0	0	0	0	0	0	0	2	0	0	0	<1	0	<1	<1	<1
Dams and Dikes	154	5	0	0	0	0	<1	1	0	0	4	<1	0	<1	11	1	3	1	2

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Quarries and Rock Processing Facilities	409	0	0	0	0	0	0	<1	0	0	17	0	0	<1	2	0	4	2	0
Conveyance to Sacramento River	0	0	<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		<1
Roads	772	97	<1	0	<1	0	3	2	0	1	122	2	0	2	60	<1	10	<1	5
Recreation Areas	460	54	0	0	0	0	0	0	0	0	219	<1	0	<1	<1	0	1	2	3
Alternatives 1 and 3 Total Permanent Impacts	13,108	315	2	<1	2	0	6	42	0	1	646	39	<1	8	330	5	202	27	56

Note: Acreages presented in this table are based on preliminary engineering design.

[1] Sensitive natural community (upland riparian) or may contain areas that are sensitive natural communities (annual grassland, foothill pine, and oak savanna). In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

[2] Canal and ditch land cover types are included but are unlikely to be regulated based on current federal and state definitions.

Table 9-2b. Alternatives 1 and 3 Acreages of Temporary Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	<1	0	1	0	0	0	0	0	0	1	0	0	<1	0	<1
Regulating Reservoirs and Conveyance Complex	567	0	8	0	1	0	<1	13	0	0	0	3	223	<1	15	<1	3	1	2
Inlet/Outlet Works	7	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Dams and Dikes	42	2	0	0	0	0	<1	<1	0	0	<1	<1	0	0	2	0	0	<1	<1
Quarries and Rock Processing Facilities	155	0	0	0	0	0	0	1	0	0	1	1	0	<1	19	0	6	<1	0
Conveyance to Sacramento	0	0	<1	0	<1	0	0	0	6	0	0	0	0	0	0	0	3	0	2

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
River																			
Roads	144	21	0	1	0	0	1	<1	0	0	16	0	0	1	0	0	2	1	2
Recreation Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternatives 1 and 3 Total Temporary Impacts	915	23	8	1	1	0	2	14	6	0	19	4	223	2	36	<1	14	2	6

Note: Acreages presented in this table are based on preliminary engineering design.

[1] Sensitive natural community (upland riparian) or may contain areas that are sensitive natural communities (annual grassland, foothill pine, and oak savanna). In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

[2] Canal and ditch land cover types are included but are unlikely to be regulated based on current federal and state definitions.

Construction

Construction of Alternative 1 or 3 would result in direct permanent loss of occupied habitat for bent-flowered fiddleneck and red-flowered bird's-foot trefoil in annual grassland, blue oak woodland, and oak savanna, and of occupied habitat for brittlescale and San Joaquin spearscale in alkali seasonal wetlands. Construction of Alternative 1 or 3 could also result in an undetermined loss of potential habitat for the special-status plants not previously observed during surveys of the study area but were assessed as having a high probability of occurrence: adobe lily, Baker's navarretia, Bolander's horkelia, California alkali grass, Keck's checkerbloom, and shining navarretia (Table 9A-2). Potential habitats for these species include annual grassland, blue oak woodland, oak savanna, chamise, mixed chaparral, and seasonal wetland. An additional 24 species listed in Table 9A-2 have moderate potential to occur in the study area and could be removed during construction. For federally listed species (Keck's checkerbloom and palmate-bracted bird's-beak), habitat models have been used to identify impacts on suitable species habitat in the study area. Table 9-3 below shows the acreages of direct, permanent and temporary impacts on the two modeled plant species. Tables 9-2a and 9-2b show the acreages of direct, permanent and temporary impacts on habitats for other special-status plant species in each component area under Alternatives 1 and 3.

Table 9-3. Acreages of Permanent and Temporary Impacts on Modeled Special-Status Plant Species Habitat in the Study Area

	Alternative 1 and 3		Alternative 2	
	Permanent Impacts	Temporary Impacts	Permanent Impacts	Temporary Impacts
Keck's checkerbloom	10,094	700	9,735	682
Palmate-bracted bird's-beak	217	8	214	7

The Authority will implement preconstruction and construction measure BMPs as part of Alternatives 1 and 3 that would limit direct impacts on special-status plants. BMP-33 requires that construction workers be trained on the importance of avoiding special-status species. BMP-35 entails fencing of sensitive habitats and any occupied special-status plant habitats where avoidance is feasible, and restricts off-road driving in the construction area, where avoided special-status plants could be damaged or destroyed. BMP-36 includes removing, bagging, and disposing of invasive species at a waste facility and would reduce the potential for the spread of invasive plant species into occupied special-status plant habitats. BMP-12 and BMP-13 would also limit indirect impacts on special-status plants by implementing a SWPPP that would protect habitats outside of the construction area from erosion, sedimentation, and spills of hazardous or petroleum substances.

These BMPs would not prevent the permanent loss of or degradation of habitat quality for special-status plants in the footprint for Alternatives 1 and 3. Under Alternative 1 or 3, construction of facilities would result in the loss and habitat modification for the four species known to occur in the affected area (bent-flowered fiddleneck, brittlescale, red-flowered bird's-

foot trefoil, and San Joaquin spearscale) through direct removal and habitat quality degradation, which could include disturbance of the seed bank and changes to soil structure and mycorrhizal (symbiotic fungal) systems. Permanent impacts on the species' habitats would result from earthmoving and vegetation removal for construction of facilities associated with the regulating reservoirs and conveyance complex, Sites Reservoir and related facilities, conveyance to Sacramento River, recreation areas, and new roads, including Comm Road South and the realigned Huffmaster Road. These permanent impacts would include both the facility footprints and the temporary construction areas where earthmoving would occur. The temporary construction areas would be returned to original grade with topsoil salvaged, stockpiled, and replaced (BMP-10) and would be revegetated with native species to control invasive plant species (BMP-36). However, the disruption of the soil structure, seed bank, and micro-organisms from disturbance of the native soil and even subtle changes in hydrology could alter the habitat sufficiently that it would no longer support the affected special-status plants, resulting in permanent loss of the species within the temporary impact area. Construction of facilities would result in the permanent loss of occupied special-status plant habitats, including annual grassland, blue oak woodland, oak savanna, and alkaline seasonal wetland in the construction footprint. Alternative 1 or 3 could also result in the direct, permanent loss of occupied habitat for seven other special-status species with potential to occur in the construction footprint, including the two federally listed modeled species, Keck’s checkerbloom and palmate-bracted bird’s-beak.

Under Alternative 1 or 3, construction activities would also result in the temporary disturbance of special-status plant habitat during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. Temporary impacts on potential special-status plant habitat would occur during construction activities for most facilities, except those associated with the Sacramento River diversion and conveyance to regulating reservoirs. Temporary impacts would result from equipment movement that does not affect living plants or disrupt the soil surface (e.g., driving over dead annual plants). Construction would result in temporary impacts on annual grassland, blue oak woodland, oak savanna, and seasonal wetland. There would be no temporary impacts on special-status plant habitat from the construction of the Sacramento River diversion and conveyance to regulating reservoirs because those facilities already exist and construction activities would be located within existing footprints.

Potential indirect impacts on special-status plants from the construction of Alternative 1 or 3 from invasive plant species and changes in the hydrology of special-status plant habitat outside the construction area due to erosion and sedimentation from earthmoving during construction would be of limited duration and intensity by implementation of BMP-12 and BMP-36.

Operation

Operation of the recreation areas under Alternatives 1 and 3 would not result in additional impacts on special-status plant species beyond those described for construction, including ongoing recreational activities in the three recreation areas. Additional operation-phase impacts could occur in undeveloped parts of the recreation areas due to visitor use of spaces outside of the constructed facility. The permanent footprint of these recreation areas is currently at a conceptual design stage, and the actual location of facilities is not yet known. Impacts shown in Table 9-2a include a substantially larger area than would ultimately be part of the recreation area

footprints, and much of the designated recreation areas would remain undeveloped. Because the construction impact acreage assessed for the recreation areas includes all habitat in the recreation area boundaries, there would be no additional impact on occupied special-status plant habitat in the recreation areas due to recreation. In addition, implementation of the Recreation Management Plan will require signs, fencing, or other exclusion practices to protect any special-status plants from recreation use.

Maintenance of Alternative 1 or 3 facilities could require access and ground disturbance in areas that are adjacent to occupied special-status plant habitat. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns would occur on an as-needed basis and could affect special-status plants or occupied special-status habitats if they are present in or adjacent to the vegetation maintenance areas. Implementation of the LMP and Recreation Management Plan will include requirements for signage, fencing, and other exclusion practices during maintenance to avoid special-status plants identified and avoided during construction. BMP-12 includes erosion and sedimentation control measures that would be required as part of maintenance activities to prevent erosion and sedimentation off site that could occur from ground disturbance, and these effects would be of limited duration and intensity.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 1 or 3 would result in significant impacts on special-status plant species by reducing the number of occurrences of special-status plants and lowering the quality of occupied habitat for bent-flowered fiddleneck, brittlescale, red-flowered bird's-foot trefoil, and San Joaquin spearscale. Construction could also affect potential habitat for additional special-status plant species, including the federally listed Keck's checkerbloom and palmate-bracted bird's-beak. The Authority will implement BMP-10, BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36 that would limit direct impacts on special-status plants before and during construction. Indirect impacts under Alternative 1 or 3 due to erosion, sedimentation, and contamination from hazardous or petroleum substances into occupied special-status plant habitats located outside of the construction area would be avoided with implementation of BMP-12 and BMP-13. The occurrences of special-status plants in the construction footprint are significant because their loss could substantially decrease genetic diversity for the species, particularly the red-flowered bird's-foot trefoil, which is known from only eight locations. While measures would be implemented before and during construction to avoid and minimize impacts on special-status plants, Alternative 1 or 3 would still result in the loss and habitat quality degradation of their habitats. Additionally, the construction footprint has not been recently or completely surveyed for special-status plants, and there is potential for additional species or locations of the known special-status plant species to occur in the footprint and be subject to construction-related impacts.

The direct, permanent losses of special-status plants would be a significant impact. Implementation of Mitigation Measures VEG-1.1 and VEG-1.2 would reduce the level of impact to less than significant because all locations of special-status plants in and within 300 feet of the Project footprint would be identified, mapped, and avoided, if feasible. If avoidance is not feasible, the acquisition and permanent protection of occupied habitat for each affected species at identified ratios would ensure some of the populations of these species would survive in perpetuity.

Operation impacts on special-status plants would not occur from erosion, sedimentation, or spills of hazardous or petroleum substances because such activities either would not be located in proximity to special-status plant species or potential impacts would be minimized by implementation of BMP-12 and BMP-13 by the Authority. The Authority will develop and implement the LMP and Recreation Management Plan to further protect special-status plants. Operation impacts on special-status plants from vegetation maintenance activities could result in losses of special-status plants, and this would be a significant impact. Implementation of Mitigation Measure VEG-1.3 would reduce the level of impact to less than significant because all locations of special-status plants in the vegetation maintenance areas would be identified, fenced, and avoided.

Mitigation Measure VEG-1.1: Conduct Appropriately Timed Surveys for Special-Status Plant Species Prior to Construction Activities

The Authority will require qualified botanists to conduct special-status plant surveys of the Project footprint, including all permanent and temporary construction impact areas and a 250-foot-wide buffer area to encompass areas where indirect effects may occur. The surveys will be conducted in accordance with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Department of Fish and Wildlife 2018), or the most current protocols, specifically with respect to the number and timing of surveys, use of reference populations, and evaluation of negative findings. Surveys will occur during the season that special-status plant species would be evident and identifiable, which generally is during their blooming period. The surveys will be conducted no more than 3 years prior to the start of ground-disturbing activities. The results of the surveys will be submitted in a report to CDFW and/or USFWS for review no less than 1 year prior to the start of ground-disturbing activities.

The survey report will include the location and description of all work areas and the location and description of all occupied habitat for special-status plant species. The report will also identify locations where effective avoidance measures could be implemented. In areas where no special-status plant species are present, no further mitigation will be required.

