Section 4.9
Hydrology and Water Quality
4.9.1 Introduction

This section addresses potential impacts of the North Sky River Wind Energy Project and the Jawbone Wind Energy Project (project) on hydrology and water quality, addresses the existing environmental conditions in the project area, identifies and analyzes environmental impacts, and recommends mitigation measures to reduce or avoid adverse impacts anticipated from the construction, operation, and decommissioning activities associated with the project. In addition, existing laws and regulations relevant to hydrology and water quality are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts.

Data collection was conducted through review of a wide variety of applicable resources, including the following: aerial photographs; United States Geological Survey (USGS) topographic maps; National Hydrography Dataset (NHD) and CalWater Geographic Information Systems (GIS) data; the Basin Plan of the Lahontan Regional Water Quality Control Board (RWQCB); the 2006 Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments from the State Water Resources Control Board (SWRCB); groundwater basin data from Bulletin 118 – Update 2003 published by the California Department of Water Resources (DWR); climate data from the National Oceanographic and Atmospheric Administration (NOAA); flood hazard data from the Federal Emergency Management Agency (FEMA); soil data from the Natural Resources Conservation Service (NRCS); and field reconnaissance data.

The study area was defined as the set of existing water resources crossed or overlain by the project and alternatives, as well as any downstream resources which could reasonably be affected by the project and alternatives. The current condition and quality of these water resources are described in technical studies completed by Pinnacle Civil Engineering (PCE, 2010). This technical study addresses the project area and is presented as Appendix I.1 to this Environmental Impact Report (EIR). In addition, a hydrogeologic exploratory drilling and aquifer testing program was conducted in 2011 and described in a water supply assessment prepared by Wood Rodgers, Inc. to characterize groundwater conditions and supply availability at the project site; this report is presented as Appendix I.2 to this EIR.

As described in Section 2.4 (Decision-Making Process), during the scoping period for the project, a public scoping meeting was conducted and written comments were received by agencies and the public regarding the project. The discussion presented under “NOP Written Comments” in Section 2.4 includes a description of scoping comments submitted by the Lahontan RWQCB for issues related to hydrology and water quality. All scoping issues related to hydrology and water quality are addressed in this section, as summarized below.

- Permitting requirements relevant to hydrology and water quality are listed in Section 4.9.3 (Regulatory Setting) and discussed under Impact 4.9-1 (Violate Any Water Quality Standards or Waste Discharge Requirements).
- The Water Quality Control Plan (Basin Plan) for the Lahontan Region is discussed in Section 4.9.2 (see “Surface Water”) and Section 4.9.3 (see “State”). Beneficial Uses relevant to the project area as designated in the Basin Plan are identified in Section 4.9.2 and discussed under Impact 4.9-3 (see “Beneficial Uses”).
Potential temporary and permanent effects to surface waters, including hydrologic effects associated with drainage pattern alterations, are addressed under Impacts 4.9-3 and 4.9-4. Mitigation measures identified under these impact discussions would minimize or avoid impacts and ensure that significant unavoidable effects do not occur.

Discussion of 100-year storm events is provided under Section 4.9.2 (see “Surface Water”) and designated Flood Hazard Areas are shown on Figure 4.9-2. Potential impacts associated with 100-year storm events are assessed under Impact 4.9-7.

In addition to the above issues noted by the Lahontan RWQCB, the cumulative impact analysis is presented under Impact 4.9-9 (Contribute to Cumulative Hydrology and Water Quality Impacts) and includes discussion of future hydrology and water quality impacts of other projects that would have the potential to affect the same water resources as the project. The full discussion of hydrology and water quality impacts is provided in Section 4.9.4.

4.9.2 Environmental Setting

Regional Climate and Topography

The project is located on 13,535 acres of land in the southeastern portion of an unincorporated area of Kern County, shown on Figure 3-1. Topography at the project site is characterized as a double-peaked hill that steeply slopes to the east from about 4,210 feet above mean sea level (msl) into a small alluvial plain at about 3,910 feet above msl (County, 2010). The site is located 12 miles northwest of the City of California City and 12 miles northeast of the City of Tehachapi, in the Antelope Valley.

The climate in this region is characterized by hot, dry summers, mild to cool winters, and sparse rainfall; average annual temperature ranges between 80 degrees Fahrenheit (°F) in July and 45 °F in December (City-Data.com, 2011). Average precipitation ranges between five and 10 inches per year, from less than five inches per year along the northerly boundary of the Antelope Valley to about 10 inches per year along the southerly boundary (AVIRWMP, 2007). Most precipitation occurs between October and March, although short duration thunderstorms sometimes occur during the summer months (AVIRWMP, 2007).

Domestic water sources in the project area are both groundwater extracted from local wells and imported water from the Tehachapi-Cummings County Water District (TCCWD) (County, 2010). Groundwater resources are discussed below, under the “Groundwater” subheading. The TCCWD, located in the Tehachapi Mountains southwest of the project site, delivers imported State Water Project water from the California Aqueduct (TCCWD, 2003). The California Aqueduct is 444 miles long and transports water south for both the State Water Project and the federal Central Valley Project.

Surface Water

Southeastern Kern County is within the Antelope-Fremont Valleys Watershed (EPA, 2011), within which the project site is encompassed by the Jawbone Canyon Watershed (PCE, 2010). This watershed is approximately 90 square miles in size (PCE, 2010). As described in Section 3.1 of this EIR, the project site is 13,535 acres, or roughly 21 square miles, which represents approximately 23 percent of the total Jawbone Canyon Watershed area. Water quality regulation for this area is governed by the South Lahontan RWQCB.

