

4.8 Hydrology and Water Quality

4.8.1 Setting

This section discusses the existing environmental and regulatory setting of the Proposed Project and alternatives, identifies potential impacts related to construction, operation and maintenance of the Proposed Project and alternatives, and proposes mitigation measures for those impacts determined to be significant. Setting information in this section was compiled from: the Proponent's Environmental Assessment (PEA) (SCE, 2008), peer-reviewed scientific literature, resource agency websites and databases, and Geographic Information System (GIS) data.

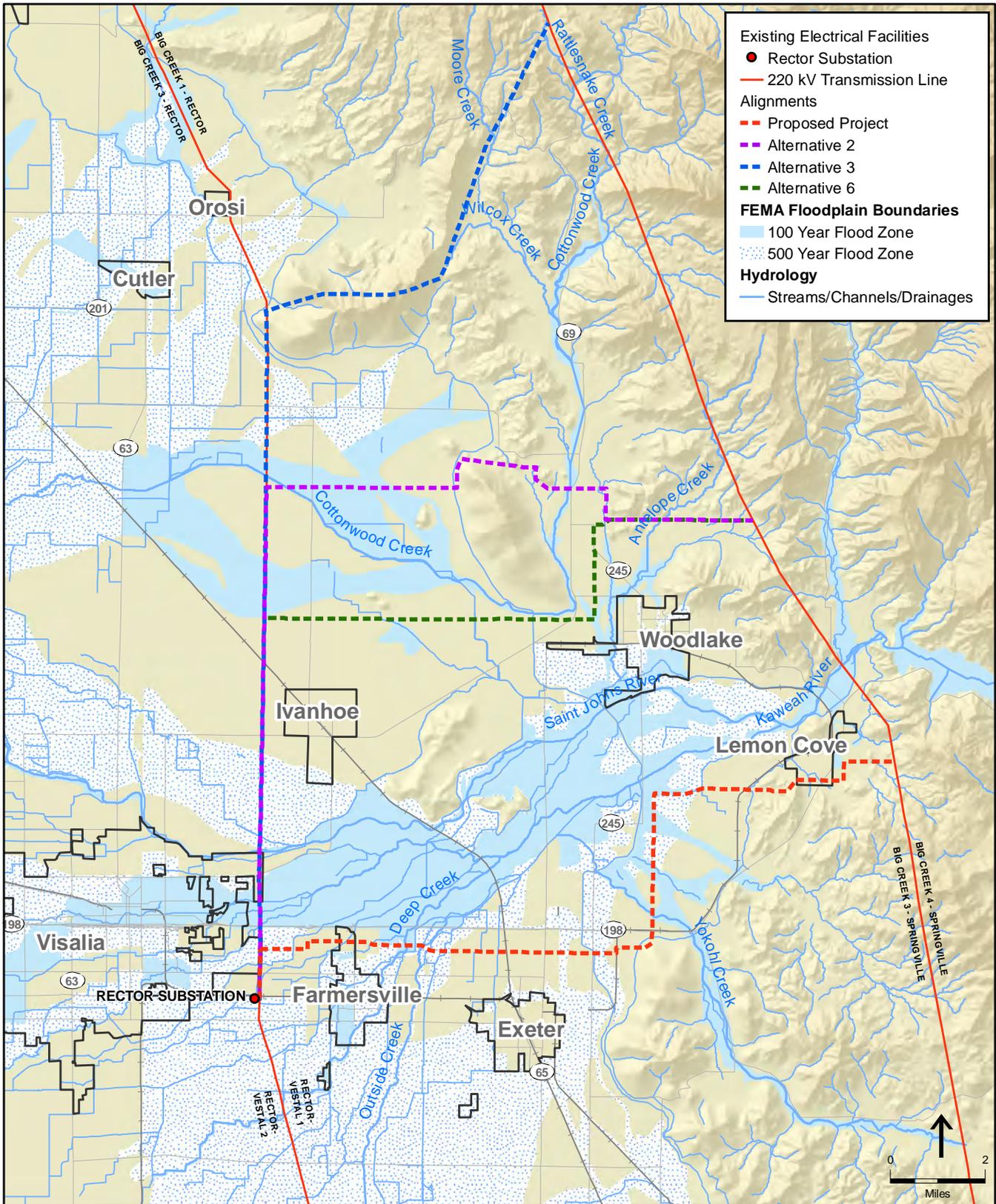
Environmental Setting

Regional Setting and Climate

The Proposed Project and alternatives are located in the southern portion of the San Joaquin Valley, within the Tulare Lake hydrologic unit (or basin). In general, the study area encompasses the foothills of the Sierra Nevada range to the north and east, and the California Central Valley to the south and west. Ground surface elevations within the study area range from approximately 12,000 feet above sea level (asl) at the eastern extent of the Kaweah River watershed to 340 feet asl at the southwestern extent near the City of Visalia. Tulare County, including the study area, has a Mediterranean climate characterized by hot, dry summers and mild winters. Most rainfall occurs during the winter between the months of November and March. Average annual precipitation in the study area ranges from 10 to 14 inches per year, increasing eastward (WRCC, 2008a, 2008b).

Surface Water Hydrology and Drainage

This portion of the San Joaquin Valley is internally drained (i.e., runoff eventually drains to the valley trough rather than to the ocean). Flow of surface water and runoff is generally from east to west. Upon reaching the valley floor, most channels emerging from the Sierra Nevada foothills form distributaries (i.e., the opposite of tributaries) as they bisect alluvial fan deposits and continue westward toward the valley trough, resulting in a greater number of channel branches. Channels in this area typically exhibit a bi-modal annual hydrograph (i.e., a runoff peak occurs in the late fall or early winter due to rainfall, and another peak occurs in the late spring or early summer as a result of snowmelt). Most channels and drainages in the study area are ephemeral due to the seasonal nature of rainfall, low annual rainfall totals, irrigation demands, and the relatively high permeability of the valley floor alluvial deposits. Normally, all native surface water supplies, imported water supplies, and direct precipitation percolate into valley groundwater if not lost through consumptive use, evapotranspiration, or evaporation (CVRWQCB, 2004). However, due to snowmelt runoff and their use as conveyance facilities for water purveyors and contractors, some channels experience perennial flow in some years. The tendency for channels to dry-up increases westward from the foothills. Major surface water channels in the study area include the Kings River, Cottonwood Creek, the Kaweah River, the Saint Johns River, Yokohl Creek, and the Tule River (Figure 4.8-1).