Mitigation Measure VEG-1.2: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species

Where surveys conducted according to Mitigation Measure VEG-1.1 determine that a special-status plant species is present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid Project impacts on the species, if feasible, through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for special-status plant species will be a minimum of 50 feet established around each occupied habitat site, the boundaries of which will be clearly marked with construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related

disturbances will occur within 250 feet of the occupied habitat. The size of activity exclusion zones may be reduced below 50 feet through consultation with a qualified biologist and with concurrence from CDFW or, for any federally listed species, from USFWS based on site-specific conditions.

If adequate exclusion zones cannot feasibly be established for avoidance, and construction would result in take of federally listed or state-listed plants or plant parts (roots, shoots, fruit, or seeds), the Authority will apply for take authorization through an Incidental Take Permit from USFWS for any federally listed plant or CDFW for any state-listed plant.

Prior to any construction activities that would result in permanent impacts on special-status plants, the Authority will acquire and permanently protect compensatory mitigation habitat for each affected species at a minimum 2:1 ratio (2 acres preserved for every 1 acre permanently affected), but the final compensation ratios will be based on site-specific information and determined through coordination with the applicable state and/or federal agencies (CDFW, USFWS) during permit processing. The compensation acreage used for the ratio will be based on the area of impact as determined by surveys required under Mitigation Measure VEG-1.1. Compensatory mitigation will be accomplished by procurement of existing offsite occupied habitat acquired in-fee, through conservation easements, or by purchasing credits from a certified conservation bank or mitigation bank. If offsite occupied habitat is acquired (permittee-responsible mitigation), the habitat will require monitoring by the Authority. If credits are purchased from a certified bank, no further monitoring will be required.

The Authority will monitor any permittee-responsible mitigation habitat annually for a minimum of 5 years, or as required by the regulating agency, to verify that the habitat suitability and extent of species cover are maintained. For these mitigation areas, the Authority will prepare and implement an operations and management plan for each compensation habitat, with funding provided through an endowment. The plan will include requirements to monitor the occupied habitat, including the special-status species absolute and relative cover, cover of other native species, and cover of invasive species. The plan will also be consistent with the LMP and will determine and implement appropriate management measures to maintain the habitat and the plant species cover at the same or greater extent as when the occupied habitat was acquired. Management measures may include removal of invasive plant species. The Authority will submit annual monitoring reports to CDFW or, for any federally listed species to USFWS, for review and verification that the Project remains in compliance with the mitigation requirements.

Mitigation Measure VEG-1.3: Establish Activity Exclusion Zones Around Special-Status Plants Prior to Vegetation Maintenance Activities

Prior to surface-disturbing maintenance or herbicide use, the Authority will use the results of the surveys conducted under Mitigation Measure VEG-1.1 to mark the known locations of special-status plants in or within 50 feet of any maintenance areas. Prior to maintenance requiring surface disturbance or vegetation removal in annual grassland,

chaparral, oak woodland and savanna, and wetlands, the Authority will require qualified botanists to conduct special-status plant surveys of the maintenance areas. If any special-status plants are found in or within 50 feet of the maintenance areas, the Authority will fence and avoid the plants that could be affected by surface-disturbing maintenance activities.

NEPA Conclusion

Construction and operation effects on special-status plant species would be the same as described above for CEQA. Construction of Alternatives 1 and 3 would result in a substantial adverse effect on special-status plant species as compared to the No Project Alternative by reducing the number of occurrences of special-status plants and lowering the quality of occupied habitat for bent-flowered fiddleneck, brittlescale, red-flowered bird's-foot trefoil, and San Joaquin spearscale. Construction could also affect potential habitat for additional special-status plant species, including the federally listed Keck's checkerbloom and palmate-bracted bird's-beak, as compared to the No Project Alternative. With implementation of BMP-10, BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36 and Mitigation Measures VEG-1.1 and VEG-1.2, construction effects would be reduced to no adverse effect. Effects related to the operation of Alternative 1 or 3 would not occur due to either the lack of species or implementation of BMP-12, BMP-13, the LMP, the Recreation Management Plan. Furthermore, Mitigation Measure VEG-1.3, would reduce adverse effects associated with vegetation maintenance. Therefore, operation effects would not be adverse.

Alternative 2

The extent of Alternative 2 permanent and temporary impacts, quantified as described above in Section 9.4, *Methods of Analysis*, is shown in Tables 9-4a and 9-4b. All land cover type acreages are preliminary, particularly for the wetland and non-wetland water types, which are subject to change pending field review and verification by the USACE and State Water Board. A comparison of the total impacts on these land cover types between Alternative 1 or 3 and Alternative 2 is shown in Table 9-5.

Table 9-4a. Alternative 2 Acreages of Permanent Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	0	0	0	0	0	0	0	0	0	<1	0	0	<1	0	<1
Regulating Reservoirs and Conveyance Complex	194	0	3	0	<1	0	<1	4	0	0	0	0	<1	<1	1	<1	<1	<1	<1
Sites Reservoir Inundation Area	10,648	108	0	0	<1	0	3	38	0	0	209	36	0	9	251	2	180	16	42
Inlet/Outlet Works	24	0	0	0	0	0	0	0	0	0	2	0	0	0	<1	0	<1	<1	<1
Dams and Dikes	83	5	0	0	0	0	<1	<1	0	0	5	0	0	<1	8	1	3	<1	2
Quarries and Rock Processing Facilities	437	0	0	0	0	0	0	0	0	0	17	2	0	0	2	0	4	2	0

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Conveyance to Sacramento River	0	0	<1	0	<1	0	0	0	0	0	0	0	0	0	0	<1	0	0	<1
Roads	832	131	1	141	<1	86	1	1	0	8	117	5	0	<1	61	<1	21	4	44
Recreation Areas	450	53	0	0	0	0	0	0	0	0	213	<1	0	<1	0	0	1	2	3
Alternative 2 Total Permanent Impacts	12,668	297	4	141	<1	86	4	43	0	8	563	43	<1	9	323	3	209	24	92

Note: Acreages presented in this table are based on preliminary engineering design.

[1] Sensitive natural community (upland riparian) or may contain areas that are sensitive natural communities (annual grassland, foothill pine, and oak savanna). In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

[2] Canal and ditch land cover types are included but are unlikely to be regulated based on current federal and state definitions.

Table 9-4b. Alternative 2 Acreages of Temporary Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types in Project Component Areas

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Sacramento River Diversion and Conveyance to Regulating Reservoirs	0	0	<1	0	<1	0	1	0	0	0	0	0	0	1	0	0	<1	0	<1
Regulating Reservoirs and Conveyance Complex	537	0	3	0	<1	0	<1	9	0	0	0	3	223	<1	14	<1	3	1	1
Inlet/Outlet Works	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	<1
Dams and Dikes	34	2	0	0	0	0	<1	<1	0	0	2	<1	0	<1	2	0	<1	<1	0
Quarries and Rock Processing Facilities	98	0	0	1	0	0	<1	<1	0	0	1	<1	0	0	<1	0	1	0	0
Conveyance to Sacramento River	0	0	2	0	5	0	0	0	6	0	0	0	0	0	0	0	3	0	2

Project Components	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Roads	226	21	0	0	0	0	<1	1	0	0	16	1	0	<1	17	0	7	1	2
Recreation Areas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alternative 2 Total Temporary Impacts	895	23	5	1	5	0	2	10	6	0	20	4	223	2	33	<1	14	2	5

Note: Acreages presented in this table are based on preliminary engineering design.

[1] Sensitive natural community (upland riparian) or may contain areas that are sensitive natural communities (annual grassland, foothill pine, and oak savanna). In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

[2] Canal and ditch land cover types are included but are unlikely to be regulated based on current federal and state definitions.

Table 9-5. Comparison of Alternatives 1, 2, and 3 Permanent and Temporary Impacts on Special-Status Plant Habitats, Sensitive Natural Communities, and Wetland and Non-Wetland Water Types

Project Alternative	Annual Grassland[1]	Blue Oak Woodland	Canal[2]	Chamise Chaparral	Ditch[2]	Foothill Pine[1]	Forested Wetland	Freshwater Marsh	Managed Wetland	Mixed Chaparral	Oak Savanna[1]	Pond	Reservoir	Scrub-Shrub Wetland	Seasonal Wetland	Perennial Stream	Intermittent Stream	Ephemeral Stream	Upland Riparian[1]
Alternatives 1 and 3 Total Permanent Impacts	13,108	315	2	<1	2	0	6	42	0	1	646	39	<1	8	330	5	202	27	56
Alternative 2 Total Permanent Impacts	12,668	297	4	141	<1	86	4	43	0	8	563	43	<1	9	323	3	209	24	92
Alternatives 1 and 3 Total Temporary Impacts	915	23	8	1	1	0	2	14	6	0	19	4	223	2	36	<1	14	2	6
Alternative 2 Total Temporary Impacts	895	23	5	1	5	0	2	10	6	0	20	4	223	2	34	<1	14	2	5

[1] Sensitive natural community (upland riparian) or may contain areas that are sensitive natural communities (annual grassland, foothill pine, and oak savanna). In annual grassland, there is potential for California brome – blue wildrye prairie, gum plant patches, needlegrass – melic grass grassland, and white-tip clover swales. In foothill pine, there is potential for foothill pine-herbaceous. In oak savanna, there is potential for valley oak woodland and forest.

[2] Canal and ditch land cover types are included but are unlikely to be regulated based on current federal and state definitions.

Construction

Construction of Alternative 2 would result in direct permanent and temporary impacts and indirect impacts on special-status plant species as compared to existing conditions. Table 9-3 shows the acreages of direct, permanent and temporary impacts on the two modeled plant species. Tables 9-4a and 9-4b show the acreages of direct, permanent and temporary impacts on each habitat type under Alternative 2. Overall, less acreage would be affected under Alternative 2 as compared to Alternative 1 or 3 but impacts on several habitats would be greater—chamise chaparral, foothill pine, mixed chaparral, pond, shrub-scrub wetland, intermittent stream, and upland riparian. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. While these preconstruction and construction measures are part of Alternative 2, their implementation would not prevent the direct, permanent loss or habitat quality degradation for special-status plant species in the Alternative 2 footprint.

Construction of Alternative 2 would result in the loss of special-status plant species through direct removal and habitat degradation. The Alternative 2 footprint contains adobe lily, as well as the four special-status plant species (bent-flowered fiddleneck, red-flowered bird's-foot trefoil, brittlescale, and San Joaquin spearscale) discussed for Alternatives 1 and 3. Permanent impacts on special-status plant species would result from construction of the same components as described for Alternatives 1 and 3 with two differences. First, additional permanent impacts from construction of the new South Road under Alternative 2 would result in the loss of annual grassland, chamise, mixed chaparral, blue oak woodland, oak savanna, and seasonal wetland. Suitable habitat for dimorphic snapdragon is present in this area. Second, permanent impacts on special-status plant habitats would be reduced due to the decreased reservoir size and inundation area. Under Alternative 2, temporary and indirect impacts would occur at the same facilities as those described for Alternatives 1 and 3.

Operation

The recreation areas would be the same between Alternatives 1, 2, and 3 and impacts in recreation areas under Alternative 2 would be the same as those described for Alternatives 1 and 3. There would be no additional impact from operation of the recreation areas on special-status plant species. All impacts on special-status plant species in the recreation areas have been included in the construction phase impacts, and additional impacts in the area of ground disturbance during the operation phase under Alternative 2 would be avoided by implementation of the same BMPs identified for operation of Alternatives 1 and 3. Impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that construction of the South Road would result in greater loss of annual grassland, chamise, mixed chaparral, blue oak woodland, oak savanna, and seasonal wetland, and the smaller reservoir would result in somewhat smaller loss of special-status plant habitats. The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-1.1 and VEG-1.2 would reduce the level of impact to less than significant. Operation impacts on special-status plants would be the same as Alternatives 1 and 3 and the same BMPs for operation would be

implemented. There would be no impact in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of BMPs, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-1.3 would reduce the level of impact from vegetation maintenance to less than significant.