Figure 4.9-1 (Surface Waters at the Proposed Project Site) shows surface water features in the project area. Cottonwood Creek, an ephemeral drainage, runs in a west-east direction through the
The central portion of the project site, between Kelso Valley Road and Jawbone Canyon Road. Cottonwood Creek joins Jawbone Canyon Wash at the southeast portion of the project site, west of where Jawbone Canyon Road turns to the north. Jawbone Canyon Wash runs towards the southwest, along the southeastern boundary of the project site. Hoffman Canyon Creek, also an ephemeral drainage, runs in a north-south direction, parallel to the west of Jawbone Canyon Road and east of the project site. Ephemeral tributaries of Cottonwood Creek, Hoffman Creek, and Jawbone Wash run through the project site, typically in northwest-southeast directions. (Trails.com, 2011)

The Lahontan RWQCB has indicated that the ephemeral drainages located throughout the project site and in the surrounding area are identified in the Water Quality Control Plan for the Lahontan Region (Basin Plan) as minor surface waters with a variety of designated Beneficial Uses (Lahontan RWQCB, 2010; Lahontan RWQCB, 1995). An explanation of the Beneficial Uses relevant to the project site is provided below.

- **MUN: Municipal and Domestic Supply.** Beneficial uses of waters used for community, military, or individual water supply systems including drinking water supply.
- **AGR: Agricultural Supply.** Beneficial uses of waters used for farming, horticulture, or ranching, including irrigation, stock watering, and vegetation or range grazing.
- **GWR: Groundwater Recharge.** Beneficial uses of waters used for natural or artificial recharge of groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifer.
- **REC-1: Water Contact Recreation.** Beneficial uses of waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible, such as swimming, among other uses.
- **REC-2: Non-Contact Water recreation.** Beneficial uses of waters used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible, such as camping and boating.
- **WARM: Warm Freshwater Habitat.** Beneficial uses of waters that support warm water ecosystems including preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.
- **WILD: Wildlife Habitat.** Beneficial uses of waters that support wildlife habitats including the preservation and enhancement of vegetation and prey species used by wildlife.

The Lahontan RWQCB has expressed concern that implementation of the project would require realignment, channelization, lining, and/or infilling of surface waters that could adversely affect the Beneficial Uses listed above, particularly MUN, GWR, WARM, and WILD (Lahontan RWQCB, 2010). These concerns are summarized in Section 2.4 and addressed below, under Impact 4.9-3 (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 Matter Which Would Result in Substantial Erosion or Siltation on Site or Off Site).
Through the Alteration of the Course of a Stream or River, or Substantially Increase the Rate or Amount of Surface Runoff in a Matter Which Would Result in Substantial Erosion or Siltation on Site or Off Site).

The project site is located to the west of the Los Angeles Department of Water and Power’s (LADWP) Los Angeles Aqueduct, a 223-mile long system that conveys water from the Owens Valley to the southern California water market. Figure 4.9-1 shows that the eastern-most boundary of the project site is within 5 miles of the Los Angeles Aqueduct, while the western-most boundary is within 10 miles. This portion of the Los Angeles Aqueduct is contained within a 52-inch aboveground pipe. Jawbone Canyon Road, which provides access to the project site, traverses the Los Angeles Aqueduct.

In addition to the defined and ephemeral drainage channels within the project area, floodplains are an important part of the surface water setting. A floodplain is a geographic area of relatively level land that is occasionally subject to inundation by surface water from rivers or streams. The Federal Emergency Management Agency (FEMA) has classified Flood Zones for the project area. The FEMA’s Flood Insurance Rate Map (FIRM) Panel 2475E of Community Panel Number 06029C, dated September 2008, includes the project site (FEMA, 2008). This map shows that portions of the project site are designated as Flood Zone A, which indicate areas subject to inundation by the 100-year flood, or the flood with a one percent chance of occurring in a year. Figure 4.9-2 shows FEMA-designated Flood Hazard Areas on the project site, and indicates that Flood Hazard Areas are associated with Cottonwood Creek and Jawbone Canyon Wash.

There are no oceans, lakes, or reservoirs in the project area.

**Groundwater**

The project site is underlain by the Kelso Lander Valley Groundwater Basin and, in the southern-most portions of the site, the Fremont Valley Groundwater Basin (SWRCB, 1995). See Figure 4.9-3 (Groundwater Resources in the Project Area).

**Kelso Lander Valley Groundwater Basin (DWR #6-69).** The Kelso Lander Valley Groundwater Basin underlies 17.5 square miles of a northwest-trending valley in eastern Kern County. The basin is bounded by nonwater-bearing crystalline rocks of the southern Sierra Nevada, with peaks on the north, east, and southeast that reach elevations of approximately 6,000 feet above msl and Sorell Peak to the west exceeding 7,700 feet about msl. (DWR, 2003a)

Natural recharge of the Kelso Lander Valley Groundwater Basin occurs through the percolation of runoff from the surrounding watershed through alluvial fan deposits. Recharge also occurs through subsurface inflow and the infiltration of precipitation on the valley floor. Groundwater flow direction is towards Jawbone Canyon. (DWR, 2003a)

The water-bearing materials of the Kelso Lander Valley Groundwater Basin are dominated by Quaternary alluvium that includes unconsolidated younger alluvial deposits and underlying unconsolidated to poorly consolidated older alluvial deposits. (DWR, 2003a)
Figure 4.9-1
Surface Water and Wetlands
Figure 4.9-2
FEMA-Designated Flood Hazard Areas
Figure 4.9-3
Groundwater Resources
Groundwater level trends, groundwater storage capacity, groundwater in storage, and groundwater budget for this basin are unknown (DWR, 2003a). In addition, the DWR has not assessed overdraft conditions for the Kelso Lander Valley Groundwater Basin. However, an assessment of water supply in this groundwater basin conducted in 2011 (Wood Rodgers, 2011) suggests that the basin is not in overdraft conditions and that sufficient water supply is available to meet the requirements of project construction and operation. This study is further discussed under Impact 4.9-2 (Substantially Deplete Groundwater Supplies or Interfere with Groundwater Recharge Such that There Would Be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level).