SOURCE: ESRI, 2008; SCE, 2008; FEMA, 1995; NHD, 2008

San Joaquin Cross Valley Loop Transmission Project. 207584.01

Figure 4.8-1
Local Hydrology

Kaweah River

Most of the study area falls within the Kaweah River watershed. The upper Kaweah River is impounded and controlled to some degree by the Terminus Dam, which was completed in 1962 by the U.S. Army Corps of Engineers, forming Lake Kaweah with an approximate capacity of 150,000 acre-feet. Lake Kaweah is located near the eastern margin of the study area, approximately 18 miles east of the City of Visalia. The upper Kaweah River drains about 561 square miles of the Sierra Nevada and has its headwaters near the 12,000 foot elevation line. West of the study area, the Kaweah River is eventually a tributary to the Tule River.

As is typical of most streams in this area, the Kaweah River experiences a peak flow in winter and in the late spring or early summer. The U.S. Geological Survey (USGS) collected flow information for the upper Kaweah River (just downstream of the Terminus Dam) from water year (WY)¹ 1962 through 1990. Over this time period, the largest recorded peak flow events were between 5,000 and 6,000 cubic feet per second (cfs), and most of the recorded peaks occurred in the late spring or summer as a result of snowmelt (or perhaps rain-on-snow events). Average annual flow over the monitored period ranged from 104 cfs during dry years to almost 2,000 cfs during wet years (USGS, 2008). Based upon the recorded stream flow data, the Kaweah River flows perennially in most years.

Kings River

A small portion of Alternative 3 intersects with the Kings River watershed and the Kings Groundwater Subbasin. The Kings River watershed encompasses 1,742 square miles, ranging in elevation from 500 to 14,000 feet asl. Variation in runoff is great, not only from year to year but from month to month. As a result of this variation, until Pine Flat Dam (forming Pine Flat Reservoir) was completed in 1954 by USACE there were alternating periods of flood in the Kings River watershed. Similar to the Kaweah River, the Kings River also experiences a peak flow in winter and in the late spring or early summer.

Artificial Channels and Ditches

The study area is also traversed by a number of artificial conveyance channels and irrigation canals. Importing irrigation water into this otherwise relatively arid region is necessary in order to produce the various crops grown in the study area. The Tulare Irrigation District Canal and the Friant-Kern Canal are the most notable irrigation canals within the study area. Built and maintained by the Tulare Irrigation District, the Tulare Irrigation Canal delivers water to various contractors in the western part of Tulare County. The Friant-Kern Canal is a federal project (i.e., Central Valley Project) that delivers water from the San Joaquin River to contractors in Tulare County and further south.

¹ A Water Year begins on October 1 of the previous year and ends on September 30 of the designated Water Year. For example, Water Year 2004 comprises October 1, 2003 through September 30, 2004.

Surface Water Quality

The quality of surface water in the study area is generally high; this includes water from stream groups feeding onto the valley floor as well as the water introduced into the Kaweah River watershed from the Friant-Kern Canal (Tulare County, 2007). Streams running through the study area are draining the western slopes of the Sierra Nevada; in this area, the dominance of granitic rocks and relatively undisturbed (i.e., undeveloped) and protected (i.e., Sequoia National Park) landscapes generally results in good quality surface water. However, in some areas the water quality effects of past land-use practices, such as mining and logging, persist.

The Central Valley Regional Water Quality Control Board (CVRWQCB) is responsible for the protection of water quality and beneficial uses of waters within Tulare County, including the study area. The CVRWQCB has yet to identify any impairments with the study area. However, just east of the study area, the CVRWQCB has identified a water quality issue for Lake Kaweah related to the presence of mercury, although the potential sources of the mercury have not been identified (CVRWQCB, 2006). The CVRWQCB (2006) has also indentified water quality issues for the lower Kings River related to electrical conductivity, molybdenum, and toxaphene; the source of these constituents is identified as agriculture. Regulatory frameworks, standards, and management actions concerning water quality in the study area are discussed in further detail below.

Flooding

Flooding within the study area (e.g., near the City of Visalia) is controlled to some degree by Terminus Dam on the Kaweah River (described above), yet flooding still occurs and the flood zones are several miles wide in some areas (Figure 4.8-1). The Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding during a 100-year flood event (i.e., one percent chance of occurring in a given year). According to FEMA (1986), several flood zones intersect the study area and alignment; the principal flood zones are associated with the Kaweah River, the Saint Johns River, and Yokohl Creek.

Groundwater Hydrology

The San Joaquin Valley is a geologic depression formed between two uplifted areas: the Coast Range on the west and the Sierra Nevada to the east. The valley has been filled by almost four miles of sedimentary material, most of which contains water too saline for domestic use (Tulare County, 2007). Recent alluvial deposits characterizing the upper layer (to a depth of approximately 3,000 feet) of sedimentary material comprise an extensive underground reservoir of fresh water.