NEPA Conclusion

Construction and operation effects on special-status plant species would be the same as described above for CEQA. Construction of Alternative 2 would result in a substantial adverse effect on special-status plant species as compared to the No Project Alternative. Construction effects would be similar to Alternatives 1 and 3 except that construction of the South Road would result in greater loss of annual grassland, chamise, mixed chaparral, blue oak woodland, oak savanna, and seasonal wetland, and the smaller reservoir would result in somewhat smaller loss of special-status plant habitats. The same BMPs (BMP-10, BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36) and mitigation measures (Mitigation Measures VEG-1.1 and VEG-1.2) as those identified for Alternatives 1 and 3 would be implemented for construction of Alternative 2. Through implementation of the BMPs and Mitigation Measures VEG-1.1 and VEG-1.2, construction effects would be reduced to no adverse effect. Operation of Alternative 2 could result in a substantial adverse effect on special-status plant species in vegetation maintenance areas as compared to the No Project Alternative. Implementation of BMPs, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-1.3 is required. Therefore, operation effects would not be adverse.

Impact VEG-2: Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

No Project

The No Project Alternative would not construct or operate any new facilities, and there would be no temporary impacts on sensitive natural communities from temporary construction staging or other disturbance and no permanent impacts from placement of facilities in sensitive natural communities. In addition, under the No Project Alternative operations of existing facilities, such as the TC Canal, RBPP, and GCID Main Canal, would continue. The owner/operators of these facilities would operate within the conditions and requirements of existing permits and agreements meant to protect riparian habitat or other identified sensitive natural communities. Furthermore, activities that currently occur within the study area such as grazing or other rural agricultural activities would continue to occur and may result in effects to riparian habitat or other sensitive natural communities but would do so in the context of existing regulations, requirements, and activities.

Significance Determination

The No Project Alternative would not result in a substantial adverse effect on riparian habitat or other sensitive natural communities. The No Project Alternative would have no impact or effect on state or federally protected sensitive natural communities.

Alternatives 1 and 3

Construction

Construction of Alternative 1 or 3 would result in direct permanent and temporary impacts on sensitive natural communities. Tables 9-2a and 9-2b show the acreages of permanent and temporary impacts on the sensitive natural community types in each component area under Alternatives 1 and 3. Indirect impacts due to construction of Alternative 1 or 3 could occur due to changes in hydrology of sensitive natural communities outside the construction area due to erosion and sedimentation during construction.

The Authority will implement BMPs during construction of Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on sensitive natural communities. These BMPs would limit direct impacts on sensitive natural communities because they would train construction workers on the importance of preserving sensitive natural communities outside of the construction footprint (BMP-33) and require fencing of sensitive natural communities where avoidance is feasible (BMP-35). BMP-35 also restricts off-road driving in the construction area, where avoided sensitive natural communities could be damaged or destroyed. BMP-36 includes removing, bagging, and disposing of invasive species at a waste facility and would reduce the potential for the spread of invasive plant species into sensitive natural communities. BMP-12 and BMP-13 would also limit indirect impacts on sensitive natural communities by implementing a SWPPP with SPCCPs that would protect habitats outside of the construction area from erosion and sedimentation. Preconstruction and construction measures are part of Alternatives 1 and 3. The measures would not prevent the permanent loss or habitat quality degradation of sensitive natural communities in the footprint for Alternatives 1 and 3.

Sensitive natural community types include upland riparian habitat, sensitive natural communities in annual grasslands, and sensitive natural communities in oak savanna. All these sensitive natural community types would experience similar types of permanent, direct impacts associated with construction, including earthmoving, vegetation removal, filling, and hydrological interruption. Construction activities would also result in the temporary disturbance of these sensitive natural community types during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. The impacts on riparian habitat that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11.

There would be no permanent or temporary impacts associated with the following sensitive communities and facilities because they are not present in these areas of the facility:

- No permanent impacts on upland riparian habitat from the construction of the Sacramento River diversion and conveyance to regulating reservoirs or the regulating reservoirs and conveyance complex;
- No permanent or temporary impacts on annual grassland from the construction of the Sacramento River diversion or conveyance to the Sacramento River;
- No permanent or temporary impacts on oak savanna from the construction of the Sacramento River diversion and conveyance to regulating reservoirs, regulating

reservoirs and conveyance complex, conveyance to Sacramento River, or Comm Road South; and

- No temporary impact on upland riparian habitat, annual grassland, or oak savanna from the construction of new roads or recreation areas.

Operation

As discussed for operation effects in Impact VEG-1, the construction impact acreages for the recreation areas include the entire recreation area beyond where the constructed facility would be placed and are overestimated. Although operation-phase impacts of the Sites Reservoir under Alternative 1 or 3 could occur in undeveloped parts of the recreation areas due to maintenance and visitor use of spaces outside of the constructed facility, these areas have been included in the construction impact acreage. Therefore, there would be no additional operations impacts from recreation activities on sensitive natural communities in the recreation areas. In addition, the Recreation Management Plan (Section 2D.8) would require signs, fencing, or other exclusion practices to protect any sensitive natural communities from recreation use.

Maintenance of Alternatives 1 and 3 facilities would require access that is adjacent to sensitive natural communities. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns would occur on an as-needed basis and could affect sensitive natural communities if they are present in the vegetation maintenance areas. Implementation of the LMP and Recreation Management Plan would include requirements for signage, fencing, and other exclusion practices during maintenance to avoid sensitive natural communities identified and avoided during construction. Implementing BMP-12 would be required as part of maintenance activities to prevent erosion and sedimentation off site that could occur from ground disturbance. These effects would be of limited duration and intensity. BMP-13 would be implemented to prevent spills of hazardous or petroleum substances from contaminating sensitive natural communities off site.

Water surface elevation (WSE) changes in Sites Reservoir would occur after inundation and during operations of the reservoir. The effects on vegetation on the reservoir shoreline would be similar to those in other California reservoirs, such that a “bathtub ring” of unvegetated shore would develop between the typical low- and high-water elevation levels established as the reservoir stores and releases water. Riparian plant species could eventually establish at the high-water elevation above the unvegetated area on parts of the shoreline.

CEQA Significance Determination and Mitigation Measures

Alternative 1 or 3 would result in significant impacts on state-protected sensitive natural communities by direct removal of vegetation in these communities for the regulating reservoirs and conveyance complex, Sites Reservoir, roads, and recreation areas. Implementation of BMP-33, BMP-35, and BMP-36 will avoid and minimize permanent and temporary impacts on sensitive natural communities. Indirect impacts under Alternative 1 or 3 due to erosion, sedimentation, and contamination from hazardous or petroleum substances into sensitive natural communities located outside of the construction area would be avoided with implementation of BMP-12 and BMP-13. The sensitive natural communities in the construction footprint are important because they are rare and/or declining in California and elsewhere. Measures would be

implemented before and during construction to avoid and minimize impacts on sensitive natural communities. The construction of Alternative 1 or 3 would still result in the loss of sensitive natural communities and habitat quality degradation. The loss of sensitive natural communities would be significant. Implementation of Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the level of impact because all locations of sensitive natural communities in and within 300 feet of the Project footprint would be identified and mapped, and the acquisition and permanent protection of in-kind communities for each affected sensitive natural community at identified ratios would ensure survival of the affected sensitive natural community in perpetuity. Mitigation for impacts on sensitive communities within annual grassland could be accomplished in one or two seasons because of the relatively rapid growth rate of herbaceous plants. Implementation of mitigation would avoid, minimize, and compensate for loss of sensitive communities within annual grassland and would reduce the level of this impact to less than significant. For upland riparian and oak savanna communities, the removal of mature trees would be a long-term impact because of the length of time that would be required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees. This impact would remain significant and unavoidable even with mitigation because of the long-term loss of upland riparian and oak savanna habitat.

Operation impacts from vegetation maintenance could result in losses of sensitive natural communities in annual grasslands, oak savanna, oak woodland, or upland riparian, and this would be a significant impact. Operation impacts on sensitive natural communities from erosion, sedimentation, and spills of hazardous or petroleum substances would be avoided by implementing BMP-12 and BMP-13. In addition, the LMP and the Recreation Management Plan would include exclusion practices that would be implemented during the operations phase. Implementation of Mitigation Measure VEG-2.3 would reduce the level of impact to less than significant because sensitive natural communities in vegetation maintenance areas would be identified, fenced, and avoided during vegetation maintenance activities.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

Prior to the start of any Project construction activities, the Authority will retain qualified botanists to conduct surveys of the Project area, including all permanent and temporary impact areas and an additional buffer of 250 feet to encompass potential indirectly affected areas. The surveys will be conducted in accordance with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (California Department of Fish and Wildlife 2018), or most current protocols. Surveys will occur during the season that plant species would be evident and identifiable, which generally is during their blooming season. Surveys will also include assessment of SRA cover, using standard methods for measuring linear feet and area, in all permanent and temporary impact areas. The surveys will be conducted no more than 3 years prior to the start of ground-disturbing activities.

The results of the survey will be submitted in a report to CDFW and/or USFWS for review no less than 1 year prior to the start of ground-disturbing activities. The report will include the location and description of all work areas and the location and description of all sensitive natural communities and oak woodlands, and it will identify locations where

effective avoidance measures could be implemented. In areas where no sensitive natural communities or oak woodlands are present, no further mitigation will be required.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

Where surveys determine that a sensitive natural community is present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid Project impacts on the community, if feasible, through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for sensitive natural communities will be a minimum of 50 feet established around each community site, the boundaries of which will be clearly marked with construction exclusion fencing or its equivalent. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 250 feet of the sensitive natural community. The size of activity exclusion zones may be reduced below 50 feet through consultation with a qualified biologist and with concurrence from CDFW or, for any federally protected communities of concern, from USFWS based on site-specific conditions.

Prior to any activities that would result in permanent impacts on sensitive natural communities, the Authority will acquire and permanently protect compensation habitat for each affected sensitive natural community at a minimum 1:1 ratio (1 acre restored or created for every 1 acre removed), or by an equivalent or greater requirement determined through coordination with state and/or federal agencies (CDFW, USFWS) during permit processing. The compensation acreage used for the ratio will be based on the area of impact as determined by surveys required under Mitigation Measure VEG-2.1. In addition to mitigating the loss of riparian habitat, specific measures will be included to compensate for the loss of SRA cover (area and linear feet), as portions of the affected riparian habitat also provide SRA cover for fish. Loss of SRA cover will be mitigated at a ratio of 3:1 or as determined through coordination with state and federal agencies (CDFW, USFWS, and NMFS). The mitigation credits for SRA cover mitigation will apply toward riparian habitat mitigation requirements (i.e., the acreage required for compensation will not be duplicated).

Compensation habitat for sensitive natural communities will consist of existing off-site in-kind habitat acquired in-fee, through conservation easements, or from by purchasing credits from a certified conservation bank or mitigation bank. If off-site habitat is acquired (permittee-responsible mitigation), the habitat will require monitoring by the Authority. If credits are purchased from a certified bank, no further monitoring will be required.

The Authority will monitor any permittee-responsible mitigation areas annually for a period of 10 years for woodland habitats or 5 years for herbaceous habitats, or as required by CDFW or USFWS, to verify that the community suitability is maintained including survival and cover of plantings. For these mitigation areas, the Authority will prepare and implement an operations and management plan for each compensation community, with

funding provided through an endowment. The plan will include requirements to monitor the mitigation areas, including comparisons between the mitigation habitat and a reference site of the same habitat retained in the pre-construction survey buffer area. Monitoring criteria may include survival, size, vigor, and percent cover of the dominant tree species for woodland habitats; percent cover of shrubs for riparian habitat and herbaceous species for grassland habitats; percent cover of invasive species for all sensitive community types; and any other relevant performance standards of the permittee-responsible mitigation required by agencies as part of the permits. In any years in which the performance standards are not met, causes for the failure, such as inadequate maintenance, irrigation, or other biotic factors will be assessed; remedial measures will be developed and implemented; and replacement plantings will be installed. The monitoring period for any subsequent plantings will restart from the date of planting. The Authority will submit annual monitoring reports to CDFW or, for any federally protected communities, to USFWS for review and verification that the Project remains in compliance with the mitigation.