In the Kelso Lander Valley Groundwater basin, the character of groundwater quality varies, with predominant cations typically represented by calcium and sodium with the predominant anions typically bicarbonate and sulfate. Groundwater in this basin is marginal to inferior for domestic use because of elevated fluoride concentrations; however, it is suitable for most irrigation uses. (DWR, 2003a)

**Fremont Valley Groundwater Basin (DWR #6-46).** The Fremont Valley Groundwater Basin underlies 523 square miles of alluvial valley in eastern Kern County and northwestern San Bernardino County. The basin is bounded on the northwest by the Garlock fault zone against impermeable crystalline rocks of the El Paso Mountains and the Sierra Nevada. This basin is bounded on the east by crystalline rocks of the Summit Range, Red Mountain, Lava Mountains, Rand Mountains, Castle Butte, Bissel Hills, and Rosamond Hills. The basin is bounded on the southwest by the Antelope Valley Groundwater Basin along a groundwater divide approximated by a line connecting the mouth of Oak Creek through Middle Butte to exposed basement rock near Gem Hill (DWR, 2003b).

Natural recharge of the Fremont Valley Groundwater Basin includes the percolation of ephemeral streams that flow from the Sierra Nevada. The general groundwater flow direction is toward Koehn Lake at the center of the valley. There is no appreciable quantity of groundwater flowing out of the basin (DWR, 2003b).

The water-bearing materials of the Fremont Valley Groundwater Basin are dominated by Quaternary alluvium and lacustrine deposits. Groundwater in the alluvium is generally unconfined, although locally confined conditions occur near Koehn Lake (DWR, 2003b).

The total storage capacity of the basin is calculated to be approximately 4,800,000 acre feet. Hydrographs indicate that groundwater elevations declined in the southwestern part of the basin by approximately nine feet between 1957 and 1999 (DWR, 2003b). Overdraft conditions for the Fremont Valley Groundwater Basin are not known.

In the Fremont Valley Groundwater basin, no primary Maximum Contaminant Levels are exceeded. However, groundwater in parts of the basin has high concentrations of Total Dissolved Solids, including fluoride and sodium (DWR, 2003b).

### 4.9.3 Regulatory Setting

Construction of the project would be subject to County, State, and federal water quality regulations, as discussed below. Additional regulations related to water quality impacts are presented in Sections 4.4 (Biological Resources), 4.6 (Geology and Soils), and 4.8 (Hazards and Hazardous Materials).
Federal

Clean Water Act (CWA)

The CWA (33 United States Code (USC) Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States (U.S.). The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the U.S., and has given the Environmental Protection Agency (EPA) the authority to implement pollution control programs. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs. The project is within the jurisdiction of the South Lahontan RWQCB.

Section 401, Water Quality Certification. Section 401 of the CWA requires that any activity, including river or stream crossing during road, pipeline, or transmission line construction, which may result in discharges into a State waterbody, must be certified by the RWQCB. This certification ensures that the proposed activity does not violate State and/or federal water quality standards. The limits of non-tidal waters extend to the Ordinary High Water (OHW) line, defined as the line on the shore established by the fluctuation of water and indicated by physical characteristics, such as natural line impressed on the bank, changes in the character of the soil, and presence of debris. The United States Army Corps of Engineers (USACE) may issue either individual, site-specific permits or general, nationwide permits for discharge into U.S. waters.

Section 402, National Pollutant Discharge Elimination System (NPDES). Section 402 of the CWA authorizes the California SWRCB to issue NPDES General Construction Storm Water Permit (Water Quality Order 99-08-DWQ), referred to as the “General Construction Permit”. Construction activities can comply with and be covered under the General Construction Permit provided that they:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will 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.

For the project, NPDES regulations are administered by the South Lahontan RWQCB. Projects that disturb one or more acres, including the project, are required to obtain NPDES coverage under the Construction General Permits.

Section 404, Discharge of Dredged or Fill Materials. Section 404 of the CWA requires a permit for construction activities involving placement of any kind of fill material into waters of the U.S. or wetlands. A Water Quality Certification pursuant to Section 401 of the CWA is required for Section 404 permit actions. If applicable, construction would also require a request for Water Quality Certification (or waiver thereof) from the South Lahontan RWQCB. When an application for a Section 404 permit is made the applicant must show it has:
- Taken steps to avoid impacts to wetlands or waters of the U.S. where practicable;
- Minimized unavoidable impacts on waters of the U.S. and wetlands; and
- Provided mitigation for unavoidable impacts.

Section 404 of the CWA requires a permit for construction activities involving placement of any kind of fill material into waters of the U.S. or wetlands. A Water Quality Certification pursuant to Section 401 of the CWA is required for Section 404 permit actions. If applicable, construction would also require a request for Water Quality Certification (or waiver thereof) from the South Lahontan RWQCB. Project activities would adhere to State and federal water quality standards and would be in compliance with Sections 401 and 404 of the CWA.

**Section 303, Water Quality Standards and Implementation Plans.** Section 303(d) of the CWA (CWA, 33 USC 1250, et seq., at 1313(d)) requires states to identify “impaired” water bodies as those which do not meet water quality standards. States are required to compile this information in a list and submit the list to the USEPA for review and approval. An affected waterbody, and associated pollutant or stressor, is then prioritized in a list of impaired water bodies known as the 303(d) List. The Clean Water Act further requires the development of a Total Maximum Daily Load (TMDL) for each water body listed as impaired. The SWRCB and RWQCBs have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TMDL requirements. No water bodies in the project area are listed as impaired on the current 2007 303(d) List, which was approved by the USEPA on June 28 (SWRCB, 2007).

**National Flood Insurance Program (NFIP)**

The National Flood Insurance Program (NFIP), implemented by the Congress of the United States in 1968, enables participating communities to purchase flood insurance. Flood insurance rates are set according to flood-prone status of property as indicated by Flood Insurance Rate Maps (FIRM) developed by the Federal Emergency Management Agency. FIRMs identify the estimated limits of the 100-year floodplain for mapped watercourses, among other flood hazards. As a condition of participation in the NFIP, communities must adopt regulations for floodplain development intended to reduce flood damage for new development through such measures as flood proofing, elevation on fill, or floodplain avoidance. Kern County participates in the NFIP, and FIRM number 06029C2475E represents the project area.

