5.9 Hydrology and Water Quality

This section describes the environmental and regulatory setting and discusses impacts associated with the construction and operation of the Sanger Substation Expansion Project (proposed project) proposed by Pacific Gas and Electric Company (PG&E, or the applicant) with respect to hydrology and water quality.

As part of the proposed project, the applicant would mount two dishes, each measuring about 4 feet in diameter, on an existing tower at the Fence Meadow Repeater Station in the Sierra National Forest. The installations would have no impact on hydrology or water quality because they would be installed on existing structures and would not require any ground disturbance or any work in or adjacent to waterbodies. Therefore, the antenna system at the Fence Meadow Repeater Station is not discussed further in this section.

5.9.1 Environmental Setting

The project site is within the Kings River floodplain; however, based on Federal Emergency Management Act maps, the proposed project site is not in a 100-year or 500-year floodplain (FEMA 2015). Flood impacts are therefore not discussed in this section.

Groundwater

The project site is located within the San Joaquin Valley Groundwater Basin in the Kings Subbasin (USGS 2012; USGS and SWRCB 2012). The depth to groundwater in the vicinity of the proposed project ranges from 50 to 60 feet below ground surface with water level in the vicinity having dropped 18 feet in the last 10 years (Fresno Irrigation District 2014, 2015). There are several groundwater wells used for agricultural operations near the project site, as shown in Figure 5.9-1. Water for the project could be obtained from the city of Sanger, the city of Fowler, or a private landowner near the project site (PG&E 2015). Groundwater from the Kings Subbasin is the sole source of supplied municipal and industrial water to the city of Sanger (King Basin Water Authority 2012). Groundwater is also the sole water source for the City of Fowler (Weisser pers. comm. 2016). The city of Fowler is located in the Kings Subbasin.

Surface Water and Site Drainage

The project site is located in a level agricultural area approximately 5 miles west of the Kings River, which is the closest major river to the project area. There are no rivers or surface water on the substation site or along the power line alignments within the project area. The closest surface water feature is a bermed agricultural ditch approximately 80 feet north of the north boundary of the substation expansion area, as shown in Figure 5.9-1.

The project site elevation ranges from approximately 348 to 352 feet above mean sea level from Jensen Avenue in the south to the northern expanded project boundary, respectively (Google Earth, Inc. 2016).

Dam Inundation

The project site is located within the dam failure inundation area of Pine Flat Dam, as identified by the 2000 Background Report for the Fresno County General Plan (Fresno County 2000). The dam and reservoir are located approximately 19 miles northeast of the project site. Under a full reservoir total dam failure scenario, the inundation area that includes Sanger, Fresno, and Clovis would be covered by a 2-foot deep sheet flow of flood water (Fresno County 2000).