Mitigation Measure VEG-2.3: Establish Activity Exclusion Zones Around Sensitive Natural Communities Prior to Vegetation Maintenance Activities

The Authority will retain a qualified botanist to use the results of the surveys conducted under Mitigation Measure VEG-2.1 to mark the locations of sensitive natural communities in vegetation maintenance areas. The Authority will fence and avoid any parts of sensitive natural communities that occur in or within 50 feet of the vegetation maintenance areas that could be affected by surface-disturbing maintenance activities. The 50-foot distance could be reduced if there are existing barriers, such as roads or buildings, between the maintenance area and the sensitive natural community that would prevent movement of soil or any herbicides used for maintenance into the sensitive natural community. The fencing will allow for wildlife movement and the Authority will maintain the fencing throughout the operations period. Alternatively, if sensitive natural communities cannot be completely avoided, the size of the affected area will be minimized to the full extent possible. If the remaining impacts on sensitive natural communities as the result of vegetation maintenance activities added together exceed 0.1 acre, the Authority will implement additional compensatory mitigation based on the same requirements as described in Mitigation Measure VEG-2.2.

NEPA Conclusion

Construction and operation effects on sensitive natural communities would be the same as described above for CEQA. Construction of Alternatives 1 and 3 would result in a substantial adverse effect on sensitive natural communities as compared to the No Project Alternative by direct removal of vegetation in these communities for the regulating reservoirs and conveyance complex, Sites Reservoir, roads, and recreation areas. Implementation of BMP-33, BMP-35, and BMP-36 will avoid and minimize permanent and temporary effects on sensitive natural communities. Indirect effects under Alternative 1 or 3 due to erosion, sedimentation, and contamination from hazardous or petroleum substances into sensitive natural communities located outside of the construction area would be avoided with implementation of BMP-12 and BMP-13. The construction of Alternative 1 or 3 would still result in the loss of sensitive natural

communities and habitat quality degradation. Implementation of Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the effect because all locations of sensitive natural communities in and within 300 feet of the footprints of Alternative 1 or 3 would be identified and mapped, and the acquisition and permanent protection of in-kind communities for each affected sensitive natural community at identified ratios would ensure survival of the affected sensitive natural community in perpetuity. Implementation of the BMPs and mitigation measures would reduce the construction effects to no adverse effect for sensitive communities in annual grassland. Effects would remain substantially adverse for upland riparian and oak savanna because of the length of time that would be required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees as compared to the No Action Alternative. Operation of Alternative 1 or 3 could result in substantial adverse effects on sensitive natural communities in vegetation maintenance areas as compared to the No Project Alternative. Implementation of BMP-12, BMP-13, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-2.3 is required. Therefore, operation effects on sensitive natural communities would not be adverse.

Alternative 2

Construction

The extent of Alternative 2 permanent and temporary impacts, quantified as described above in Section 9.4, *Methods of Analysis,* is shown in Tables 9-4a and 9-4b. All land cover type acreages are preliminary and subject to change pending field review. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. While these preconstruction and construction measures are part of Alternative 2, their implementation would not prevent the permanent loss or habitat quality degradation of sensitive natural communities in the Alternative 2 footprint.

Construction of Alternative 2 would result in the loss of sensitive natural communities through direct removal of vegetation and habitat quality degradation. Permanent and temporary impacts on sensitive natural communities would result from construction of the same facilities as described for Alternatives 1 and 3, with three differences. First, additional permanent impacts from construction of the new South Road under Alternative 2 would result in permanent loss of upland riparian, foothill pine woodland, and oak savanna. Second, permanent impacts resulting from fill of Sites Reservoir on sensitive natural communities would be smaller due to the decreased reservoir size and inundation area. Third, additional impacts from construction of the Sacramento River discharge would result in permanent loss of upland riparian. The effects on upland riparian that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11.

Under Alternative 2, temporary impacts would be as described for Alternatives 1 and 3, except for additional temporary loss of upland riparian at the Sacramento River discharge.

Operation

The recreation areas would be the same between Alternatives 1, 2, and 3 and impacts in recreation areas under Alternative 2 would be the same as those described for Alternatives 1 and 3. There would be no additional impact in recreation areas on sensitive natural communities under Alternative 2. All impacts on sensitive natural communities in the recreation areas have

been included in the construction phase impacts, and additional impacts of recreational use under Alternative 2 would be avoided during the operation phase by implementation the Recreation Management Plan. The impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3. Impacts due to ground disturbance during maintenance throughout the Alternative 2 area would be minimized by implementation of the same BMPs identified for operation of Alternatives 1 and 3. Potential for establishment of riparian species on the reservoir shoreline would also be as described for Alternatives 1 and 3.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that construction of the new South Road under Alternative 2 would result in permanent loss of upland riparian, foothill pine woodland, and oak savanna; the smaller reservoir would result in somewhat smaller loss of sensitive natural communities; and construction of the Sacramento River discharge would result in permanent loss of upland riparian habitat. The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the level of impact to less than significant for the loss of sensitive communities in annual grassland. This impact would remain significant and unavoidable even with mitigation for foothill pine woodland, upland riparian, and oak savanna.

Operation impacts on sensitive natural communities would be avoided by the implementation of the same BMPs identified for operation of Alternatives 1 and 3, the LMP, and the Recreation Management Plan. There would be no impact in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of Mitigation Measure VEG-2.3 would reduce the level of impact from vegetation maintenance to less than significant.

NEPA Conclusion

Construction and operation effects on sensitive natural communities would be the same as described above for CEQA. Construction of Alternative 2 would result in a substantial adverse effect on sensitive natural communities as compared to the No Project Alternative. Construction of Alternative 2 would result in similar effects to Alternatives 1 and 3 except that construction of the new South Road under Alternative 2 would result in permanent loss of upland riparian, foothill pine woodland, and oak savanna; the smaller reservoir would result in somewhat smaller loss of sensitive natural communities; and construction of the Sacramento River discharge would result in permanent loss of upland riparian habitat. The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-2.1 and VEG-2.2 would reduce the level of effect, but effects on upland riparian, foothill pine woodland, and oak savanna would remain substantially adverse even with mitigation. Operation of Alternative 2 could result in a substantial adverse effect on sensitive natural communities in vegetation maintenance areas as compared to the No Project Alternative. Implementation of the BMPs, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-2.3 is required. Therefore, operation effects would not be adverse.

Impact VEG-3: Substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means

No Project

The No Project Alternative would not construct or operate any new facilities. State and federally protected wetlands and non-wetland waters occur in the study area. Because the No Project Alternative would not construct or operate new facilities, there would be no temporary impacts on wetlands and non-wetland waters from temporary construction staging or other disturbance or permanent impacts from placement of facilities in wetlands or non-wetland waters. In addition, under the No Project Alternative operations of existing facilities, such as the TC Canal, RBPP, and GCID Main Canal, would continue. The owner/operators of these facilities would operate within the conditions and requirements of existing permits and agreements meant to protect wetlands. Furthermore, activities that currently occur within the study area such as grazing or other rural agricultural activities would continue to occur and may affect wetlands but would do so in the context of existing regulations, requirements, and activities.

Significance Determination

The No Project Alternative would not result in a substantial adverse effect on wetlands. The No Project Alternative would have no impact or effect on state or federally protected wetlands and non-wetland waters.

Alternatives 1 and 3

Construction

Construction of Alternatives 1 and 3 would result in direct permanent and temporary impacts and indirect impacts on wetlands and non-wetland waters, including waters of the state regulated by the State Water Board and federally protected wetlands and non-wetland waters of the United States regulated by the USACE. Tables 9-2a and 9-2b show the estimated acreages of direct permanent and temporary impacts on each wetland and non-wetland water type in each component area under Alternatives 1 and 3.

The Authority has incorporated BMPs into the design of Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on wetlands and non-wetland waters. These BMPs would limit direct impacts on wetlands and non-wetland waters because they would train construction workers on the importance of preserving wetlands and non-wetland waters outside of the construction footprint (BMP-33) and require fencing of wetlands and non-wetland waters where avoidance is feasible (BMP-35). BMP-35 would also restrict off-road driving in the construction area, where avoided wetlands and non-wetland waters could be damaged or destroyed. BMP-36 includes removing, bagging, and disposing of invasive species at a waste facility and would reduce the potential for the spread of invasive plant species into wetlands and non-wetland waters. BMP-12 and BMP-13 would also limit indirect impacts on wetlands and non-wetland waters by implementing a SWPPP that would protect habitats outside of the construction area from erosion, sedimentation, and spills of hazardous or petroleum substances. While these preconstruction and construction measures are part of Alternatives 1 and 3, the

measures would not prevent the permanent loss or habitat quality degradation of wetlands and non-wetland waters in the Alternatives 1 and 3 footprint of all components.

Wetlands

Construction of Alternative 1 or 3 would result in the loss of wetlands through direct removal, filling, inundation, and hydrological interruption and in habitat quality degradation. Permanent impacts on wetlands would result from earthmoving and vegetation removal for construction of facilities associated with the regulating reservoirs and conveyance complex, Sites Reservoir and related facilities, conveyance to the Sacramento River, recreation areas, and new roads. Construction of the aforementioned facilities would result in the permanent loss of forested wetland, freshwater marsh, scrub-shrub wetland, and seasonal wetland in the Alternatives 1 and 3 footprint. The impacts on forested wetland or scrub-shrub wetland that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11. There are no mapped wetlands in the footprints of the Sacramento River diversion and conveyance to regulating reservoirs, and therefore there would be no permanent impacts on wetlands from the construction activities associated with these components.

Because exact locations of construction-related activities are not known for the new roads, construction of the new roads is assumed to result in direct permanent loss of wetlands in the entire construction disturbance area. However, a substantial portion of these impacts would be avoided or temporary if the wetlands were avoided or restored after construction. The maximum extent (in acres) of wetlands that would be affected by construction of the new roads is shown in Table 9-2a.

Under Alternatives 1 and 3, construction activities would also result in the temporary disturbance of wetlands during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. Temporary impacts on wetlands would occur during construction of the regulating reservoirs and conveyance complex, Sites Reservoir and related facilities, conveyance to Sacramento River, the day-use boat ramp/parking recreation area, and roads. Construction of most facilities would result in temporary impacts on freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland. There are no wetlands in the footprints of the Sacramento River diversion and conveyance to regulating reservoirs, and therefore there would be no temporary impacts on wetlands from the construction activities associated with these components.

Indirect impacts due to construction of Alternative 1 or 3 would occur due to changes in hydrology of wetlands outside the construction area due to erosion and sedimentation during construction. These would be reduced by implementation of BMP-12 and BMP-36.

Non-Wetland Waters

Construction would result in the loss of non-wetland waters and habitat quality degradation through direct removal, filling, and hydrological interruption. Permanent impacts on non-wetland waters would result from earthmoving and vegetation removal for construction of the regulating reservoirs, Sites Reservoir and related facilities, conveyance to Sacramento River, recreation areas, and new roads. Construction of these facilities would result in the permanent loss of canal, ditch, ephemeral stream, intermittent stream, perennial stream, pond, and a small area of Funks

Reservoir in the footprints of Alternatives 1 and 3. There are no non-wetland waters in the footprints of the Sacramento River diversion and conveyance to regulating reservoirs, and therefore there would be no permanent impacts on non-wetland waters from the construction activities associated with these components.

The Authority has estimated the maximum extent (in acres) of non-wetland waters that would be affected by construction of the new roads (Table 9-2a). Because exact locations of construction-related activities are not known within the road alignment corridor, construction of the new roads is expected to result in direct permanent loss of non-wetland waters in the entire construction disturbance area. Impacts to non-wetland waters could be avoided or reduced through road refinements (e.g., narrowing the road alignment corridor to avoid non-wetland waters).

Construction activities would also result in the temporary disturbance of non-wetland waters during construction and reduced habitat quality in the interim between the completion of construction and the establishment of habitat restoration plantings. Temporary impacts on non-wetland waters would occur during construction of the Sacramento River diversion and conveyance to regulating reservoirs, Sites Reservoir and related facilities, conveyance to Sacramento River, the day-use boat ramp/parking recreation area, and roads. Construction of these facilities would result in temporary impacts on canal, ditch, ephemeral stream, intermittent stream, perennial stream, pond, and reservoir.

Indirect construction impacts, such as erosion and sedimentation, could change the hydrology of non-wetland waters outside the construction area. These would be reduced by implementation of BMP-12 and BMP-36.