The study area overlies the northeast portion of Kaweah Groundwater Subbasin (Kaweah Subbasin), which is part of the larger San Joaquin Valley Groundwater Basin (DWR, 2004). The Kaweah Subbasin lies between the Kings Groundwater Subbasin on the north, the Tule Groundwater Subbasin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Kings River Conservation District on the west. The Kaweah Subbasin generally comprises lands in the Kaweah Delta Water Conservation District (KDWCD). Groundwater flow is generally southwestward, from areas of recharge along the eastern side of the San Joaquin

Valley westerly toward the valley trough. On the east side of the Kaweah Subbasin, the sedimentary deposits comprising the subbasin consist of material derived from the Sierra Nevada and are divided into three stratigraphic units: continental deposits, older alluvium and younger alluvium. For the most part, accessible groundwater occurs within an unconfined state throughout the study area (usually coincident with the extent of modern alluvial fan deposits), while localized areas of semi-confined groundwater occur sporadically.

On average, the Kaweah Subbasin water level has declined by about 12 feet from 1970 through 2000 (DWR, 2004). The KDWCD estimated that the groundwater reservoir within and near KDWCD's boundaries is over-drafted by approximately 17,000 to 36,000 acre-feet per year (Tulare County, 2007). Groundwater level information for the City of Visalia shows an ever decreasing static groundwater level since 1986 (Tulare County, 2007). Groundwater flow in northwestern Tulare County tends to flow away from the Kaweah River, and ranges in depth from 30 to 80 feet below ground surface (bgs) (SCE, 2008).

Groundwater Quality

The groundwater in the Kaweah Subbasin is generally of a calcium bicarbonate type, with sodium bicarbonate waters occurring near the western margin. The mineral quality of groundwater extracted for use in Tulare County is generally satisfactory for crop irrigation. Total dissolved solids (TDS) values range from 35 to 1,000 milligrams per liter (mg/L), with a typical range of 300 to 600 mg/L (DWR, 2004). The salinity of groundwater typically increases in a westward direction across the San Joaquin Valley. There are localized areas of high nitrate pollution on the eastern side of the subbasin; there is also high salinity between the cities of Lindsay and Exeter.

Under natural conditions, groundwater moves from recharge areas along the sides of the Valley toward the low (or central) section where it is discharged at the land surface by seepage, evaporation, and transpiration. The great alkali areas of the southwestern parts of the County indicate natural discharge of groundwater by evaporation has occurred, leaving an accumulation of salts in the surface soils (Tulare County, 2007). Because of the closed nature of the Tulare Lake Basin, there is little net loss of groundwater through subsurface outflow. As such, salts accumulate within the basin due to importation and subsequent evaporation of surface water. The principle water quality problem in the basin is the accumulation of salts; this problem is compounded by the overdraft of groundwater for municipal, agricultural, and industrial purposes, and the use of water from deeper formations and outside the basin which further concentrates salts within the remaining groundwater (CVRWQCB, 2004).

Regulatory Setting

Federal and State Water Quality Policies

The statutes that govern the activities under the Program that affect water quality are the federal Clean Water Act (CWA) (33 U.S.C. § 1251) and the Porter-Cologne Water Quality Control Act (Porter-Cologne) (Water Code, § 13000 et seq.). These acts provide the basis for water quality regulation in the study area.

The California Legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality to the State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs). The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of State and federal regulations. The nine RWQCBs throughout California adopt and implement water quality control plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The RWQCB adopts and implements a Water Quality Control Plan (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code, §13240-13247).

Beneficial Use and Water Quality Objectives (CWA Section 303)

The CVRWQCB is responsible for the protection of the beneficial uses of waters within Tulare County and the study area. The CVRWQCB uses its planning, permitting, and enforcement authority to meet this responsibility and has adopted the Water Quality Control Plan for the Tulare Lake (Basin Plan) to implement plans, policies, and provisions for water quality management. The CVRWQCB published the most recent version of the Basin Plan in January 2004 (CVRWQCB, 2004).

In accordance with State policy for water quality control, the CVRWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan has identified existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction (CVRWQCB, 2004). Table 4.8-1 identifies beneficial uses designated in the Basin Plan for the surface water bodies relevant to the study area. Table 4.8-2 defines the applicable beneficial use categories. For groundwater, the following beneficial uses have been identified and occur throughout the Tulare Lake Basin (including the study area): municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, water contact recreation, and wildlife habitat. The Basin Plan also includes water quality objectives that are protective of the identified beneficial uses; the beneficial uses and water quality objectives collectively make-up the water quality standards for a given region and Basin Plan (CVRWQCB, 2004). Within the study area, agricultural supply is an important and prevalent beneficial use of surface water and groundwater. The CVRWQCB is charged with protecting the quality of surface water and groundwater that may be diverted or extracted (or otherwise captured) and used for agricultural supply. However, the CVRWQCB does not exercise authority over the maintenance or condition of water delivery infrastructure (e.g., pipelines, canals, ditches, etc.). Therefore, any issues concerning the potential damage to water delivery infrastructure as a result of the Proposed Project or alternatives would be resolved between SCE and the appropriate landowner or entity during acquisition of project right-of-way (ROW).

**TABLE 4.8-1
BENEFICIAL USES OF WATERS WITHIN THE STUDY AREA**

Waterbody	MUN ^a	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC 1	REC 2	COMM	WARM	COLD	WILD	RARE	MIGR	SPWN	AQUA
Kaweah River (below Lake Kaweah)	X	X	X	X	X				X	X		X		X				
Kings River (Friant-Kern to Peoples Weir)	X	X		X	X				X	X		X		X				

^a Refer to Table 4.8-2, below, for definition of abbreviations

SOURCE: CVRWQCB, 2004.