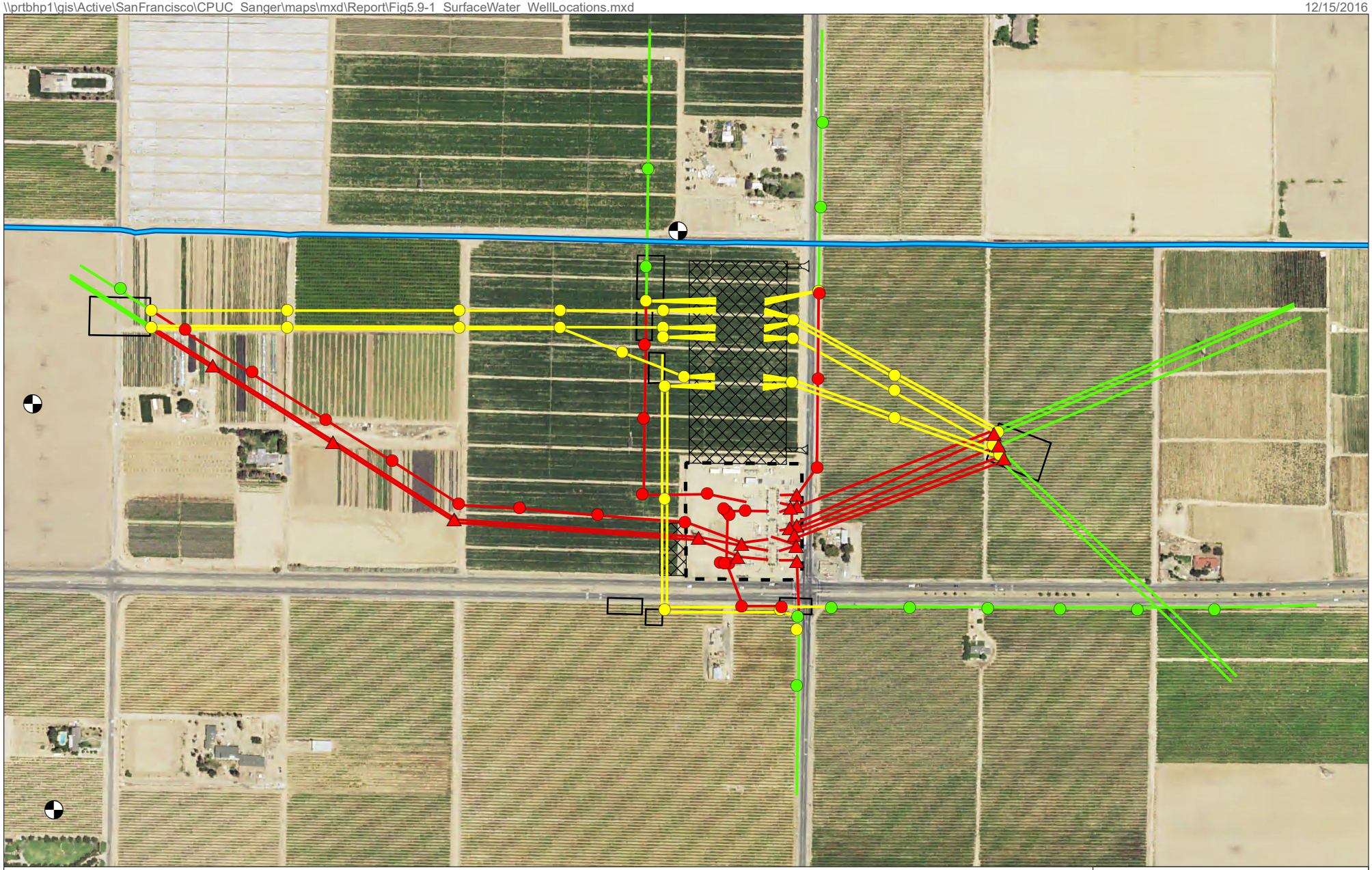

Figure 5.9-1
Surface Water Features and Water Well Locations
Sanger Substation
Fresno County, CA

5.9.2 Regulatory Setting

Federal

Clean Water Act Section 402 (National Pollution Discharge Elimination System)

As authorized by Section 402 of the Clean Water Act, the California State Water Resources Control Board (SWRCB) administers the statewide National Pollution Discharge Elimination System (NPDES) General Permit for Discharges of Stormwater Associated with Construction Activity (Construction General Permit) (NPDES Permit, 2009-0009-DWQ and 2010-0014-DWQ) that covers a variety of construction activities that could result in wastewater discharges. Under this system, the state grants coverage under the Construction General Permit for projects that disturb more than one acre of land. The SWRCB Construction General Permit process involves submittal of a Notice of Intent to the SWRCB to notify the agency of construction activity, development of a Stormwater Pollution Prevention Plan (SWPPP), and implementation of water quality monitoring activities if needed. The purpose of a SWPPP is to:

- Identify all pollutant sources that may affect the quality of discharges of storm water associated with construction activity from the construction site;
- Identify non-storm water discharges;
- Identify, construct, implement, and maintain best management practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction;
- Develop a maintenance schedule for BMPs installed during construction that are designed to reduce or eliminate pollutants after construction is completed;
- Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity that discharge directly to a waterbody listed for impairment due to sedimentation, in accordance with Clean Water Act Section 303(d); and
- Identify a sampling and analysis strategy and sampling schedule for discharges that are potentially contaminated by pollutants not visually detectable in the runoff.

The SWPPP would apply to all components of the proposed project that would result in ground disturbance.

State

Porter-Cologne Water Quality Control Act (Porter-Cologne Act)

Article 4 of the Porter-Cologne Water Quality Control Act (California Water Code 13260 et seq.) states that discharge of waste in an area that could affect Waters of the State requires filing a report of discharge with the Regional Water Quality Control Board. Waters of the State include surface water and groundwater in the state. Dischargers must obtain Waste Discharge Requirements.