Operation

Operation of the recreation areas under Alternative 1 or 3 would not result in additional impacts beyond those described for construction, including ongoing recreational activities in the three recreation areas. As discussed for operation effects in Impact VEG-1, the construction impact acreages for the recreation areas include the entire recreation area beyond where the constructed facility would be placed and are overestimated. Although operation-phase impacts of the Sites Reservoir under Alternative 1 or 3 could occur in undeveloped parts of the recreation areas due to visitor use of spaces outside of the constructed facility, these areas have been included in the construction impact acreage. Therefore, there would be no additional operations impacts from recreation activities on wetlands and non-wetland waters in the recreation areas.

Maintenance of Alternatives 1 and 3 facilities would require access that is adjacent to wetlands and non-wetland waters. Vegetation maintenance activities around facilities that involve grading, tilling, disking, or controlled burns would occur on an as-needed basis and could affect wetlands or non-wetland waters if they are present in the vegetation maintenance areas. The LMP and Recreation Management Plan would include requirements for signage, fencing, and other exclusion practices during maintenance to avoid wetlands and non-wetland waters identified and avoided during construction. BMP-12 includes erosion and sedimentation control measures that would be required for maintenance activities involving ground disturbance that could result in erosion and sedimentation into wetlands and non-wetland waters, and these effects would be avoided.

CEQA Significance Determination and Mitigation Measures

Alternative 1 or 3 would result in significant impacts on state- and federally protected wetlands and non-wetland waters by direct removal, filling, hydrological interruption, and other indirect impacts due to erosion and sedimentation into wetlands and non-wetland waters located outside of the construction area. The loss of ditch and canal habitats would be considered significant only where the ditch or canal supports wetland habitat, such as freshwater marsh, scrub-shrub wetland, or seasonal wetland. The Authority will implement BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36 to minimize direct impacts on wetlands and non-wetland waters before and during construction. While BMPs would minimize impacts on wetlands and non-wetland waters, Alternatives 1 or 3 would still result in the permanent loss of wetlands and non-wetland waters and habitat quality degradation. The permanent loss of wetlands and non-wetland waters would be significant. Implementation of Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the level of impact to less than significant because all wetlands and non-wetland waters in and within 300 feet of the Project footprint would be identified and mapped, and the acquisition and permanent protection of in-kind wetlands and non-wetland waters for each affected wetland and non-wetland water at identified ratios in Mitigation Measures VEG-3.2 and VEG-3.3 and any additional requirements identified during the permitting process would ensure no net loss of wetlands and non-wetland waters in perpetuity.

Operation impacts on wetlands and non-wetland waters from erosion, sedimentation, and spills of hazardous or petroleum substances would be avoided by implementation of BMP-12 and BMP-13. Development and implementation of the LMP and the Recreation Management Plan would reduce impacts on wetlands and non-wetland waters. Operation impacts on wetlands and non-wetlands waters from vegetation maintenance could result in losses of wetlands and non-wetland waters, and this would be a significant impact. Implementation of Mitigation Measure VEG-3.4 would reduce the level of impact to less than significant, because all locations of wetlands and non-wetland waters within the vegetation maintenance areas would be identified, fenced, and avoided by vegetation maintenance activities.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

To the extent practicable, the Authority will avoid and minimize impacts on wetlands and non-wetland waters during construction by implementing the measures listed below. These measures will be incorporated into contract specifications and implemented by the construction contractor. Compliance will be monitored by a qualified biologist and reported as indicated in BMP-35.

- The roads, pipelines, electrical corridors, and recreation areas will be designed, to the extent practicable, to avoid direct and indirect impacts on wetlands and non-wetland waters.
- In wetlands and non-wetland waters that will be preserved, construction activities will be avoided in saturated or ponded natural wetlands and drainages during the wet season (spring and winter) to the maximum extent feasible. Where such activities are unavoidable, protective practices such as use of padding or vehicles with balloon tires will be employed.

- Exposed drainage banks and levees above drainages will be stabilized immediately following completion of construction activities. Non-wetland waters will be restored in a manner that encourages vegetation to reestablish to its pre-Project condition and reduces the effects of erosion on the drainage system.
- Any trees, shrubs, debris, or soils that are inadvertently deposited below the ordinary high-water mark of streams will be removed in a manner that minimizes disturbance of the drainage bed and bank.
- To the extent feasible, in-stream construction below the ordinary high-water mark of natural drainages will be restricted to the low-flow period (generally April through October).

Where wetlands or non-wetland waters (streams or ponds) are present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid Project impacts on wetlands, streams, and ponds through the establishment of activity exclusion zones, in which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones will be established around each wetland and at the edges of each stream or pond, the boundaries of which will be clearly marked with construction exclusion fencing. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur in 250 feet of a wetland, stream, or pond. The size of activity exclusion zones may be reduced based on site-specific conditions, such as the presence of hydrologic or topographic barriers, through consultation with a qualified biologist and with concurrence from CDFW and/or State Water Board, for state-regulated wetlands and non-wetland waters or, from USACE for any federally protected wetlands or non-wetland waters. Where temporary impacts on wetlands, streams, or ponds cannot be avoided during construction, the impact will be compensated as a permanent impact.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

For unavoidable temporary and permanent impacts on wetlands, the Authority will compensate for the loss by creation or acquisition and permanent protection of suitable wetland habitat to ensure no net loss of wetland habitat functions and values. Compensation will be provided for all permanent impacts and temporary impacts on wetlands that last longer than 1 year, and mitigation will be implemented immediately following temporary impacts and concurrent with or in advance of permanent impacts. Final compensation acreages will be based on the verified aquatic resources delineation and through the CWA Section 404 and 401 permitting process. Mitigation for temporary impacts will occur on site, if feasible. Compensation will also be in compliance with the *Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division* (U.S. Army Corps of Engineers 2015). Any permanent impact on wetlands will be mitigated by creating or preserving wetlands at a minimum 1:1 ratio (1 acre restored or created for every 1 acre filled), but the final compensation ratios may include additional compensation and will be based on site-specific information and determined through coordination with state and federal agencies (State Water Board, USACE) during permit

processing. Where wetland impacts overlap with listed species impacts, mitigation will be coordinated for both resources and will not be duplicated.

Wetland mitigation will consist of replacement habitat that may be a combination of the following two options, purchase of mitigation bank credits and permittee-responsible mitigation. Purchase of mitigation bank credits will be the preferred compensation method to reduce the risk and uncertainty of mitigation success and avoid temporal losses of wetland function during the establishment phase of wetland creation or restoration.

- The Authority will purchase offsite mitigation bank credits for the affected wetland type (i.e., forested wetland [riparian], freshwater marsh, scrub-shrub wetland [riparian], seasonal wetland) at a USACE-approved and CDFW-approved mitigation bank to allow for economy of scale and higher quality habitat due to large patch size. Preference will also be for a mitigation bank in the same watershed as the affected wetlands. The Authority will provide written evidence to the resource agencies that compensation has been established through the purchase of mitigation credits. The Authority will not be required to monitor mitigation credit wetlands.
- For permittee-responsible mitigation, the Authority will retain a qualified restoration biologist to develop a wetland restoration and monitoring plan that involves creating or enhancing the affected wetland type (i.e., forested wetland [riparian], freshwater marsh, scrub-shrub wetland [riparian], seasonal wetland) in open space in the Project area or at an offsite location. The Authority will coordinate with CDFW, USACE, and the State Water Board for final plan approval prior to the removal of any wetland habitat and will ensure implementation of the wetland restoration plan. The plan will be based on the Project alternative selected and the extent of wetlands at the time of construction. The plan will identify how, where, and when mitigation will occur, monitoring and maintenance activities, success criteria, funding assurances, appropriate long-term management measures, and agency reporting requirements. The plan will include a species list and specify the number of each species, planting locations, and maintenance requirements. Plantings will use an appropriate method (i.e., seed, container plant, or plug) for the best survival potential and cost efficiency. The extent of planting will be adequate to ensure that the required mitigation ratio will be reached by the end of the monitoring period and that stem density, canopy cover, and species composition requirements are met. Species seeded will be similar to those removed from the Project area and will consist of inoculum taken from the affected wetlands. The survival rates and vegetative cover of wetland plantings and wetland hydrology will be monitored annually for 5 years, or an equivalent or longer period as required in the Project permits and compared with nearby undisturbed reference wetlands. Progress reports will be provided to the USACE and the State Water Board at the completion of each monitoring period. If the percent vegetative cover of wetland plants is equivalent to reference sites at the end of the monitoring period, the revegetation will be considered successful. Planting survival requirements will be 70% at the end of 5 years, or greater, if required by the Project permits. If the survival criterion of 70% is not met in any monitoring year or at the end of the monitoring period, planting and monitoring will be repeated after mortality causes have been identified and remedial measures have been implemented, and the

monitoring period will be extended to account for the required number of monitoring years for all plantings. Mitigation sites will be protected in perpetuity in a conservation easement or through deed restriction.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

For unavoidable temporary and permanently affected streams and ponds, the Authority will compensate for the loss by creation or acquisition and permanent protection of suitable open-water habitat to ensure no net loss of stream or pond habitat functions and values. Compensation will be provided for all permanent impacts and temporary impacts on non-wetland waters that last longer than 1 year, and mitigation will be implemented immediately following temporary impacts and concurrent with or in advance of permanent impacts. Final compensation acreages will be based on the verified aquatic resources delineation and through the CWA Section 404 and 401 permitting process. Mitigation for temporary impacts will occur on site, if feasible. Compensation will also be in compliance with the *Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division* (U.S. Army Corps of Engineers 2015). Any permanent effect on open-water habitat will be mitigated by creating or preserving habitat at a 1:1 ratio (1 acre restored or created for every 1 acre filled), or by an equivalent or greater requirement as determined through coordination with state and federal agencies (State Water Board, USACE) during permit processing. Compensation will be provided for all permanent impacts and temporary impacts on non-wetland waters that last longer than 1 year, and mitigation will be implemented concurrent with or in advance of construction-related impacts. Final compensation acreages will be based on the verified aquatic resources delineation and through the CWA Section 404 and 401 permitting process. Where stream or pond impacts overlap with listed species impacts, mitigation will be coordinated for both resources and not be duplicated.

Stream and pond mitigation will consist of replacement habitat that may be a combination of the following two options, which include purchase of mitigation bank credits and permittee-responsible mitigation. Purchase of mitigation bank credits will be the preferred compensation method to reduce the risk and uncertainty of mitigation success and avoid temporal losses of stream and pond functions during the establishment phase of creation or restoration.

- The Authority will purchase offsite mitigation bank credits at a USACE-approved and CDFW-approved mitigation bank. Out-of-kind compensation may be used based for stream or pond (, if approved by the regulatory agencies. Preference will also be for a mitigation bank in the same watershed as the affected streams and ponds. The Authority will provide written evidence to the USACE and State Water Board that compensation has been established through the purchase of mitigation credits. The Authority will not be required to monitor mitigation credit non-wetland waters.
- For permittee-responsible mitigation, the Authority will retain a qualified restoration biologist to develop a non-wetland restoration and monitoring plan that involves creating or enhancing the affected water type (i.e., ephemeral, intermittent, or

perennial stream, or pond) in open space in the Project area or at an offsite location. The Authority will coordinate with CDFW, USACE, and the State Water Board for final plan approval prior to the removal of any stream or pond habitat and will ensure implementation of the restoration plan. The plan will be based on the Project alternative selected and the extent of streams and ponds at the time of construction. The plan will identify how, where, and when mitigation will occur, monitoring and maintenance activities, success criteria, funding assurances, appropriate long-term management measures, and agency reporting requirements. The plan will include grading specifications and design information for creation of stream and pond habitat. The bank stability and downcutting of streams and hydrology of ponds will be monitored annually for a minimum of 5 years, or as required in the Project permits. Progress reports will be provided to the USACE and the State Water Board at the completion of each monitoring period. If stream and pond structure and stability are retained at the end of the monitoring period, the mitigation will be considered successful. If the stream stability or pond hydrology is not met in any monitoring year or at the end of the monitoring period, remedial measures will be implemented, and the monitoring period will be extended to account for the required number of monitoring years. Mitigation sites will be protected in perpetuity in a conservation easement or through deed restriction.