**TABLE 4.8-2
DEFINITIONS OF BENEFICIAL USES OF SURFACE WATERS**

Beneficial Use	Description
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Industrial Service Supply (IND)	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
Industrial Process Supply (PRO)	Uses of water for industrial activities that depend primarily on water quality.
Groundwater Recharge (GWR)	Uses of water for natural or artificial recharge or groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Freshwater Replenishment (FRSH)	Uses of water for natural or artificial maintenance of surface water quantity or quality (e.g., salinity).
Navigation (NAV)	Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
Hydropower Generation (POW)	Uses of water for hydropower generation.
Water Contact Recreation (REC 1)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC 2)	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Commercial and Sport Fishing (COMM)	Uses of water for commercial, recreational (sport) collection of fish, shellfish, or other aquatic organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

**TABLE 4.8-2 (Continued)
DEFINITIONS OF BENEFICIAL USES OF SURFACE WATERS**

Beneficial Use	Description
Warm Freshwater Habitat (WARM)	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Rare, Threatened, or Endangered Species (RARE)	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal laws as rare, threatened, or endangered.
Migration of Aquatic Organisms (MIGR)	Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.
Spawning, Reproduction, and/or Early Development (SPWN)	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.
Aquaculture (AQUA)	Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.

SOURCE: CVRWQCB, 2004.

The objective of the federal CWA is “to restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” Under CWA section 303(d), the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. Table 4.8-3 provides details of the listing of Kaweah Lake and the lower Kings River as impaired water bodies, as designated by the CVRWQCB (2006), including pollutants and issues of concern. For those water bodies failing to meet standards, states are required to establish total maximum daily loads (TMDL). A TMDL defines how much of a specific pollutant a given water body can tolerate and still meet relevant water quality standards. To date, a TMDL has not been developed for Kaweah Lake or for the lower Kings River.

**TABLE 4.8-3
PROPOSED 2006 CWA SECTION 303(D) LIST OF
WATER QUALITY LIMITED SEGMENTS IN THE STUDY AREA**

Name	Pollutant/Stressor	Source	Proposed TMDL Completion Date
Kaweah Lake	Mercury	unknown	2019
Kings River (Island Weir to Stinson and Empire Weirs)	Electrical Conductivity Molybdenum Toxaphene	Agriculture	2015

SOURCE: CVRWQCB, 2006.

Water Quality Certification (CWA Section 401)

Section 404 of the CWA requires a permit from the United States Army Corps of Engineers (Corps) prior to discharging dredged or fill material into waters of the United States, unless such a discharge is exempt from CWA section 404. The term “waters of the United States” as defined in the Code of Federal Regulations (40 CFR 230.3[s]) includes all navigable waters and their tributaries. In addition, section 401 of the CWA requires that an applicant for any federal permit (e.g., a Corps 404 permit) obtain certification from the state that the discharge will comply with other provisions of the CWA and with state water quality standards. For the study area, the CVRWQCB or SWRCB (in the case of activities associated with water diversions) must provide the water quality certification required under section 401 of the CWA. SCE would contact the relevant federal agency(s) in order to determine whether the federal agency(s) would take jurisdiction on a specific project and require a permit; if a federal permit is required then SCE would also be required to obtain water quality certification from the CVRWQCB.

NPDES Program (CWA Section 402)

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added section 402(p), which establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. In November 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that establish storm water permit application requirements for discharges of storm water to waters of the United States from construction projects that encompass five or more acres of soil disturbance. Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES Program to address storm water discharges from construction sites that disturb land equal to or greater than one acre and less than five acres (small construction activity).

General Construction Permit (Order 99-08-DWQ)

While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the SWRCB has chosen to adopt only one statewide General Permit at this time that would apply to all storm water discharges associated with construction activity.² This General Permit requires all dischargers where construction activity disturbs one acre or more, to:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that would prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.
- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation.
- Perform inspections of all BMPs.

² SWRCB Order No. 99-08-DWQ National Pollutant Discharge Elimination System General Permit No. CAS000002.

This General Permit is implemented and enforced by the nine RWQCBs. The CVRWQCB administers the stormwater permitting program in the section of Tulare County that includes the study area. Dischargers are required to submit a Notice of Intent (NOI) to obtain coverage under this General Permit and annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected. Dischargers are responsible for notifying the relevant RWQCB of violations or incidents of non-compliance.

On August 19, 1999, the SWRCB reissued the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ, referred to as “General Permit”). In September 2000, a court decision directed the SWRCB to modify the provisions of the General Permit to require permittees to implement specific sampling and analytical procedures to determine whether BMPs implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt, and (2) preventing other pollutants, that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives. The monitoring provisions in the General Permit have been modified pursuant to the court order.

If the project is approved, SCE will submit an NOI to the SWRCB and obtain coverage under the General Permit. The preparation of a SWPPP would be required in accordance with the General Permit. The SWPPP would include, but not be limited to, relevant measures, conditions, and obligations which would reduce the impacts of construction activities on stormwater and receiving water quality and quantity.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Act (codified in the California Water Code, §13000 *et seq.*) is the basic water quality control law for California. As mentioned above, it is implemented by the SWRCB and the nine RWQCBs. The SWRCB establishes statewide policy for water quality control and provides oversight of the RWQCBs’ operations. The RWQCBs have jurisdiction over specific geographic areas that are defined by watersheds. Tulare County is under the jurisdiction of the CVRWQCB. In addition to other regulatory responsibilities, the RWQCBs have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the state³ could cause pollution or nuisance, including impacts to public health and the environment.

Dredge/Fill Activities and Waste Discharge Requirements

Actions that involve or are expected to involve dredge or fill, and discharge of waste, are subject to water quality certification under section 401 of the CWA and/or waste discharge requirements under the Porter-Cologne Act. The SWRCB’s Division of Water Rights processes section 401 water quality certifications on projects that involve water diversions (California Code of Regulations, title 23, § 3855). Chapter 4, Article 4 of the Porter-Cologne Act (California Water

³ “Waters of the state” are defined in the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” (Water Code, § 13050 (e))

Code, § 13260-13274), states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) shall file a Report of Waste Discharge with the applicable RWQCB. For discharges directly to surface water (waters of the United States) an NPDES permit is required, which is issued under both State and federal law; for other types of discharges, such as waste discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, or discharges to waters of the state (such as isolated wetlands), Waste Discharge Requirements (WDRs) are required and are issued exclusively under State law. The WDR application process is generally the same as for CWA section 401 water quality certification, though in this case it does not matter whether the particular project is subject to federal regulation. SCE would contact the CVRWQCB and file a Report of Waste Discharge; the CVRWQCB would then determine whether an issuance or a waiver of WDR is required.