**State Department of Water Resources (DWR)**

The California DWR major responsibilities include preparing and updating the California Water Plan to guide development and management of the State's water resources; planning, designing, constructing, operating, and maintaining the State Water Resources Development System; regulating dams; providing flood protection; assisting in emergency management to safeguard life and property; educating the public; and serving local water needs by providing technical assistance. In addition, DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

**Senate Bill 610**

Senate Bill 610 (SB610) was passed on January 1, 2002, amending California state law to require detailed analysis of water supply availability for large development projects. The primary purpose of SB610 is to improve the linkage between water and land use planning by ensuring greater
communication between water providers and local planning agencies, and ensuring that land use decisions for certain large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. SB610 requires the preparation of a Water Supply Assessment (WSA) for a project that is subject to the California Environmental Quality Act (CEQA) and meets certain requirements; each of these requirements is discussed below with regards to the project.

1. Is the project subject to CEQA under Water Code Section 10910?
   Yes. As presented in this EIR, the project requires issuance of permits by a public agency and is, therefore, subject to CEQA.

2. Is the project a “Project” under Water Code Section 10912?
   A project would meet the definition of “Project” per Water Code Section 10912 if it is:
   - A proposed residential development of more than 500 dwelling units;
   - A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
   - A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
   - A proposed hotel or motel, or both, having more than 500 rooms;
   - A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
   - A mixed-use project that includes one or more of the projects specified in this subdivision; or
   - A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project (DWR, 2003c).

   Based on the definitions of “Project” listed above, the proposed North Sky River Wind Energy Project and Jawbone Wind Energy Project do not meet the intent of the SB 610 definition. While the project would be an industrial facility, it would not be an “industrial plant” with more than 1,000 persons or an “industrial park” planned to house more than 1,000 persons. The project would not include any structures or units characterized as residential, shopping, business, commercial, manufacturing, processing, or mixed-use. Kern County, as the CEQA Lead Agency for the project, has determined that the project does not meet the definition of “Project” per SB610; however, the applicant has prepared a WSA for the purposes of this EIR. This decision is not an authoritative interpretation of the types of projects that should be required per SB 610; other Lead Agencies may choose to make different decisions on similar projects, with regards to the applicability of SB610.

3. Is there a public water system that will service the project?
   Due to the remote location of the project area, there is no existing domestic water delivery system or public water system located within the project site. As described below under item 5, water may be obtained from the Tehachapi-Cummings County Water District and imported to the site via trucks, but this water would not be delivered to the site via Tehachapi-Cummings County Water District infrastructure or connections.
4. Is there a current Urban Water Management Plan (UWMP) that accounts for the project demand?

The project site is located adjacent to the north/northwest of the service area for the Antelope Valley-East Kern (AVEK) Water Agency’s 2008 UWMP, as shown in Appendix E of the UWMP (AVEKWA, 2008). However, the Kelso Lander Valley Groundwater Basin, which underlies the project site and could be used to meet water supply requirements for the project, is not within the service area for the AVEK 2008 UWMP. Therefore, it cannot be assumed that water requirements associated with the project are accounted for in the AVEK 2008 UWMP.

5. Is groundwater a component of the supplies for the project?

During construction of the project, water would be pumped from the Kelso Lander Valley Groundwater Basin, which underlies the northwestern portion of the project site. As described in the water supply assessment prepared for the project, sufficient groundwater supplies are anticipated to be available to meet the project’s construction and operations water requirements under varying climatic conditions for the lifetime of the project (Wood Rogers, 2011). Water would be pumped from one of two existing groundwater wells on the project site. If use of these wells is not available or if the wells are determined to be unsuitable to meet the project’s water supply requirements, water would be imported from the Tehachapi-Cummings County Water District via truck. Water for the Operation and Maintenance (O&M) facility operations would either be obtained from a well on the property or trucked in.

**Porter-Cologne Water Quality Control Act**

The California SWRCB regulates water quality through the Porter-Cologne Water Quality Act of 1969, which contains a complete framework for the regulation of waste discharges to both surface waters and groundwater of the State. On the regional level, the project falls under the jurisdiction of the Lahontan RWQCB, Region 6, which is responsible for the implementation of State and federal water quality protection statutes, regulations and guidelines. The Lahontan RWQCB has developed a Water Quality Control Plan for the Lahontan Region (Basin Plan) to show how the quality of the surface and ground waters in the Lahontan Region should be managed to provide the highest water quality reasonably possible. The Basin Plan lists the various beneficial uses of water within the region, describes the water quality which must be maintained to allow those uses, describes the programs, projects, and other actions which are necessary to achieve the standards established in this plan, and summarizes plans and policies to protect water quality. The project would be expected to not disrupt current or designated beneficial uses of surface waters.

**Streambed Alteration Agreement (California Fish and Game Code)**

Section 1602 of the California Fish and Game Code protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the California Department of Fish and Game (CDFG) in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State, and requires any person, State or local governmental agency, or public utility to notify the CDFG before beginning any activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
• Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

During final engineering and design of the project, if it is determined that any project-related actions would have the potential to necessitate a Streambed Alteration Agreement, then such an agreement would be prepared and implemented prior to construction of the project, thus maintaining compliance with Section 1602 of the California Fish and Game Code. A Streambed Alteration Agreement is required if the CDFG determines the activity could substantially adversely affect an existing fish and wildlife resource. The agreement includes measures to protect fish and wildlife resources while conducting the project. The CDFG must comply with the CEQA before it may issue a final Lake or Streambed Alteration Agreement; therefore, the CDFG must wait for the lead agency to fully comply with the CEQA before it may sign the draft Lake or Streambed Alteration Agreement, thereby making it final.