Mitigation Measure VEG-3.4: Establish Activity Exclusion Zones Around Wetlands and Non-Wetland Waters Prior to Vegetation Maintenance Activities

The Authority will retain a wetland specialist to mark the boundaries of wetlands and non-wetland waters in vegetation maintenance areas using the verified aquatic resources delineation prepared for Project permitting. If wetlands or non-wetland waters occur in or within 50 feet of the vegetation maintenance areas, the wetlands or non-wetland waters will be fenced and avoided by all surface-disturbing maintenance activities. Alternatively, if wetlands and non-wetland waters cannot be completely avoided, the size of the affected area will be minimized to the full extent possible. The Authority will implement additional compensatory mitigation that is based on the same requirements as those specified in Mitigation Measures VEG-3.2 and VEG-3.3 for any remaining impacts on wetlands or non-wetland waters from vegetation maintenance activities.

NEPA Conclusion

Construction and operation effects on state- and federally protected wetlands and non-wetland waters would be the same as described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on wetlands and non-wetland waters as compared to the No Project Alternative by direct removal, filling, hydrological interruption, and other indirect effects due to erosion and sedimentation into wetlands and non-wetland waters located outside of the construction area. The Authority will implement BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36 to minimize direct effects on wetlands and non-wetland waters before and during construction. While BMPs would minimize effects on wetlands and non-wetland waters, Alternatives 1 or 3 would still result in the permanent loss of wetlands and non-wetland waters and habitat quality degradation. Implementation of Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the effect because all wetlands and non-wetland waters in and within 300

feet of the Project footprint would be identified and mapped, and the acquisition and permanent protection of in-kind wetlands and non-wetland waters for each affected wetland and non-wetland water at identified ratios in Mitigation Measures VEG-3.2 and VEG-3.3 and any additional requirements identified during the permitting process would ensure no net loss of wetlands and non-wetland waters in perpetuity. Operation of Alternative 1 or 3 could result in substantial adverse effects on wetlands and non-wetland waters in maintenance areas as compared to the No Project Alternative. Implementation of BMP-12, BMP-13, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-3.4 is required. Therefore, operation effects would not be adverse.

Alternative 2

Construction

Construction of Alternative 2 would result in direct permanent and temporary impacts and indirect impacts on wetlands and non-wetland waters, including waters of the state regulated by the State Water Board and federally protected wetlands and non-wetland waters of the U.S. regulated by the USACE. Tables 9-4a and 9-4b show the acreages of direct permanent and temporary impacts on each wetland and non-wetland water type under Alternative 2. The BMPs for Alternatives 1 and 3 would also apply to Alternative 2. While these preconstruction and construction measures are part of Alternative 2, their implementation would not prevent the permanent loss or habitat quality degradation of wetlands and non-wetland waters in the Alternative 2 footprint.

Construction of Alternative 2 would result in the loss of wetlands and non-wetland waters and habitat quality degradation through direct removal, filling, and hydrological interruption. Permanent and temporary impacts on wetlands and non-wetland waters would result from construction of the same facilities as described for Alternatives 1 and 3 with two differences. First, additional impacts from construction of the new South Road under Alternative 2 would result in permanent loss of forested wetland, seasonal wetland, scrub-shrub wetland, ephemeral stream, and intermittent stream. Second, permanent impacts resulting from fill of Sites Reservoir on forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland would be smaller due to the decreased reservoir size and inundation area. The impacts on forested wetland or scrub-shrub wetland that is also a component of SRA cover for fish are described for Impact FISH-1 in Chapter 11.

Under Alternative 2, temporary and indirect impacts would be as described for Alternatives 1 and 3.

Operation

The recreation areas would be the same between Alternatives 1, 2, and 3 and impacts in recreation areas under Alternative 2 would be the same as those described for Alternatives 1 and 3. There would be no additional impacts from operation of the recreation areas for Alternative 2 on wetlands and non-wetland waters. All impacts on wetlands and non-wetland waters in the recreation areas have been included in the construction phase impacts, and additional impacts for access roads in the area of disturbance under Alternative 2 would be avoided during the operation phase by implementation of SWPPP requirements for post-construction erosion and

sedimentation control measures. The impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3. Construction of the South Road would result in greater loss of forested wetland, seasonal wetland, scrub-shrub wetland, ephemeral stream, and intermittent stream when compared to Alternatives 1 and 3, given the larger footprint. Construction of the smaller reservoir would result in somewhat smaller losses of forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland due to the locations of these resources and the smaller reservoir footprint (Table 9-4). The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. As with Alternatives 1 and 3, implementation of Mitigation Measures VEG-3.1, VEG-3.2, and VEG-3.3 would reduce the level of impact to less than significant.

Operation impacts on wetlands and non-wetland waters would be the same as described for Alternatives 1 and 3, and the same BMPs identified for operation of Alternatives 1 and 3 would be implemented. There would be no impact in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of the LMP, the Recreation Management Plan, and Mitigation Measure VEG-3.4 would reduce the level of impact from vegetation maintenance to less than significant.

NEPA Conclusion

Construction and operation effects on state- and federally protected wetlands and non-wetland, would be the same as described above for CEQA. Under Alternative 2, construction of the South Road would result in greater loss of forested wetland, seasonal wetland, scrub-shrub wetland, ephemeral stream, and intermittent stream when compared to Alternatives 1 and 3, given the larger footprint. Construction of the smaller reservoir would result in somewhat smaller losses of forested wetland, freshwater marsh, managed wetland, scrub-shrub wetland, and seasonal wetland due to the locations of these resources and the smaller reservoir footprint (Table 9-4). The same BMPs (BMP-12, BMP-13, BMP-33, BMP-35, and BMP-36) and mitigation measures (VEG-3.1, VEG-3.2, and VEG-3.3) as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. Operation of Alternative 2 could result in substantial adverse effects on wetlands and non-wetland waters in maintenance areas as compared to the No Project Alternative. Implementation of BMPs, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-3.4 is required. Therefore, operation effects would not be adverse.

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

All local policies and ordinances that could pertain to the Project are described in Appendix 4A, Section 4A.5.3, *Local/Regional Policies and Regulations*.

No Project

The No Project Alternative would not construct or operate any new facilities. Therefore, there would be no conflict with local policies or ordinances that protect vegetation and wetland resources. In addition, under the No Project Alternative operations of existing facilities, such as the TC Canal, RBPP, and GCID Main Canal, would continue. The owner/operators of these facilities would operate within the conditions and requirements of existing permits and agreements meant to protect vegetation resources and be consistent with local laws and policies.

Significance Determination

The No Project Alternative would not conflict with local policies or ordinances. The No Project Alternative would have no impact/no effect.

Alternatives 1 and 3

Construction

As described in Impacts VEG-1, VEG-2, and VEG-3, construction of Alternative 1 or 3 would affect vegetation and wetland resources. These resources are protected by policies in the Colusa County General Plan (Colusa County 2012), Glenn County General Plan Update Existing Conditions Report (Glenn County 2020), Tehama County General Plan (Tehama County 2009), and 2030 Countywide General Plan (County of Yolo 2009). General plan policies for these counties protect vegetation and wetland resources such as special-status plant species, riparian habitat, oak woodlands, wetlands, and streams. The 2030 Countywide General Plan also protects large valley oaks (*Quercus lobata*), although there are none in the Alternatives 1 and 3 footprint in Yolo County, and promotes removal of invasive plant species.

As described under Impacts VEG-1, VEG-2, and VEG-3, BMPs are incorporated into Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on special-status species, sensitive natural communities, wetlands, and non-wetland waters.

The BMPs that the Authority will implement would not prevent the permanent loss or habitat quality degradation of special-status species habitats, sensitive natural communities, wetlands, and non-wetland waters in the footprint for Alternatives 1 and 3. As described for Impacts VEG-1, VEG-2, and VEG-3, construction of Alternative 1 or 3 facilities would result in permanent and temporary impacts on special-status species habitats, sensitive natural communities, wetlands, and non-wetland waters. One vegetation community not included in Impact VEG-2 as a sensitive natural community is blue oak woodland, which is protected by county policies, as well as the state Oak Woodlands Conservation Act. The extent of blue oak woodland that would be permanently and temporarily affected by construction of Alternative 1 or 3 is shown in Tables 9-2a and 9-2b.

In Glenn County, construction of the GCID Main Canal head gate and improvements would result in temporary impacts on upland riparian habitat and wetlands located in staging areas. In Colusa County, construction of the Sites Reservoir and related facilities would result in permanent and temporary impacts on special-status species habitats, sensitive natural communities, wetlands, non-wetland waters, and blue oak woodland. In Yolo County, construction of the Dunnigan Pipeline and CBD outlet would result in permanent and temporary

impacts on upland riparian habitat, wetlands, and non-wetland waters. No vegetation or wetland resources protected by policies in the Tehama General Plan would be affected by work at the RBPP, the only Alternative 1 or 3 facility in Tehama County, because no ground disturbance would occur.

Operation

As described in Impacts VEG-1, VEG-2, and VEG-3, operation under Alternative 1 or 3 in the recreation areas would not result in additional impacts or require additional mitigation measures. Vegetation maintenance activities for land around facilities that involve grading, tilling, disking, or controlled burns could affect blue oak woodland if it is present in the vegetation maintenance areas. Implementation of the LMP and Recreation Management Plan would include requirements for signage, fencing, and other exclusion practices during maintenance to avoid blue oak woodland identified and avoided during construction.

CEQA Significance Determination and Mitigation Measures

Alternative 1 or 3 would have significant impacts on sensitive vegetation and wetland resources protected by local general plan policies. The BMPs identified for construction under Impacts VEG-1, VEG-2, and VEG-3 will minimize permanent and temporary impacts on special-status species, sensitive natural communities, wetlands, and non-wetland waters. Mitigation Measures VEG-1.2, VEG-2.2, VEG-3.1, VEG-3.2, and VEG-3.3 would minimize and compensate for impacts on these protected sensitive resources except blue oak woodland. Oak woodlands are considered important under the state Oak Woodlands Conservation Act and county general plans. Loss of blue oak woodland from construction under Alternative 1 or 3 would be considered significant. Implementation of Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the level of impact because all locations of blue oak woodland in and within 300 feet of the construction footprint would be identified and mapped, and the acquisition and permanent protection of blue oak woodland for each affected woodland at ratios identified below in the applicable mitigation measures would ensure survival of blue oak woodland in perpetuity. However, the removal of mature blue oak trees would be a long-term impact due to the length of time required for newly planted trees to reach mature size and fully replace the habitat function and habitat value of the removed trees in the woodland community. Additionally, in accordance with the California Oak Woodland Conservation Act (California Public Resources Code 21083.4), no more than 50% of the blue oak woodland loss could be compensated directly through planting. Therefore, there would be a long-term and permanent loss of blue oak woodland habitat from construction even with mitigation and this impact would remain significant and unavoidable.

The Authority will develop and implement the LMP and Recreation Management Plan to protect blue oak woodland with exclusion practices, but operation impacts from vegetation maintenance could result in loss of blue oak woodland, and this would be a significant impact. Implementation of Mitigation Measure VEG-4.3 would reduce the level of impact to less than significant, because all locations of blue oak woodland in the vegetation maintenance areas would be identified, fenced, and avoided during vegetation maintenance activities.

Mitigation Measure VEG-1.2: Establish Activity Exclusion Zones Around Special-Status Plants in Temporary Impact Areas and Compensate for Permanent Impacts on Special-Status Plant Species

This mitigation measure is described for Impact VEG-1.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

This mitigation measure is described for Impact VEG-2.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described for Impact VEG-2.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

This mitigation measure is described for Impact VEG-3.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described for Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This mitigation measure is described for Impact VEG-3.

Mitigation Measure VEG-4.1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands During Construction

Where surveys determine that oak woodlands are present in or adjacent to an area where temporary ground-disturbing activities would take place, the Authority will avoid impacts on oak woodlands through the establishment of activity exclusion zones, within which no ground-disturbing activities will take place, including construction staging or other temporary work areas. Activity exclusion zones for oak woodlands will be established at the edges of oak woodland habitat that is within 50 feet of construction activity, the boundaries of which will be clearly marked with construction exclusion fencing. The establishment of activity exclusion zones will not be required if no construction-related disturbances will occur within 50 feet of an oak woodland.

The following measures will also be implemented during construction of each Project component to protect and minimize effects on retained oak woodland trees that are adjacent to construction activities.