Waiver for Dewatering and Discharge to Land (CVRWQCB Resolution R5-2003-0008)

The CVRWQCB has adopted a waiver of WDR (Resolution R5-2003-0008) for specific types of low-threat discharges to the land surface with the Central Valley region. Construction dewatering is among the activities covered by this waiver. Waivers serve much the same purpose as general permits (i.e., they are intended to describe a range of protective measures that could be applied to a broad category of activities). SCE would apply for and obtain this waiver from the CVRWQCB for their actions involving dewatering.

Floodway Encroachment (Central Valley Flood Protection Board)

The California Department of Water Resources (DWR), Central Valley Flood Protection Board (CVFPB; formerly the Reclamation Board), regulates the design and construction of encroachments which may affect flood control works and floodways along the Sacramento and San Joaquin Rivers and their tributaries. The CVFPB has jurisdiction over any project that proposes to work in a regulated stream, designated floodway, on federal flood control project levee slopes, or within 10 feet of the levee toe; this includes projects related to the installation of pipelines, conduits, and utility lines. Approval by the CVFPB is required for projects or uses which encroach into rivers, waterways, and floodways within and adjacent to federal and State authorized flood control projects and within designated floodways adopted by the CVFPB. Sections of Alternatives 2, 3 and 6 fall within the designated floodways of the Saint Johns River and/or Cottonwood Creek, and SCE would be required to consult with and obtain (if necessary) an encroachment permit (or waiver) from the CVFPB.

Local

Tulare County General Plan (Proposed Project and Alternatives 2, 3 and 6)

The following policies identified in the General Plan Conservation and Open Space Element may be applicable to the Proposed Project and alternatives:

Policy 6.C.2: Surface waters, which serve as substantial recharge sources for groundwater basins, should be maintained at levels of purity suitable for agricultural and domestic use, except that certain particulate materials may be tolerated because of natural filtration available.

Policy 6.C.3: Solid waste disposal areas should not be located where there is possibility of ground or surface water contamination. (At least four feet above the water table where there is a surface mantle of finely grained natural soil, well compacted, and at least ten feet above the water table where there is disposal of toxic wastes.)

Policy 6.C.10: Development practices that upset natural habitat in wetlands and watersheds should be controlled so as to minimize erosion and maximize beneficial vegetative growth.

Policy 6.C.24: During preliminary and final road location surveys, roads should be planned away from natural drainage channels. Stream crossing points should involve a minimum disturbance to banks and existing channels and excessive cuts and accumulations of waste soil near natural drainages avoided.

Policy 6.J.5: Building and road construction on slopes of more than 25 percent should be prohibited, and development proposals on slopes of 5-25 percent should be required to be accompanied by plans for control of prevention of erosion, alteration of surface water runoff, and increase of soil slippage and wildfire occurrence.

Policy 6.J.7: Channel modification should be discouraged in streams and rivers where they increase the rate of flow, rate of sediment transport, erosive capacity, have adverse effect on aquatic life or modify necessary groundwater recharge.

(Tulare County, 2001).

Fresno County General Plan (Proposed Project and Alternatives 2, 3 and 6)

The following policies identified in the General Plan Open Space and Conservation Element may be applicable to the Proposed Project and alternatives:

Policy OS-A.25: The County shall minimize sedimentation and erosion through control of grading, cutting of trees, removal of vegetation, placement of roads and bridges, and use of off-road vehicles. The County shall discourage grading activities during the rainy season unless adequately mitigated to avoid sedimentation of creeks and damage to riparian habitat.

Policy OS-A.26: The County shall continue to require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities and urban runoff.

(County of Fresno, 2000).

City of Visalia General Plan (Proposed Project and Alternatives 2, 3 and 6)

The following policies identified in the General Plan Conservation, Open Space, Recreation and Parks Element may be applicable to the Proposed Project and alternatives:

Policy 1.2.1: Protect, and where necessary, restore and enhance a continuous corridor of native riparian vegetation along planning area waterways.

(City of Visalia, 2003).

City of Farmersville General Plan (Proposed Project)

The Conservation, Open Space, Parks and Recreation Element of the Farmersville General Plan includes one general goal relating to hydrology, water resources, and water quality that is applicable to the Proposed Project; the goal states following: “protect air and water quality from negative impacts” (City of Farmersville, 2002).

4.8.2 Significance Criteria

Significance criteria, or thresholds, listed in Appendix G of the CEQA Guidelines are used to determine the significance of potential impacts due to the Proposed Project and alternatives. Based on criteria in Appendix G of the CEQA Guidelines, a project would be considered to have a significant hydrology- or water quality-related effect on the environment if it would:

- a) Violate any water quality standards or waste discharge requirements;
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- c) Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or sedimentation on- or off-site;
- d) Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- f) Otherwise substantially degrade water quality;
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- j) Be susceptible to inundation by seiche, tsunami, or mudflow.

Some of the criteria listed in Appendix G of the CEQA Guidelines are not directly applicable to the Proposed Project and alternatives, or otherwise do not merit further discussion. For example, the study area is not subject to inundation by seiche or tsunami, or mudflow. Further, all potential impacts of the Proposed Project and alternatives upon water quality are addressed within the context of criterion a). Criterion a) includes all applicable local, State, and federal water quality

standards or waste discharge requirements. Further, the CVRWQCB water quality standards and objectives are protective of a wide range of beneficial uses within all areas of the Proposed Project and alternatives (CVRWQCB, 2004). Resultantly, potential water quality impacts outside of those addressed by criterion a) are not applicable to the Proposed Project and alternatives and, consequently, impacts related to otherwise degrading water quality (criterion f)) are not addressed further in this EIR.