Local

Fresno County General Plan

The *Fresno County General Plan* provides policy direction for land development in unincorporated Fresno County. The Open Space and Conservation Element of the plan includes the following goals and policies that are relevant to the proposed project:

- ***Goal OS-A:*** *To protect and enhance the water quality and quantity in Fresno County's streams, creeks, and groundwater basins.*
- ***Policy OS-A.23:*** *The County shall protect groundwater resources from contamination and overdraft by pursuing the following efforts:*
  - *Identifying and controlling sources of potential contamination;*
  - *Protecting important groundwater recharge areas;*
  - *Encouraging water conservation efforts and supporting the use of surface water for urban and agricultural uses wherever feasible;*
  - *Encouraging the use of treated wastewater for groundwater recharge and other purposes (e.g., irrigation, landscaping, commercial, and nondomestic uses);*
  - *Supporting consumptive use where it can be demonstrated that this use does not exceed safe yield and is appropriately balanced with surface water supply to the same area;*
  - *Considering areas where recharge potential is determined to be high for designation as open space; and*
  - *Developing conjunctive use of surface and groundwater.*
- ***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.*

5.9.3 Environmental Impacts and Assessment

Applicant Proposed Measures

The applicant has incorporated the following Applicant Proposed Measure (APM) into the project to specifically minimize or avoid impacts on hydrology and water quality. A list of all project APMs is included in Table 4-5.

APM GEO-2/APM WQ-1: Development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). Because the project involves more than an acre of soil disturbance, a SWPPP will be prepared for the project as required by the state National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Stormwater Associated with Construction Activity. This plan will be prepared in accordance with the Water Board guidelines and other applicable erosion and sediment control Best Management Practices (BMPs). Implementation of the plan will help stabilize disturbed areas and will reduce erosion and sedimentation. The SWPPP will designate BMPs that will be followed during and after construction of the project. Examples of erosion-minimizing measures that may be identified in the SWPPP include:

- Using drainage control structures (e.g., straw wattles or silt fencing) to direct surface runoff away from disturbed areas.

- Strictly controlling vehicular traffic.
- Implementing a dust-control program during construction.
- Restricting access to sensitive areas.
- Using vehicle mats in wet areas.
- Revegetating disturbed areas, where applicable, following construction.

In areas where soils are to be temporarily stockpiled, soils will be placed in a controlled area and will be managed with similar erosion control techniques. Where construction activities occur near a surface waterbody or drainage channel and drainage from these areas flows towards a waterbody or wetland, stockpiles will be placed at least 100 feet from the waterbody or will be properly contained (such as berming or covering to minimize risk of sediment transport to the drainage). Mulching or other suitable stabilization measures will be used to protect exposed areas during and after construction activities. Erosion-control measures will be installed, as necessary, before any clearing during the wet season and before the onset of winter rains. Temporary measures, such as silt fences or wattles intended to minimize erosion from temporarily disturbed areas, will remain in place until disturbed areas have stabilized.

The SWPPP will be designed specifically for the hydrologic setting of the project.

Impacts on Hydrology and Water Quality

Table 5.9-1 includes the significance criteria from Appendix G of the California Environmental Quality Act Guidelines' hydrology and water quality section to evaluate the environmental impacts of the proposed project. The proposed project would not be located in a 100-year floodplain. There would be no impact under criteria (g) and (h), and detailed analyses are, therefore, not provided in this section.

Table 5.9-1 Hydrology and Water Quality Checklist

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
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 the 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 siltation on- or off-site?	☐	☐	☒	☐
d. Substantially alter the existing drainage pattern of the 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?	☐	☐	☒	☐

Table 5.9-1 Hydrology and Water Quality Checklist

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water 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?	☐	☐	☒	☐
j. Expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

a. Would the project violate any water quality standards or waste discharge requirements?

Construction

NO IMPACT

The closest surface waterbody to the project site is an agricultural irrigation ditch approximately 80 feet north of the project site. No activities would involve filling this irrigation ditch or otherwise discharging materials into this irrigation ditch. Furthermore, the ditch is bermed. Given the distance of the ditch from the construction area and the presence of a berm, it is improbable that any hazardous materials spill or runoff would reach the irrigation ditch and affect water quality. PG&E would water the unpaved road adjacent to the irrigation ditch during construction for dust abatement pursuant to APM AIR-1, presented in Section 5.3.3. The road is below the grade of the berm and this water would not enter the irrigation ditch. There would be no excavation or drilling that could affect groundwater, given that groundwater is 50 to 60 feet below ground surface, which is deeper than any excavation required for the project. There would be no impact related to water quality standards or waste discharge requirements.

Operation and Maintenance

NO IMPACT

Operation and maintenance of the expanded substation would involve activities similar to the existing operation and maintenance activities. There would be no change to the risk impacts related to water quality and waste discharge requirements. There would be no impact.

b. Would the project 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)?