- The potential for long-term loss of woody vegetation will be minimized by pruning vegetation rather than removing entire trees or shrubs in areas where complete removal is not required. Any trees or shrubs that need to be trimmed will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. Cutting will be limited to the minimum area necessary in the construction zone. To protect nesting birds, no pruning or removal of woody vegetation will be performed between February 1 and August 31 without preconstruction bird surveys conducted in accordance with CDFW and/or USFWS requirements, as described in Mitigation Measures WILD-1.22 and WILD-1.23, *Conduct Vegetation Removal During the Non-Breeding Season of Nesting Migratory Birds* and *Conduct Preconstruction Surveys for Non-Raptor Nesting Migratory Birds and Implement Protective Measures if Found*, respectively.
- Operation or parking of vehicles, digging, trenching, slope cuts, soil compaction, grading, paving, or placement of fill will be prohibited within 6 feet of the driplines of retained oak woodland trees.
- Any off-site drainage will be directed in such a way as to prevent drainage into adjacent oak woodlands.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

Per protection of oak trees in oak woodland in Policy CON 1-9 from the Colusa County General Plan, the Authority, in coordination with Colusa County, will develop a management plan for the protection and enhancement of oak woodlands to offset the loss of oak woodlands. This plan will mitigate the loss of oak woodlands using one or more of the following options:

- Offsite deed restriction or conservation easement acquisition and/or acquisition in fee title by a land conservation organization for purposes of offsite oak woodland conservation;
- In-lieu fee payment to the Oak Woodlands Conservation Fund;
- Replacement planting onsite in an area subject to deed restriction or conservation easement;
- Replacement planting off site in an area subject to a conservation easement; or
- A combination of these options.

Prior to any activities that would result in permanent impacts on oak woodlands, any permanent impacts to oak woodlands will be mitigated by creating or preserving oak woodlands at a 1:1 ratio (1 acre restored or created for every 1 acre removed), or by an equivalent or greater requirement as determined through coordination with Colusa County during permit processing. The compensation acreage used for the ratio will be based on the area of impact as determined by surveys required under Mitigation Measure VEG-2.1. In accordance with requirements of the California Oak Woodland Conservation

Act (California Public Resources Code 21083.4), replacement planting will not account for more than 50% of the oak woodland mitigation requirement. Therefore, up to half of the oak woodland impact mitigation requirement will consist of onsite or offsite replacement planting. The replacement planting area must be suitable for tree planting, not conflict with current or planned land uses, and be large enough to accommodate replacement plantings at a density equal to the density of the affected oak woodlands, up to a maximum density of 200 trees per acre. The remaining portion of the oak woodland impact mitigation requirement will be implemented in the form of an in-lieu fee payment to the state or to the county in which the oak woodland is affected.

The Authority will prepare and implement a mitigation and monitoring plan for oak woodlands, with funding provided through an endowment. The plan will include requirements to implement appropriate management measures to maintain the oak woodlands. The Authority will monitor oak woodland plantings annually for at least 5 years to verify that the habitat quality is maintained and meets success criteria. Success criteria for oak woodland plantings may include criteria such as survival of plantings, tree vigor, tree diameter, and tree canopy size. Planting survival requirements will be 70% at the end of 5 years with at least fair or good vigor, or as required by Colusa County. The plan will also coordinate with the LMP and will determine and implement appropriate management measures to maintain the community and meet monitoring performance standards. If the survival and vigor criteria are not met in any monitoring year or at the end of the monitoring period, planting and monitoring will be repeated after mortality or insufficient growth causes have been identified and remedial measures have been implemented, and the monitoring period will be extended to account for the required number of monitoring years for all plantings. Mitigation sites will be protected in perpetuity in a conservation easement or through deed restriction.

Mitigation Measure VEG-4.3: Establish Activity Exclusion Zones Around Blue Oak Woodlands Prior to Vegetation Maintenance Activities

The Authority will retain qualified botanists to mark the locations of blue oak woodlands in vegetation maintenance areas using the results of the surveys conducted under Mitigation Measure VEG-2.1. If blue oak woodland occurs in or within 50 feet of the vegetation maintenance areas, the outer dripline of the woodland canopy will be fenced and avoided by all surface-disturbing maintenance activities. Alternatively, if blue oak woodlands cannot be completely avoided, the size of the affected area will be minimized to the full extent possible. If the remaining impacts on blue oak woodland by vegetation maintenance activities exceed 0.1 acre, the Authority will implement additional compensatory mitigation based on the same requirements as described in Mitigation Measure VEG-4.2.

NEPA Conclusion

Construction and operation effects on vegetation and wetland resources that are protected under local general plan policies would be the same as described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on vegetation and wetland resources that are protected under local general plan policies as compared to the No Project

Alternative. Implementation of the BMPs identified for construction under Impacts VEG-1, VEG-2, and VEG-3, the LMP, Recreation Management Plan, and Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the construction effects, but oak woodlands are considered important under the state Oak Woodlands Conservation Act and county general plans. The long-term effects due to the length of time required for mitigation plantings to fully replace the habitat function and habitat value of the removed blue oak woodland would remain adverse as compared to the No Project Alternative. Operation of Alternative 1 or 3 could result in a substantial adverse effect on oak woodlands protected by general plan policies and the California Oak Woodland Conservation Act in vegetation maintenance areas as compared to the No Project Alternative. Implementation of BMPs and Mitigation Measure VEG-4.3 is required. Therefore, operation effects would not be adverse.

Alternative 2

Construction

As described in Impacts VEG-1, VEG-2, and VEG-3, construction of Alternative 2 would affect vegetation and wetland resources that are protected by policies in the Colusa County General Plan (Colusa County 2012), Glenn County General Plan Update Existing Conditions Report (Glenn County 2020), Tehama County General Plan (Tehama County 2009), and 2030 Countywide General Plan (County of Yolo 2009). General plan policies for these counties protect vegetation and wetland resources, including special-status species, riparian habitat, oak woodlands, wetlands, and streams. The BMPs for construction of Alternatives 1 and 3 would also apply to Alternative 2. Blue oak woodland is protected by county policies, as well as the state Oak Woodlands Conservation Act, but is not included in Impact VEG-2 as a sensitive natural community. The extent of blue oak woodland that would be permanently and temporarily affected by construction is shown in Tables 9-4a and 9-4b. Loss of blue oak woodland would be less under Alternative 2 than under Alternative 1 or 3 due to the smaller size of the inundation area.

Operation

The recreation areas would be the same between Alternatives 1, 2, and 3, and impacts in recreation areas under Alternative 2 would be the same as those described for Alternatives 1 and 3. Operation of recreation areas for Alternative 2 would not result in additional impacts or require additional mitigation measures. All impacts on vegetation and wetland resources protected under local general plan policies have been included in the construction phase impacts for recreation areas. Impacts of vegetation maintenance would also be the same between Alternatives 1, 2, and 3. Impacts in areas due to ground disturbance during maintenance throughout the Alternative 2 area would be minimized during the operation phase by implementation of BMPs identified for operation of Alternatives 1 and 3.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 except that the smaller reservoir size would result in a somewhat smaller loss of blue oak woodland. The same BMPs as those for Alternatives 1 and 3 would be implemented for construction of Alternative 2. Implementation of Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would

reduce the level of impact. There would be a long-term and permanent loss of blue oak woodland habitat even with mitigation and this impact would remain significant and unavoidable.

As with Alternatives 1 and 3, operation of Alternative 2 would not result in additional impacts in the recreation areas, but there would be potential impacts in vegetation maintenance areas. As with Alternatives 1 and 3, implementation of the BMPs for operation, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-4.3 would reduce the level of impact from vegetation maintenance to less than significant.

NEPA Conclusion

Construction and operation effects on vegetation and wetland resources that are protected under local general plan policies would be the same as described above for CEQA. Construction of Alternative 2 would result in similar effects to Alternatives 1 and 3 except that the smaller reservoir size would result in a somewhat smaller loss of blue oak woodland. Implementation of the BMPs identified for construction under Impacts VEG-1, VEG-2, and VEG-3 and Mitigation Measures VEG-2.1, VEG-4.1, and VEG-4.2 would reduce the construction effects, but the long-term effects would remain substantially adverse. Operation of Alternative 2 could result in a substantial adverse effect on blue oak woodlands protected by general plan policies and the California Oak Woodland Conservation Act in vegetation maintenance areas as compared to the No Project Alternative. Implementation of the BMPs, the LMP, the Recreation Management Plan, and Mitigation Measure VEG-4.3 is required. Therefore, operation effects would not be adverse.

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

No Project

The No Project Alternative would not construct or operate any new facilities. Therefore, there would be no conflict with adopted conservation plans. Existing facilities, such as the TC Canal or GCID Main Canal, are not located within an adopted Habitat Conservation Plan or Natural Community Conservation Plan and therefore have no ability to conflict.

Significance Determination

The No Project Alternative would have no conflicts with any approved conservation plans. The No Project Alternative would have no impact/no effect.

Alternatives 1 and 3

Construction

The Yolo County HCP/NCCP (Yolo Habitat Conservancy 2018) and the Yolo Bypass Wildlife Area LMP (California Department of Fish and Game 2008) are the only conservation plans that apply to Alternatives 1 and 3. These plans apply to the Dunnigan Pipeline and CBD outlet, which are the only parts of the Alternatives 1 and 3 footprint located in Yolo County. The construction of Alternatives 1 and 3 is not covered under the Yolo County HCP/NCCP, because the Project was not included in the 2030 Countywide General Plan for Yolo County or in the covered

activities of the Yolo County HCP/NCCP. Construction of the Dunnigan Pipeline and CBD outlet would create primarily temporary impacts and a small area of permanent impact that would not conflict with the establishment of conservation areas under the HCP/NCCP. No construction would occur in the Yolo Bypass Wildlife Area under Alternatives 1 and 3.

As discussed in Impacts VEG-2, VEG-3, and VEG-4 for the conveyance to Sacramento River component, construction of Alternative 1 or 3 in the Dunnigan Pipeline and CBD outlet footprint would have permanent and temporary impacts on sensitive natural communities, wetlands, and non-wetland waters that are habitats for covered species in the Yolo County HCP/NCCP, consisting of upland riparian, managed wetland, and intermittent stream. The BMPs described under Impacts VEG-2, VEG-3, and VEG-4 are incorporated into Alternatives 1 and 3 to avoid and minimize permanent and temporary impacts on sensitive natural communities, wetlands, and non-wetland waters. The BMPs that the Authority will implement would not prevent the permanent loss or habitat quality degradation of sensitive natural communities, wetlands, and non-wetland waters in the footprint for Alternatives 1 and 3. Mitigation Measures VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 for riparian habitat, wetlands, and streams would align with the conservation strategy of the Yolo County HCP/NCCP, in that they would require compensatory mitigation for impacts on these habitat types.

Operation

Operation under Alternative 1 or 3 would not result in additional impacts or require additional mitigation measures. Therefore, there would be no operation-related impacts due to conflicts with the Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 1 or 3 would result in significant impacts on special-status plant species habitats, sensitive natural communities, wetlands, and non-wetland waters through direct removal of vegetation, filling, hydrological interruption, and other indirect impacts as described above under Impacts VEG-2, VEG-3, and VEG-4. The BMPs identified under Impacts VEG-1, VEG-2, and VEG-3 will minimize permanent and temporary impacts on special-status species, sensitive natural communities, wetlands, and non-wetland waters. Implementation of Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of the construction impacts and avoid conflicts with the adopted Yolo County HCP/NCCP and Yolo Bypass Wildlife Area LMP because all locations of special-status species, sensitive natural communities, wetlands, and non-wetland waters in and within 300 feet of the construction footprint under Alternatives 1 and 3 would be identified and mapped, and the acquisition and permanent protection of these resources at identified compensation ratios would ensure survival of special-status plant species, sensitive natural communities, wetlands, and non-wetland waters in perpetuity. Therefore, the level of this impact would be reduced to less than significant with mitigation. Operation of Alternative 1 or 3 would not result in additional impacts.

Mitigation Measure VEG-2.1: Conduct Surveys for Sensitive Natural Communities and Oak Woodlands in the Project Area Prior to Construction Activities

This mitigation measure is described above for Impact VEG-2.

Mitigation Measure VEG-2.2: Avoid and Compensate for Adverse Effects on Sensitive Natural Communities

This mitigation measure is described above for Impact VEG-2.