In addition, the Proposed Project and alternatives would not have an impact upon flooding, and the various criteria (d), e), g), and i)) related to flooding or stormwater drainage systems, are subsequently not applicable in this case. Neither the Proposed Project nor the alternatives would place housing within a 100-year flood hazard area, nor would they expose people or structures to a significant risk of loss, injury, or death involving flooding (e.g., any existing risk concerning flooding would not be exacerbated by the Proposed Project or the alternatives). The Proposed Project and alternatives would not increase the rate or amount of surface runoff such that it would result in substantial flooding. Regarding criterion e), there is no potential for the Proposed Project and alternatives to impact stormwater drainage systems or provide additional sources of polluted runoff not addressed in the context of the other criteria. All potential impacts concerning runoff and erosion resulting from implementation of the Proposed Project or alternatives are addressed under criteria a) and c).

The groundwater basins underlying the study area are relatively large, predominantly unconfined, and heavily impacted by existing agricultural demands (e.g., the annual overdraft within the Tulare Lake groundwater basin alone represents over half of the statewide total annual overdraft [Tulare County, 2007]). Groundwater use is not proposed for the Proposed Project or alternatives, and they would otherwise have negligible impact upon existing groundwater supplies and processes (criterion b)).

4.8.3 Applicant Proposed Measures

No Applicant Proposed Measures have been identified by SCE to reduce project impacts on hydrology and water quality.

4.8.4 Impacts and Mitigation Measures

Approach to Analysis

This impact analysis considers the potential hydrologic and water quality effects of activities associated with the construction operation, and maintenance of Proposed Project. The proposed modifications at the Springville, Vestal, and Big Creek 3 Substations consist solely of electrical system and safety upgrades, and the associated construction, operation and maintenance activities would have no impact with respect to hydrology and water quality. Similarly, the same type of electrical system and safety upgrade activities proposed for the Rector Substation would not have any potential hydrology and water quality impacts.

a) Violate any water quality standards or waste discharge requirements.

Impact 4.8-1: Construction and maintenance of the Proposed Project could result in increased erosion and sedimentation and/or pollutant (e.g., fuels and lubricants) loading to surface waterways, which could increase turbidity, suspended solids, settleable solids, or otherwise decrease water quality in surface waterways. *Less than significant with mitigation* (Class II)

Construction activities associated with the Proposed Project could increase the turbidity or otherwise degrade the water quality of receiving stream channels or other surface waterways. Activities that disturb the ground near or within a stream channel (e.g., clearing and grading) could make soils and sediments more susceptible to erosion by altering their existing structure or state. Depending on the distance and ground slope, some portion of the eroded material could eventually be delivered to a receiving stream channel or other type of waterway over a relatively short time period (e.g., during the next rain event). In this case, increased erosion rates would likely lead to increased sediment concentrations and turbidity levels in the receiving stream channel and have a potentially adverse impact on the beneficial uses identified by the CVRWQCB (2004). Further, moderate increases in surface runoff from construction areas could initiate or exacerbate an erosion and sediment delivery problem. An increase in the runoff rate from a construction area may result from temporarily decreasing ground surface resistance to overland flow (e.g., clearing of native vegetation or slope grading), decreasing the infiltration capacity of the soil by means of compaction (e.g., with heavy equipment), or by increasing the velocity of runoff (e.g., concentrating flow into manmade features or into existing rills or gullies). In addition, if construction equipment or workers inadvertently release pollutants (e.g., hydraulic fluid or petroleum) on site, these compounds could be entrained by runoff and discharged into receiving channel(s) causing water quality degradation. The extent of erosion or pollution that could occur at any given construction site varies depending on soil type, vegetation/cover, and weather conditions.

Most elements of the Proposed Project that would require construction involve only short-term (i.e., within a single season) construction activities, and thus the associated potential impacts would be short-lived in nature. Actions associated with the Proposed Project that include notable construction components include removal and installation of lattice towers, installation of new poles, preparation of wire stringing sites, installation of access roads, and development of material staging yards. Specific construction activities referenced under this potential impact include, but are not limited to, clearing and grading, excavation work, and the stockpiling of soil or sediments. The Proposed Project would disturb a total of approximately 161.3 acres, of which approximately 89.9 acres would be restored upon completion of construction activities. The area of disturbance would not be concentrated in one or two locations, but rather spread throughout the entire Proposed Project area at discrete locations along the alignment; this would reduce the magnitude of the overall potential impact with respect to erosion and sediment delivery and also make it easier to control or prevent these potential problems.

As described above, the Proposed Project would be required to adhere to a number of federal and State water quality provisions. SCE would be required to submit an NOI to the SWRCB in order

to obtain approval to carry-out construction activities under the General Permit or a waiver thereof (all construction activities proposed as part of the Project are those typically covered or waived under the General Permit). The preparation of a SWPPP would be required in accordance with the General Permit. The SWPPP would include, but not be limited to, relevant measures, conditions, and monitoring obligations which would reduce the impacts of construction activities on water quality. Additionally, actions that involve or are expected to involve dredge or fill material, and/or discharge of waste, are subject to water quality certification under section 401 of the CWA and/or waste discharge requirements under the Porter-Cologne Act. If a federal permit is required as part of the project, then water quality certification for the actions covered within the federal permit would be obtained from the CVRWQCB. Otherwise, Chapter 4, Article 4 of the Porter-Cologne Act (California Water Code, § 13260-13274), states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) shall file a Report of Waste Discharge with the applicable RWQCB and be subject to Waste Discharge Requirements (WDR). WDR typically address potential indirect discharges of waste to surface waters, such as waste discharges to land (e.g., spoils disposal and storage) or erosion from soil disturbance. The WDR application process is generally the same as for CWA section 401 water quality certification, though in this case it does not matter whether the particular project is subject to federal regulation. As discussed above, if a federal permit is required then SCE would be required to also obtain water quality certification from the CVRWQCB. In addition, SCE would contact the CVRWQCB and file a Report of Waste Discharge; the CVRWQCB would then determine whether an issuance or a waiver of WDR is required.