**California Water Code §13260**

California Water Code §13260 requires that any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB; the project is within the jurisdiction of the Lahontan RWQCB. Any actions related to the project that would be applicable to California Water Code §13260 would be reported to the South Lahontan RWQCB.

**California Water Code §13751**

California Water Code §13751 requires a Report of Well Completion to be filed with the DWR within 60 days of well completion. New wells must comply with DWR Well Standards as described in Water Resources Bulletins 74-81 and 74-90.

**NPDES General Construction Permit**

The NPDES was established per 1972 amendments to the federal Water Pollution Control Act, in order to control discharges of pollutants from point sources (Section 402). As described above, under “Federal,” 1987 amendments to the Clean Water Act created a new section of the act devoted to storm water permitting (Section 402(p)), with individual States designated for administration and enforcement of the provisions of the Clean Water Act and the NPDES permit program. The SWRCB issues both General Construction Permits and individual permits under this program.

Projects disturbing more than one acre of land during construction are required to file a Notice of Intent (NOI) with the SWRCB to be covered under the State NPDES General Construction Permit for discharges of storm water associated with construction activity. The project proponent must control measures that are consistent with the State General Permit. A SWPPP must be developed and implemented for each site covered by the General Permit. A SWPPP describes BMPs the discharger will use to protect stormwater runoff and reduce potential impacts to surface water quality through the construction period. The SWPPP must contain the following: a visual monitoring program; a chemical monitoring program for “non-visible” pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment (SWRCB, 2006). The area that would be disturbed under the proposed project exceeds one acre and; therefore, the project would be required to comply with the General Permit.
Local

**Kern County General Plan (KCGP)**

The policies, goals, and implementation measures in the KCGP for hydrology and water quality applicable to the project are provided below. The KCGP, originally adopted on June 15, 2004 and last amended on September 22, 2009, contains additional policies, goals, and implementation measures that are more general in nature and not specific to the project; these are not listed below but are incorporated by reference.

**Chapter 1. Land Use / Conservation / Open Space Element**

1.3 Physical and Environmental Constraints

**Policies**

- **Policy 1.** Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained (Map Code 2.1 [Seismic Hazard], Map Code 2.2 [Landslide], Map Code 2.3 [Shallow Groundwater], Map Code 2.5 [Flood Hazard], Map Codes from 2.6 – 2.9, Map Code 2.10 [Nearby Waste Facility], and Map Code 2.11 [Burn Dump Hazard]) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.

- **Policy 6.** Regardless of percentage of slope, development on hillsides will be sited in the least obtrusive fashion, thereby minimizing the extent of topographic alteration required and reducing soil erosion while maintaining soil stability.

- **Policy 7.** Ensure effective slope stability, wastewater drainage, and sewage treatments in areas with steep slopes are adequate for development.

- **Policy 8.** Encourage the preservation of the floodplain’s flow conveyance capacity, especially in floodways, to be open space/passive recreation areas throughout the County.

- **Policy 9.** Construction of structures that impede water flow in a primary floodplain will be discouraged.

- **Policy 10.** The County will allow lands which are within flood hazard areas, other than primary floodplains, to be developed in accordance with the General Plan and Floodplain Management Ordinance, if mitigation measures are incorporated so as to ensure that the proposed development will not be hazardous within the requirements of the Safety Element (Chapter 4) of this General Plan.

- **Policy 11.** Protect and maintain watershed integrity within Kern County.

**Implementation Measures**

- **Implementation Measure E.** Development proposed in areas with steep slopes will be reviewed for conformity to the adopted Hillside Development Ordinance to ensure that appropriate soil stability, drainage, and sewage treatment will result.

- **Implementation Measure F.** The County will comply with the Colbey-Alquist Floodplain Management Act in regulating land use within designated floodways.

- **Implementation Measure H.** Development within areas subject to flooding, as defined by the appropriate agency, will require necessary flood evaluations and studies.

- **Implementation Measure I.** Designated flood channels and water courses, such as creeks, gullies, and riverbeds, will be preserved as resource management areas or in the case of urban areas, as linear parks whenever practical.
• **Implementation Measure J.** Compliance with the Floodplain Management Ordinance prior to grading or improvement of land for development or the construction, expansion, conversion or substantial improvements of a structure is required.

• **Implementation Measure N.** Applicants for new discretionary development should consult with the appropriate Resource Conservation District and the California RWQCB regarding soil disturbances issues.

### 1.9 Resources

**Policies**

• **Policy 11.** Minimize the alteration of natural drainage areas. Require development plans to include necessary mitigation to stabilize runoff and silt deposition through utilization of grading and flood protection ordinances.

### 1.10.6 Surface Water and Groundwater

**Policies**

• **Policy 34.** Ensure that water quality standards are met for existing users and future development.

• **Policy 40.** Encourage utilization of community water systems rather than the reliance on individual wells.

• **Policy 41.** Review development proposals to ensure adequate water is available to accommodate projected growth.

• **Policy 43.** Drainage shall conform to the Kern County Development Standards and the Grading Ordinance.

• **Policy 44.** Discretionary projects shall analyze watershed impacts and mitigate for construction-related and urban pollutants, as well as alterations of flow patterns and introduction of impervious surfaces as required by the CEQA, to prevent the degradation of the watershed to the extent practical.

• **Policy 46.** In accordance with the Kern County Development Standards, tank truck hauling of domestic water for land developments or lots within new land developments is not permitted.

### Implementation Measures

• **Implementation Measure Y.** Promote efficient water use by utilizing measures such as:
  
  i. Requiring water-conserving design and equipment in new construction.
  
  ii. Encouraging water-conserving landscaping and irrigation methods.
  
  iii. Encouraging the retrofitting of existing development with water conserving devices.

### Kern County Ordinances

The Wind Energy (WE) Combining District (Chapter 19.64) contains development standards and conditions (Section 19.64.140) that would be applicable to the siting and operation of wind turbine generators (WTGs). The following provisions apply to hydrology and water quality issues related to the project.