Construction

LESS THAN SIGNIFICANT IMPACT

Water supply for construction would be obtained from the City of Sanger and/or the City of Fowler and/or the substation expansion area landowner, all of which use groundwater. The estimated total water needs of the project construction are 1 million gallons for dust control, compaction, and concrete work. The substation expansion area currently supports row crops that are irrigated during the growing season, requiring 5.9 million gallons of groundwater per year. Overall, a reduction in groundwater use is anticipated at the site since crops would no longer be grown during construction within the proposed substation expansion site, and irrigation for this purpose would cease. Assuming all 1 million gallons of water are used during one year, there would be a net reduction in groundwater use of about 4.9 million gallons in that year of construction. Construction would use less groundwater than is currently used on the parcel for agricultural operations. Therefore, there would be a net reduction in groundwater use on the parcel during construction. There would be no adverse impact to groundwater levels or supplies during construction of the proposed project.

The proposed project would create approximately 6.8 acres of 95-percent compacted yard surface rock at the substation site during construction. This type of surface is considered impervious or less pervious. The power line reconfiguration work would add minimal interstitial impervious surface from foundation installation. The impervious surface at the substation site is associated with the expansion area, retention pond, and foundations. Storm water would accumulate in the on-site retention basin that would be constructed as part of the proposed project during precipitation events. The captured rain water runoff from the substation that is collected in the retention basin would eventually percolate into the ground. The small amount of new impervious surface compared to the size of the ground surface that recharges the groundwater basin, abundant pervious surface surrounding the project site, and percolation from the retention basin means that groundwater recharge would not be measurably impacted. Impacts to recharge would be less than significant.

Operation and Maintenance

NO IMPACT

Operation and maintenance of the expanded substation would not require water. Furthermore, the current water demands for the irrigation of eggplant crops that are planted in the proposed substation expansion area would cease because the crops would be removed as part of construction of the proposed project, resulting in a net reduction of 5.9 million gallons of groundwater use per year. No additional impervious surface would be created during operation and maintenance of the proposed project. There would be no adverse impact to groundwater during operation and maintenance of the proposed project.

c. Would the project substantially alter the existing drainage pattern of the 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 siltation on- or off-site?

Construction

LESS THAN SIGNIFICANT IMPACT

Ground disturbance would occur during construction at the substation expansion site, access roads, and power line reconfiguration. Grading would be minimal and would not affect active drainages. The

substation site, where most grading would occur, is nearly level; therefore, grading would not substantially affect the grade of the site. The substation expansion site would be graded to divert all storm water to a new retention basin in the southwestern portion of the expansion area. The substation site would also be covered with crushed rock. These components would prevent substantial erosion and siltation once these elements are in place. However, during active grading and construction activities for trenching and substation site grading, which could require up to 3 feet of overexcavation, there could be significant erosion impacts. The applicant would be required to develop and implement a SWPPP that would address erosion control per APM GEO-2/APM WQ-1. Implementation of the BMPs in the SWPPP as detailed in APM GEO-2/APM WQ-1, such as using straw wattles and stockpiling soils in a controlled area, would minimize the potential for erosion and siltation on site. Impacts from construction would be less than significant with the implementation of APM GEO-2/APM WQ-1.

Operation and Maintenance

NO IMPACT

No additional changes to drainages would be created during operation and maintenance of the proposed project. There would be no adverse impact related to drainages and sedimentation and siltation during operation and maintenance of the proposed project.

d. Would the project substantially alter the existing drainage pattern of the 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?

Construction

LESS THAN SIGNIFICANT IMPACT

Ground disturbance would occur during construction at the substation expansion site, access roads, and in the power line reconfiguration area. The grading would be minimal and would not affect active drainages. The substation expansion site, where most grading would occur, is nearly level; therefore, grading would not substantially affect the grade of the site. The substation expansion site would be mostly covered with crushed rock, which would decrease permeability of the site and could increase runoff from the expansion area. The substation expansion site would be graded to divert all storm water to a new retention basin in the southwestern portion of the expansion area. The storm water retention basin would provide approximately 40,000 cubic feet of storage for the proposed facility. The site drainage system and retention basin would be designed to collect and allow infiltration of the volume of runoff generated by impervious (10 percent), semi-pervious (70 percent), and pervious (20 percent) surfaces of the facility during a 50-year storm event. Grading associated with power line reconfiguration would be limited in area such that it may result in some localized ponding, but these impacts would be minor and temporary. Impacts would be less than significant.