Construction and maintenance activities associated with the Proposed Project could also increase the turbidity within receiving stream channels or other surface waterways. A total of eight miles of new access roads would be installed, some very near to existing surface water channels such as Deep Creek, Outside Creek, and Yokohl Creek. In general, roads commonly lead to increases in the volume of surface runoff as well as increases in erosion and sediment delivery. This is attributable to the fact that road installation substantially reduces the infiltration capacity of soils and disturbs the existing soil structure, making the soil more susceptible to erosion and entrainment by runoff. The beneficial uses of the surface water channels within the Proposed Project area are protected by the water quality standards outlined in the Basin Plan (CVRWQCB, 2004); these beneficial uses could be adversely affected by increased sedimentation and turbidity levels resulting from the erosion and delivery of sediment from the proposed new access roads.

Potential construction and maintenance surface water quality impacts are somewhat different with respect to the existing requirements for water quality protection. The existing measures required of SCE (e.g., the General Permit, water quality certification, and/or WDR) are sufficient to reduce potential construction-related water quality impacts to a less than significant level. Though, with respect to potential impacts associated with the proposed new access roads, the required measures are not necessarily sufficient. Therefore, Mitigation Measure 4.8-1 would be required to specifically address the potential water quality impacts associated with proposed new roads.

Mitigation Measure 4.8-1: For all segments of new access roads that would be within 300 feet of an existing surface water channel (including irrigation ditches where no berm or levee is currently in place) and traverse a ground slope greater than two percent, the following protective measures shall be installed:

- Permanent access roads shall be in-sloped with a rock-lined ditch on the inboard side;
- Water bars, or a similar drainage feature, shall be installed at 150 foot intervals (so as to reduce the effective, connected length of the access road to 150 feet).

Significance after Mitigation: Less than Significant.

Impact 4.8-2: Dewatering during construction activities could release previously contaminated groundwater to surface water channels and/or increase sediment loading to surface water channels through overland discharge and subsequent erosion, both processes could decrease water quality in surface waterways. *Less than significant with mitigation (Class II)*

As discussed above, groundwater within the Proposed Project area could be as shallow as 30 feet. Therefore, the proposed excavations (up to 60 feet) could encounter groundwater in select locations, in which case dewatering would be necessary. Where the groundwater table is relatively shallow, some groundwater seepage may occur into pole excavation or auger holes requiring dewatering on a one-time basis immediately prior to pole placement and installation. All dewatering activities, when necessary, would discharge directly to the land surface in the vicinity of the particular installation or construction site. Any discharge to the land surface has the potential, depending on the volume and rate, to induce erosion and cause sediment to be delivered to nearby surface waterways. However, such discharges would be very limited in duration, only occur on a one-time basis, and would be distinct from stormwater discharges. The existing measures required of SCE as part of the waiver of WDR (CVRWQCB Resolution R5-2003-0008) would be sufficient to reduce the potential sediment loading impacts of dewatering activities to a less than significant level.

Though the dewatering process would be temporary, yielding only a small volume of groundwater, the potential exists for such water or saturated soils to already be contaminated. Discharge (i.e., through dewatering) or displacement of contaminated water or soil, as a result of excavation related to the Proposed Project, could potentially impact the beneficial uses of surface water or groundwater identified in the Basin Plan (CVRWQCB, 2004). Mitigation Measure 4.8-2 would be required to specifically address the potential water quality impacts associated with dewatering discharge of previously contaminated groundwater.

Mitigation Measure 4.8-2: If degraded soil or groundwater is encountered during excavation (e.g., there is an obvious sheen, odor, or unnatural color to the soil or groundwater), SCE and/or its contractor shall excavate, segregate, test, and dispose of degraded soil or groundwater in accordance with State hazardous waste disposal requirements.

Significance after Mitigation: Less than Significant.

c) Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or sedimentation on- or off-site.

Impact 4.8-3: Construction activities could impact local drainage patterns, or the course of a given stream, resulting in substantial on- or off-site erosion or sedimentation. *Less than significant with mitigation* (Class II)

The Proposed Project, in disturbing the ground and hillsides during construction activities, may alter existing drainage pathways so as to make surface soils more susceptible to erosive forces (i.e., overland flow) and/or generate enough increased runoff through removal/clearing of existing vegetation to increase surface erosion. This potential impact is synonymous with the potential impact of construction activities upon erosion processes, sediment delivery, and water quality, and it is addressed in Impact 4.8-1 (above).

Mitigation Measure 4.8-3: Implement Mitigation Measure 4.8-1, described above.

Significance after Mitigation: Less than Significant.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

Impact 4.8-4: Certain structures would be installed within a flood hazard area and could impede or redirect flood flows. *Less than significant* (Class III)

As part of the Proposed Project, new structures (i.e., poles) would be placed within a 100-year floodplain as identified by FEMA (1986). The 100-year floodplains relevant to the Proposed Project are those primarily related to the Kaweah River and Yokohl Creek. The new structures placed within the 100-year floodplains would not be large enough to impede or redirect flood flows. In the vicinity of the Proposed Project (i.e., the flat valley area), overbank flows spread-out rapidly and cover a relatively large area, and the effect that the new structures would have on the hydraulics of such flows is essentially negligible.

Mitigation: None required.

4.8.5 Cumulative Impacts

The geographic context for the cumulative impacts associated with hydrology and water quality is the Kaweah River watershed downstream (or west) of Terminus Dam.