**Zoning Ordinance**

**Chapter 19.64 WE Combining District**

In 1986, the WE Combining District was adopted as Chapter 19.64 of the Kern County Zoning Ordinance. The WE Combining District promotes the development of wind energy in Kern County. The WE Combining District (Chapter 19.64) contains development standards and conditions...
(Section 19.64.140) that would be applicable to the siting and operation of WTGs. The following provision applies to hydrology and water quality issues related to the project:

Section 19.64.140.K. Prior to issuance of any grading permit, a plan for the mitigation of potential soil erosion and sedimentation shall be prepared by a registered civil engineer or other professional and submitted for approval by the Director of the Engineering, Surveying, and Permit Services Department. The soil erosion and sedimentation control plan shall be consistent with the applicable requirements of the California SWRCB pertaining to the preparation and approval of SWPPPs (in compliance with the federal CWA, described above). Notwithstanding the foregoing, the revegetation portion of the soil erosion and sedimentation plan shall be prepared by a professional biologist or other professional approved, in advance, by the Engineering, Surveying, and Permit Services Department.

The plan shall include a timetable for full implementation, estimated costs, and a surety bond or other security as approved by the Engineering, Surveying, and Permit Services Department in an amount determined by that department to guarantee plan implementation. The soil erosion and sedimentation control plan, including the revegetation plan and security instrument, shall be submitted to, and approved by, the Floodplain Management Section of the Engineering, Surveying, and Permit Services Department prior to the issuance of any grading permit. The security shall remain on file with the Engineering, Surveying, and Permit Services Department until that department has verified that the plan has been successfully implemented.

**Chapter 19.70 Floodplain Combining District**

Section 19.70.040 of the Kern County Zoning Ordinance prohibits the following uses in the Floodplain (FP) Combining District:

A. All uses prohibited by the base district with which the FP District is combined.

B. All uses that will likely increase the flood hazard or affect the water-carrying capacity of the floodplain beyond the limits resulting from encroachment as specified in Section 19.70.130 of this chapter.

C. Dumping, stockpiling, or storage of floatable substances or other materials which, in the opinion of the Kern County Engineering, Surveying, and Permit Services Department, will add to the debris loads of the stream or watercourse, unless protected by flood control devices approved by the Kern County Engineering, Surveying, and Permit Services Department and constructed in accordance with Section 19.70.130 of this chapter.

D. Storage of junk or salvage operations.

E. Oil storage tanks or processing equipment, unless floodproofed or sufficiently elevated above the Base Flood Elevation, as determined by the Kern County Engineering, Surveying, and Permit Services Department.

F. Individual sewage disposal systems (e.g., septic tank systems), unless protected by flood control devices approved by the Kern County Engineering, Surveying, and Permit Services Department and constructed in accordance with the requirements of the Kern County Health Department so as to minimize infiltration of floodwaters into the systems and discharges from the systems into the floodwaters.

G. Sources of water supply (e.g., wells, springs) unless protected by flood control devices approved by the Kern County Engineering, Surveying, and Permit Services Department and constructed in accordance with the requirements of the Kern County Health Department so as to minimize infiltration of floodwaters.
H. Any use which endangers the temporary safeguards erected for flood protection.

**Building and Construction Ordinance**

Chapter 17.28 Kern County Grading Code

Requirements of the Kern County Grading Code will be implemented. A grading permit will be obtained prior to commencement of construction activities. Of particular note with respect to hydrology and water quality is Section 17.28.140, Erosion Control, as discussed in Section 4.6 (Geology and Soils).

Chapter 17.48 Kern County Floodplain Management

Any construction that takes place within areas of special flood hazards, areas of flood-related erosion hazards, and areas of mudslide (i.e., mudflow) hazards within the jurisdiction of unincorporated Kern County will comply with the requirements and construction design specifications of this ordinance. Any required development permits will be obtained prior to commencement of construction activities.

### 4.9.4 Impacts and Mitigation Measures

**Methodology**

This section describes the potential hydrology and water quality impacts associated with development of the North Sky River Wind Energy Project and Jawbone Wind Energy Project (project). This analysis first established baseline conditions for the affected environment relevant to hydrology and water quality, as presented above in Section 4.9.2. These baseline conditions were evaluated based on their potential to be affected by construction activities as well as O&M activities for the project. Sections 3.7 (Construction), 3.8 (Operation and Maintenance Activities), and 3.9 ( Decommissioning and Repowering) of this EIR describe the activities that are reasonably expected to occur over the lifetime of the project (anticipated to be approximately 30 years), including construction and installation of WTGs, operation and maintenance, and decommissioning. The predicted interactions between the affected environment and project activities are evaluated based on the significance criteria defined below.

**Thresholds of Significance**

The Kern County CEQA Implementation Document and Kern County Environmental Checklist state that a project would normally be considered to have a significant impact if it would:

- Violate any water quality standards or waste discharge requirements;
- 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);
- 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 site or off site;
- 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 site or off site;
- 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;
• Otherwise substantially degrade water quality;
• 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;
• Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
• 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
• Result in inundation by seiche, tsunami, or mudflow.

The Notice of Preparation/Initial Study (NOP/IS) prepared for the project found that there would be no impact to hydrology and water quality related to the following significance criteria topics: placement of housing within a mapped 100-year flood hazard area; and the exposure of 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. Therefore, it is not necessary to further address these issues in this EIR analysis.

Project Impacts

Impact 4.9-1: Violate Any Water Quality Standards or Waste Discharge Requirements

Development of the project would result in a significant impact to hydrology and water quality if associated construction, maintenance, or decommissioning activities would result in the violation of any water quality or waste discharge standards. Such violations could occur through the creation of erosion, sedimentation, and/or polluted runoff, through the accidental release of potentially hazardous materials required during construction or operational activities, and/or through the discharge of contaminated groundwater during dewatering activities. Applicable water quality standards and regulations are presented in Section 4.9.3 (Regulatory Setting). Potential impacts associated with water quality or waste discharge violations are described below.