Mitigation Measure VEG-3.1: Avoid and Minimize Disturbance of Wetlands and Non-Wetland Waters During Construction Activities

This mitigation measure is described above for Impact VEG-3.

Mitigation Measure VEG-3.2: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Wetlands

This mitigation measure is described above for Impact VEG-3.

Mitigation Measure VEG-3.3: Compensate for Temporary and Permanent Impacts on State- or Federally Protected Non-Wetland Waters

This mitigation measure is described above for Impact VEG-3.

Mitigation Measure VEG-4-1: Avoid and Minimize Potential Adverse Effects on Oak Woodlands

This mitigation measure is described above for Impact VEG-4.

Mitigation Measure VEG-4.2: Compensate for Adverse Effects on Oak Woodlands

This mitigation measure is described above for Impact VEG-4.

NEPA Conclusion

Construction and operation effects on vegetation and wetland resources that are protected under the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP would be the same as described above for CEQA. Construction of Alternative 1 or 3 would result in a substantial adverse effect on vegetation and wetland resources that are protected under the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP as compared to the No Project Alternative. Significant effects on special-status plant species habitats, sensitive natural communities, wetlands, and non-wetland waters through direct removal of vegetation, filling, hydrological interruption, and other indirect effects could occur as described above under Impacts VEG-2, VEG-3, and VEG-4. Implementation of BMPs and Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce construction effects to no adverse effect. Operation of Alternative 1 or 3 would have no additional effects on vegetation and wetland resources protected by the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP as compared to the No Project Alternative.

Alternative 2

Construction

Similar to Alternatives 1 and 3, construction of Alternative 2 in the Dunnigan Pipeline and CBD outlet footprint would have permanent and temporary impacts on habitats for covered species in the Yolo County HCP/NCCP. Impacts under Alternative 2 would be slightly larger, due to the extension of the Dunnigan Pipeline alignment to the Sacramento River. As discussed for Alternatives 1 and 3, construction of the pipeline would not conflict with establishment of conservation areas under the Yolo County HCP/NCCP and the compensatory mitigation proposed for impacts on sensitive natural communities, wetland, and non-wetland waters would align with the Yolo County HCP/NCCP conservation strategy. The BMPs for construction of Alternatives 1 and 3 would also apply to Alternative 2.

Operation

Under Alternative 2, the impacts related to conflicts with the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP during operation would be as described for Alternatives 1 and 3.

CEQA Significance Determination and Mitigation Measures

Construction of Alternative 2 would result in similar impacts to Alternatives 1 and 3 but slightly greater, due to the extension of the pipeline alignment to the Sacramento River. As with Alternatives 1 and 3, implementation of the BMPs and Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2 would reduce the level of impact to less than significant.

Under Alternative 2, the impacts related to conflicts with the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP during operation would be as described for Alternatives 1 and 3 and there would be no additional impacts.

NEPA Conclusion

Construction and operation effects on vegetation and wetland resources that are protected under the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP would be the same as described above for CEQA. Construction of Alternative 2 would result in substantial adverse effects on special-status plant species habitats, sensitive natural communities, wetlands, and non-wetland waters protected by the Yolo County HCP/NCCP and Yolo Bypass Wildlife Area LMP as compared to the No Project Alternative. Construction of Alternative 2 would result in similar effects to Alternatives 1 and 3 but be slightly greater due to the extension of the pipeline alignment to the Sacramento River. Through implementation of the BMPs and Mitigation Measures VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, VEG-4.1, and VEG-4.2, potential construction conflicts with the adopted Yolo County HCP/NCCP or Yolo Bypass Wildlife Area LMP would be reduced to no adverse effect. As described above for CEQA, operation of Alternative 2 would have no additional conflicts with these plans.

Impact VEG-6: Introduction or increased spread of invasive plant species

No Project

The No Project Alternative would not construct or operate any new facilities. There would be no additional potential beyond existing agricultural and other land use activities in the study area to introduce or increase the spread of invasive plant species.

Significance Determination

The No Project Alternative would have no impact or effect due to an increased potential of the introduction or spread of invasive plant species.

Alternatives 1, 2, and 3

Construction and Operation

The invasive plant species identified Table 9B-5 (Appendix 9B) are also very common and widespread throughout California and the Central Valley; consequently, there is a relatively low likelihood they would spread from the Alternatives 1, 2, and 3 footprints to off-site locations where they are not already present and have an adverse effect on sensitive terrestrial natural communities, wetlands, or non-wetland waters. BMP-36 and vegetation control activities as part of the LMP will be implemented to further control introduction of invasive plant species. BMP-36 requires removing, bagging, and disposing of removed invasive plants at a waste facility to reduce the potential for the spread of invasive plant species, and includes revegetation of areas subject to temporary ground disturbance with native species to reduce colonization by invasive species. Vegetation control activities in the LMP that are part of Project operation would include the use of vegetation control and grazing around all facilities, recreation areas, and the Project buffer around all facilities.

Invasive aquatic vegetation related to on-water recreational activities is discussed in Chapter 6, *Water Quality*.

CEQA Significance Determination and Mitigation Measures

Construction and operation of Alternative 1, 2, or 3 would not result in the increased spread of invasive plants that would result in an adverse effect on sensitive terrestrial natural communities, wetlands, or non-wetland waters because of the low likelihood of spread. In addition, implementation of BMP-36 as part of construction, and the vegetation control activities in the LMP as part of operation would reduce the potential for introduction and spread of invasive plant species. Therefore, the potential for introduction and increased spread of invasive plants is a less-than-significant impact.

NEPA Conclusion

Construction and operation effects on increased spread of invasive plants would be the same as described above for CEQA. Construction and operation of Alternative 1, 2, or 3 would not result in the increased spread of invasive plants that would result in an adverse effect on sensitive terrestrial natural communities, wetlands, or non-wetland waters as compared to the No Project Alternative because of the low likelihood of spread. In addition, implementation of BMP-36 as

part of construction, and the vegetation control activities in the LMP as part of operation, would reduce the potential for introduction and spread of invasive plant species. The potential effects associated with the introduction and increased spread of invasive plants would not be adverse.

9.6 References

9.6.1 Printed References

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds). 2012. *The Jepson Manual: Vascular Plants of California*, second edition, revised. Berkeley, CA: University of California Press.

Calflora. 2021. Information on California plants for education, research, and conservation. Search for Cal-IPC Invasive Plant Species. Available: http://www.calflora.org/. Accessed: January 7, 2021.

California Department of Fish and Game. 2008. Land Management Plan for the Yolo Bypass Wildlife Area. Final. June 2008. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=84924&inline. Accessed: February 6, 2021.

California Department of Fish and Wildlife. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. March 20. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline.

California Department of Fish and Wildlife. 2020. *California Sensitive Natural Communities.* Last revised: September 9, 2020. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline. Accessed: December 11, 2020.

California Department of Fish and Wildlife. 2021. California Natural Diversity Database, RareFind 5, January 13, 2021 [43 Quadrangles: Balls Ferry, Bend, Bird Valley, Black Butte Dam, Dunnigan, Eldorado Bend, Foster Island, Fruto NE, Gerber, Gilmore Peak, Glenn, Hamilton City, Hough Springs, Kirkville, Kirkwood, Knights Landing, Leesville, Lodoga, Logandale, Los Molinos, Manor Slough, Maxwell, Meridian, Moulton Weir, Nord, Ord Ferry, Orland, Panther Spring, Princeton, Rail Canyon, Red Bank, Red Bluff East, Red Bluff West, Sites, Stone Valley, Sutter Causeway, Taylor Monument, Tuscan Springs, West of Gerber, Wildwood School, Williams, Willows, Zamora]. Available: https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx.

California Department of Water Resources. 2000a. North-of-Delta Offstream Storage Investigation Progress Report. January 4.

California Department of Water Resources. 2000b. North-of-Delta Offstream Storage Investigation Progress Report Appendix B: Wetland Delineation Field Studies Report. April.

California Invasive Plant Council. 2021. Inventory of Invasive Plant Species of California. Last revised: February 1, 2017. Available: https://www.cal-ipc.org/plants/inventory/. Accessed: January 8, 2021.

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Quadrangles searched: 4012242, 4012232, 4012222, 4012212, 4012223, 4012213, 4012214, 4012221, 4012211, 4012127, 3812271, 3812188, 3812177, 3812178, 3812281, 3812187, 3912117, 3912127, 3912128, 3912126, 3912273, 3912271, 3912272, 3912263, 3912262, 3912261, 3912252, 3912251, 3912242, 3912253, 3912241, 3912231, 3912232, 3912233, 3912244, 3912234, 3912224, 3912223, 3912222, 3912168, 3912178, 3912116, and 3812176. Available: http://www.rareplants.cnps.org. Accessed: December 16, 2020.

Colusa County. 2012. Colusa County General Plan, Conservation Element. Available: https://countyofcolusa.org/DocumentCenter/View/2722/Conservation-Element_Colusa_Final?bidId=.

County of Yolo. 2009. 2030 Countywide General Plan, Conservation and Open Space Element. Adopted November 2009, Resolution No 09-189. Available: https://www.yolocounty.org/home/showpublisheddocument?id=8005.

Glenn County. 2020. Glenn County General Plan Update Existing Conditions Report. Available: https://static1.squarespace.com/static/5c8a73469b7d1510bee16785/t/5e556b56c253f84cdc287783/1582656403698/GlennCounty-ECR-Final-Feb2020.pdf.

Hill, S. R. 2015. *Sidalcea keckii.* Flora of North America. Available: http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250101137.

Natural Resources Conservation Service. 2006. *Soil Survey of Colusa County, California*. USDA, in cooperation with Colusa County Resource Conservation District; State of California, Department of Conservation; Regents of the University of California; United States Department of Agriculture, Forest Service; and United States Department of the Interior, Bureau of Land Management and Fish and Wildlife Service.

Natural Resources Conservation Service. 2020a. *Soil Survey Geographic (SSURGO) Database for Colusa and Glenn counties, California* [Online]. U.S. Department of Agriculture. Available: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed: October 21, 2020.

Natural Resources Conservation Service. 2020b. Climate Data for Colusa, California. Available: http://agacis.rcc-acis.org/?fips=06011 and http://agacis.rcc-acis.org/?fips=06021. Accessed December 10, 2020.

Natural Resources Conservation Service. 2020c. Climate Data for Stony Gorge, California. Available: http://agacis.rcc-acis.org/?fips=06011 and http://agacis.rcc-acis.org/?fips=06021. Accessed: December 10, 2020.

Sites Project Authority and U.S. Bureau of Reclamation 2017. Sites Reservoir Project Draft Environmental Impact Report/Environmental Impact Statement. August 2017. Available: https://sitesproject.org/resources/environmental-review/draft-environmental-impact-report-environmental-impact-statement/.

Tehama County. 2009. Tehama County General Plan. March. Available: https://www.co.tehama.ca.us/images/stories/planning/2009-2029%20Tehama%20County%20General%20Plan%20r1.pdf.

U.S. Army Corps of Engineers. 2015. *Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE.* Final January 12, 2015. Available: https://www.spd.usace.army.mil/Portals/13/docs/regulatory/mitigation/MitMon.pdf. Accessed: June 21, 2021.

U.S. Fish and Wildlife Service. 2021. *Information for Planning and Consultation (IPaC). List of threatened and endangered species that may occur in the proposed project, and/or may be affected by the proposed project*. (Consultation Code 08ESMF00-2021-SLI-0961.) Available: https://ecos.fws.gov/ipac/. Accessed: February 9, 2021.

U.S. Geological Survey. 2020. *Science in Your Watershed, Locate Your Watershed.* Hydrological Unit Code 18020104. Available: https://water.usgs.gov/wsc/cat/18020104.html. Last Updated: July 17, 2020. Accessed: June 21, 2021.

Yolo Habitat Conservancy. 2018. Yolo Habitat Conservation Plan/Natural Community Conservation Plan. Final. April 2018. Available: https://www.yolohabitatconservancy.org/documents. Accessed: February 5, 2021.

9.6.2 Personal Communications

Davis, Brittany E., PhD. Environmental Program Manager. California Department of Water Resources. July 6, 2021—Email to John Spranza, Senior Ecologist/Regulatory Specialist, HDR, Sacramento, CA, and Mallory Bedwell, California Department of Water Resources.