The Proposed Project, along with the past, present, and reasonably foreseeable future projects in the area identified in Section 3.6, *Cumulative Projects*, would be required to comply with applicable federal, State, and local water quality regulations. This project, along with other projects involving similar general construction activities, would be required to obtain coverage under the General Permit, Section 401 (of the CWA) water quality certification, and/or WDR. Storm water management measures would be required to be identified and implemented that would effectively control erosion and sedimentation and other construction related pollutants during construction. Other management measures, such as construction of infiltration/detention basins, would be required to be identified and implemented that would effectively treat pollutants that would be expected for the post-construction land use for certain projects. Construction and operational related stormwater runoff from this project would be controlled by the requirements of an NPDES permit (e.g., General Permit), WDR measures, and mitigation measures required as part of this EIR. Other new development in the area would also be required to control construction and operational stormwater by implementing State and local requirements regarding hydrology and water quality, as well as by requirements introduced through CEQA review where applicable. Furthermore, the mitigation measures described above would ensure that the Proposed Project contribution to hydrologic resources and water quality impacts would be less than cumulatively considerable. Therefore, the impact of the Proposed Project, in combination with other past, present, and reasonably foreseeable projects, would be less than significant (Class III).

4.8.6 Alternatives

No Project Alternative

Under the No Project Alternative, the Proposed Project would not be implemented. Therefore, there would be no impacts related to hydrology and water quality (No Impact).

Alternative 2

In general, the potential impacts to hydrology and water quality resulting from the implementation of Alternative 2 would be the same as for the Proposed Project. However, some differences in the extent of the potential impacts should be noted.

As discussed above, with respect to the sections of Alternative 2 that fall within the designated floodways of the Saint Johns River and Cottonwood Creek, SCE would be required to consult with and obtain an encroachment permit (or waiver) from the Central Valley Flood Protection Board.

Further, compared to the Proposed Project, more new access roads would be installed under Alternative 2. A total of 11.4 miles (compared to eight miles) of new access roads would be installed, some very near to existing surface water channels such as Antelope Creek and tributaries to Antelope Creek. Also, under Alternative 2, roads would generally be installed on steeper slopes as compared with the Proposed Project. Some roads would be installed on slopes exceeding 25 percent (though the proposed “switch-back” design would decrease the actual road slope) and this may require further consultation with Tulare County staff in order to ensure that Alternative 2 is consistent with the policies presented in the General Plan (Tulare County, 2001) (e.g., Policy 6.J.5 states that building and road construction on slopes of more than 25 percent should be prohibited).

Though the extent and severity of the potential construction and maintenance impacts related to the implementation of Alternative 2 may be slightly greater, they would not warrant additional or different mitigation measures than those required for the Proposed Project. Therefore, Mitigation Measures 4.8-1, 4.8-2, and 4.8-3 would also be required for Alternative 2 and the potential impacts of this alternative to hydrologic resources and water quality would be less than significant (Class II).

Alternative 3

In general, the potential impacts to hydrology and water quality resulting from the implementation of Alternative 3 would be the same as for the Proposed Project. However, some differences in the extent of the potential impacts should be noted.

As discussed above, with respect to the sections of Alternative 3 that fall within the designated floodways of the Saint Johns River and Cottonwood Creek, SCE would be required to consult with and obtain an encroachment permit (or waiver) from the Central Valley Flood Protection Board.

Further, compared to the Proposed Project, more new access roads would be installed as part of Alternative 3. A total of 18.5 miles (compared to eight miles) of new access roads would be installed, some very near to existing surface water channels such as Moore Creek, Wilcox Creek, and Rattlesnake Creek (all tributaries to Cottonwood Creek). Also, under Alternative 3, roads would generally be installed on steeper slopes as compared with the Proposed Project. Some roads would be installed on slopes exceeding 25 percent (though the proposed “switch-back” design would decrease the actual road slope) and this may require further consultation with Tulare County staff in order to ensure that Alternative 3 is consistent with the policies presented in the General Plan (Tulare County, 2001) (e.g., Policy 6.J.5 states that building and road construction on slopes of more than 25 percent should be prohibited).

Though the extent and severity of the potential construction and maintenance impacts related to the implementation of Alternative 3 may be slightly greater, they would not warrant additional or different mitigation measures than those required for the Proposed Project. Therefore, Mitigation

Measures 4.8-1, 4.8-2, and 4.8-3 would also be required for Alternative 3 and the potential impacts of this alternative to hydrologic resources and water quality would be less than significant (Class II).

Alternative 6

In general, the potential impacts to hydrology and water quality resulting from the implementation of Alternative 6 would be the same as for the Proposed Project. However, some differences in the extent of the potential impacts should be noted.

As discussed above, with respect to the sections of Alternative 6 that fall within the designated floodways of the Saint Johns River or Cottonwood Creek, SCE would be required to consult with and obtain an encroachment permit (or waiver) from the Central Valley Flood Protection Board.

Many of the new access roads that would be installed for Alternative 6 would be the same as those proposed for Alternative 2 (i.e., for the first 8.1 miles north of the Rector Substation, and for the last 3.2 miles at the eastern end of the alignment); the principal difference being the central part of Alternative 6 alignment (i.e., the approximately 9.2 miles that would not fall within the same alignment as Alternative 2), where SCE access would be achieved primarily through modification of existing roads (e.g., widening existing roads by roughly eight feet). The exact area or linear distance of new access roads that would be required for Alternative 6 has not yet been quantified, though it would likely be less than that proposed for Alternative 2 as Alternative 6 endeavors to make considerable use of existing roads. However, as with Alternative 2, some new access roads would be installed very near to existing surface water channels such as Antelope Creek and tributaries to Antelope Creek. Also, under Alternative 6, roads would generally be installed on steeper slopes as compared with the Proposed Project (e.g., at locations on the eastern portion, where the alignment is synonymous with Alternative 2).

Though the extent and severity of the potential construction and maintenance impacts related to the implementation of Alternative 6 may be slightly greater, they would not warrant additional or different mitigation measures than those required for the Proposed Project. Therefore, Mitigation Measures 4.8-1, 4.8-2, and 4.8-3 would also be required for Alternative 6 and the potential impacts of this alternative to hydrologic resources and water quality would be less than significant (Class II).

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