Operation and Maintenance

NO IMPACT

No additional changes to drainages would be created during operation and maintenance of the proposed project. There would be no adverse impact related to drainages and flooding during operation and maintenance of the proposed project.

e. Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Construction

LESS THAN SIGNIFICANT IMPACT WITH MITIGATION

The project site is not served by any existing or planned public or private storm water drainage systems other than the drainage system at the existing Sanger Substation. Ground disturbance during construction activities at the substation expansion site, access roads, and power line reconfiguration work areas would mobilize sediment and could result in polluted runoff. Discovery of contaminated soils may also result in polluted runoff. Construction activities also carry the risk of a hazardous materials spill, which could contribute to polluted runoff. Once constructed, the site drainage system and retention basin for the expanded substation would collect and retain the volume of runoff generated by the facility during a 50-year storm event. However, until the retention basin is constructed, the potential for creation of polluted runoff would be significant. APM HAZ-2 would require that construction crews are trained in safe handling of hazardous materials prior to the initiation of construction activities. APM HAZ-4 would require suspected contaminated soils to be tested. These APMs are fully described in Section 5.8.3. GEO-2/APM WQ-1 would require implementation of a SWPPP to minimize sedimentation through implementation of BMPs.

Implementation of the SWPPP APM would reduce sedimentation impacts to less than significant. Implementation of the hazardous materials APMs mentioned above could prevent some hazardous materials impacts from occurring during routine construction. However, not enough details are provided in APM HAZ-2 and APM HAZ-4 to determine their effectiveness in preventing hazardous materials impacts. For example, APM HAZ-2 requires spill response equipment and training but does not require immediate and thorough cleanup of spills and does not require storage of equipment to contain runoff from contaminated areas from accidental spills. And APM HAZ-4 requires testing of removed soil suspected of contamination, but does not contain specific details on equipment to keep on site to allow for removal of such soil as well as coordination procedures to follow if contaminated soil is located. Hazardous materials pollution impacts could remain significant. MM HAZ-1 would require the applicant to prepare and implement a Hazardous Materials Management Plan to ensure that specific actions and protocols are established. MM HAZ-1 is fully described in Section 5.8.3 and would supersede APM HAZ-2 and APM HAZ-4. Through implementation of MM HAZ-1, in addition to APM GEO-2/APM WQ-1, potential impacts associated with polluted runoff due to hazardous materials would be less than significant.

Operation and Maintenance

LESS THAN SIGNIFICANT IMPACT

Operation and maintenance activities for the proposed project would be comparable to the activities currently occurring at the project site. No new ground disturbance is planned, such that no new sources of sedimentation would be created during operation and maintenance. The new configuration of the substation, including the retention basin, would result in an outdated Spill Prevention, Control, and Countermeasure plan for Sanger Substation, which could result in polluted runoff if there is a hazardous materials spill and thus a significant impact. As described in Section 5.8.3, under APM HAZ-1 the applicant would prepare a new Spill Prevention, Control, and Countermeasure plan for Sanger Substation to address the new substation design and retention basin. Impacts would be less than significant with the implementation of APM HAZ-1.

f. Would the project otherwise substantially degrade water quality?

NO IMPACT

All potential impacts to water quality are addressed under other significance criteria. The proposed project's construction and operation would not otherwise substantially degrade water quality. There would be no other water quality impact.

i. Would the project 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?

LESS THAN SIGNIFICANT IMPACT

The project site is located within a potential dam failure inundation area associated with Pine Flat Dam. The project area could be temporarily flooded by the initial water surge following a catastrophic failure of Pine Flat Dam. Flood waters would be only up to 2 feet deep at the project site. Dam failure risk at the project site would not change after the project is built. Currently, the project site contains a substation with certain risks from dam failure. The proposed project would result in an expanded substation at the same site, with similar risks, given that operation and maintenance activities would be appreciably the same as current activities. Therefore, the proposed project would not exacerbate the risk of dam failure, and construction and operation of the project would result in a less than significant impact.

j. Would the project expose people or structures to a significant risk of inundation by seiche, tsunami, or mudflow?

NO IMPACT

Even though the project is located within a seismically active region, no waterbodies are located in the vicinity of the project that are capable of generating seiches or tsunamis that could result in inundation at the project site. Mudflows require super-saturated slope conditions. The topography at and adjacent to the project site is generally level. Slopes capable of generating mudflows are not present and would not be created by project implementation. There would be no impact.