Soil Erosion and Sedimentation

Soil-disturbing activities that would occur during construction of the project include the following activities: grading of roads, turbine foundations, and crane pads; grading of substation, concrete batch plant, O&M building, materials laydown area, and equipment staging areas; construction of turbine tower foundations and transformer pads; and construction of the substations and O&M building. Preparation of the project site for construction would involve land clearing and grading by removing topsoil and vegetation for roads, WTG foundations, and substations. All grading and excavation activities would have the potential to cause water quality degradation resulting from soil disturbance. In particular, due to the steep terrain in some areas of the project site, the installation and/or upgrading of access roads would require substantial earth-moving activities with the potential for associated water quality effects.

As described in Section 4.9.2 (Environmental Setting), Cottonwood Creek and Jawbone Canyon Wash traverse the project site, in addition to multiple intermittent or ephemeral waterways. Soil-disturbing activities required for project implementation are summarized above. Of these activities, road construction, widening, and/or improvement for either temporary or permanent access, particularly in steep terrain, have the potential to cause soil instability resulting in erosion (soil transport) and subsequent water quality degradation via sediment deposition into local waterways (soil delivery). Land disturbance associated with road construction and improvements would include: vegetation clearing, blade grading, soil compaction, installation of drainage structures and
stream crossings, and installation of slope-strengthening structures as needed. These activities involve soil disturbance and stockpiling of earth that could potentially accelerate soil erosion. Exposed and disturbed soils could be transported via wind and/or stormwater runoff into surface drainages on the project site, as well as their downstream tributaries. The potential for water quality degradation to occur as a result of soil erosion and sedimentation is greatest on steeper slopes, and where project access roads traverse stream channels.

**Hazardous Materials**

During construction or operation and maintenance of the project, any activity which results in the accidental release of hazardous or potentially hazardous materials could result in water quality degradation. Hazardous and potentially hazardous chemicals used during construction of the project and its associated linear facilities will include gasoline, diesel fuel, motor oil, hydraulic fluid, antifreeze, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. The preparation and pouring of concrete and the use of motorized equipment are examples of construction activities that would involve the use of potentially harmful materials. Excess concrete could flow away from a concrete batch plant, turbine foundation site, or substation construction site. Motorized equipment could leak hazardous materials such as motor oil, transmission fluid, or antifreeze due to inadequate or improper maintenance, unnoticed or unrepai red damage, improper refueling, or operator error.

As described in Section 3.8 (Operation and Maintenance Activities), during operation and maintenance of the project, hazardous and potentially hazardous chemicals (for example, oil, grease, and ethylene glycol) would be used to lubricate and cool the WTGs and ancillary facilities; a radiator would dissipate heat and would contain a water and ethylene mixture that would be tested annually. The gearbox would contain approximately 70 gallons of oil that would not be routinely renewed. The WTGs would be equipped with leak-proof gaskets. Possible leakage or spillage during operations and/or maintenance of the WTGs would be confined within the towers. A supply of chemicals would be stored on site in the maintenance yard. Due to the remote location of the site, it is expected that two 500-gallon diesel storage tanks would be installed on site to serve O&M vehicles. To minimize the potential for harmful releases through spills or contaminated runoff, chemicals would be stored in tanks or drums located within secondary containment areas. Use of extremely hazardous materials is not anticipated. Storage and use of hazardous materials would be subject to a hazardous materials management plan approved by Kern County. In contrast with construction activities, which would include more intensive use of heavy equipment for longer periods of time, operation and maintenance of the project would have substantially less potential to result in an accidental spill or release of hazardous materials that could cause water quality degradation.

In addition to the potential for water quality to be affected by the accidental release of hazardous materials, water quality degradation could also occur as a result of the discharge of contaminated groundwater during dewatering activities, if necessary. Dewatering activities would be required if groundwater is unexpectedly encountered during project construction. Any dewatering activities would be performed in compliance with applicable State and local regulatory requirements. These operations may include, as applicable, the use of sediment traps and sediment basins in accordance with the California Stormwater Quality Association (CASQA) Handbook for Construction (CASQA, 2009), which provides guidance for selecting and implementing BMPs to eliminate or reduce the discharge of pollutants from construction sites to waters of the State. Depth to groundwater at the project site is not known; therefore, it is possible that groundwater resources
may be unexpectedly encountered and dewatering activities would be required. Discharge of the dewatered effluent would be regulated under the NPDES General Construction Permit, administered by the Lahontan RWQCB. Compliance with the conditions of the NPDES General Construction Permit would ensure that contaminated groundwater is properly tested and treated, if necessary, prior to discharge to any surface water.

**Conclusion**

During construction of the project, potential impacts to water quality associated with erosion and sedimentation would be localized and temporary. The project proponents would implement measures to minimize and contain erosion and sedimentation in accordance with the Kern County Grading Code, and would be required to submit a grading permit to the County for approval prior to commencement of any construction activities. Land clearing and grading would be performed according to the Soil Erosion and Sedimentation Mitigation Plan as required by Section 19.64.140.K (WE Combining District - Development Standards and Conditions) of the Kern County Zoning Ordinance. Additionally, because the project would disturb more than one acre, the project proponents would be required to obtain and comply with the NPDES General Permit. As required by this permit, the project proponents would develop and implement a SWPPP, including a Rain Event Action Plan (REAP) prior to permit approval.

**Mitigation Measures**

Mitigation measures identified in other issue area sections of this EIR that would help to minimize or avoid the potential for project activities to result in the violation of any water quality standards or waste discharge requirements are summarized below. Please see Section 4.4 (Biological Resources) for the full text of Mitigation Measure 4.4-30, Section 4.6 (Geology and Soils) for the full text of Mitigation Measures 4.6-5 and 4.6-6, and Section 4.8 (Hazards and Hazardous Materials) for the full text of Mitigation Measures 4.8-1 and 4.8-3. Mitigation Measure 4.9-1 was introduced specifically for this issue area and the full text of MM 4.9-1 is presented below the following bullet list, which provides summaries of all MMs relevant to Impact 4.9-1.

- **MM 4.9-1** requires the project proponent(s) to submit a road plan to the County for approval at least 60 days prior to commencement of construction activities, thereby facilitating the identification and implementation of any necessary Best Management Practices to control erosion and/or sedimentation, and the identification and prevention of any potential disturbances to drainages and/or riparian areas. The road plan shall clearly identify all planned road construction and improvements to existing roads, all drainage crossings, and all sensitive habitat within 100 feet of road improvements.

- **MM 4.4-30** requires the project proponent(s) to demonstrate compliance with all required water quality permits prior to commencement of any construction activities. All required water quality permits would be maintained and made available on-site at all times during construction of the project.

- **MMs 4.6-5 and 4.6-6**, would minimize the potential impacts of grading and would require implementation of specific Best Management Practices to reduce the potential for water quality degradation through erosion and sedimentation, as specified in the Soil Erosion and Sedimentation Control Plan.

- **MM 4.8-1** requires that all hazardous materials are properly stored, handled by trained individuals, and disposed of in accordance with applicable laws and regulations, and Mitigation Measure 4.8-3, which requires specific herbicide application equipment and
techniques to protect water quality from degradation through improper handling and application of herbicides. Additionally, to prevent hazardous materials from entering drainages and affecting water quality, the applicant would be required to implement a Hazardous Materials Business Plan and submit it to the Kern County Environmental Health Services Department for review and approval, as discussed in Section 4.8 (Hazards and Hazardous Materials).

Mitigation Measure 4.9-1, listed below and summarized in the list above, would be implemented with the project.

**MM 4.9-1** The project proponent(s) shall submit a Road Plan to the Kern County Engineering, Surveying, and Permit Services Department for approval prior to any access or spur road construction and/or upgrades. The Road Plan shall identify the precise location of all planned access and spur road construction and/or improvements to existing roads, the specific improvements/modifications that would be undertaken at each location or road segment, including the planned width of each completed segment, the engineered limits of cut and fill, the location of any drainage and/or sensitive habitat within 100 feet of either edge of the planned access or spur road, and the location and construction details of any new or modified stream crossings or drainage diversion structures. Should the Road Plan propose a “cut” or “fill” of more than twelve (12) inches, or the movement of more than fifty (50) cubic yards of material, the Road Plan shall be submitted in the form of a grading permit application to the Kern County Engineering, Surveying, and Permit Services Department for review and approval.

**Level of Significance after Mitigation**

Impacts would be less than significant.

**Impact 4.9-2: Substantially Deplete Groundwater Supplies or Interfere with Groundwater Recharge Such that There Would Be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level**

Construction, operation, and/or decommissioning of the project could impact groundwater supply and recharge if one of the following occurs: the affected groundwater basin is in overdraft conditions; construction activities cause the affected groundwater basin to be in overdraft; substantial drawdown occurs at groundwater wells in the area as a result of construction groundwater pumping; or project activities redirect natural recharge to groundwater basin(s), such as through the introduction of impervious areas that prevent infiltration. Each of these potential conditions is discussed below.

During construction, water requirements would be met using local groundwater resources pumped from an on-site well and stored in a temporary or permanent reservoir, or water would be purchased from an off-site source and trucked on to the site. Potential off-site sources include the Cal Portland Mojave Plant and/or the Los Angeles Aqueduct. During operations, water requirements would also be met using an on-site groundwater well, and/or by trucking water on to the site. No impacts to groundwater supply would occur if water is purchased from an off-site source. For the purposes of this impact analysis, it is assumed that local groundwater resources would be used to meet all construction and operational water supply requirements.

**Overdraft.** Groundwater overdraft occurs when the quantity of water removed from a groundwater basin exceeds the rate of recharge to that basin. As described above in Section 4.9.2, the overdraft
conditions for the Kelso Lander Valley Groundwater Basin and the Fremont Valley Groundwater Basin have not been assessed by the DWR. If overdraft conditions are present and construction of the project utilizes local groundwater resources, the project could exacerbate overdraft conditions, resulting in adverse impacts to groundwater resources. Overdraft conditions can be temporary and of varying duration, depending upon the intensity and duration of activities which cause such conditions to occur. A recent assessment of the Kelso Lander Valley Groundwater Basin conducted by Wood Rogers Inc. suggests that the basin is not in overdraft conditions and that sufficient water supply is available within this basin to meet project construction and operational water requirements (Wood Rogers, 2011). Use of local groundwater resources to meet water requirements during project construction would require groundwater monitoring and reporting activities, conducted in coordination with local agencies, in order to avoid and/or minimize potential overdraft impacts.

**Drawdown.** Drawdown occurs when groundwater pumping at one well lowers the aquifer level such that other wells in the vicinity experience an increased depth to groundwater, requiring greater energy to draw the same volume of water from affected wells. Section 3.4 describes that several year-round and seasonal residences exist near the project site; due to the remote location of the project site, it is reasonably assumed that residences in the area utilize private groundwater wells to meet domestic water needs. Depending on the location of project supply wells in proximity to other local private groundwater wells, and the pumping rate and duration required to meet project needs, construction of the project could result in adverse drawdown effects.

The assessment of groundwater supplies conducted by Wood Rogers Inc. includes preliminary analysis of drawdown effects in the area of the pump test well, located in the southwestern portion of Kelso Lander Valley Groundwater Basin, and determines that drawdown effects would be temporary and of short duration (Wood Rogers, 2011). As with overdraft, drawdown conditions can be temporary and of varying duration, depending upon the intensity and duration of activities which cause such conditions to occur. Use of local groundwater resources to meet water requirements during project construction would require groundwater monitoring and reporting activities, conducted in coordination with local agencies, in order to avoid and/or minimize potential drawdown impacts.

**Recharge.** The project would introduce new impervious surfaces associated with the following permanent project components: WTGs, service roads, a power collection system, communication cables, overhead and underground transmission lines, electrical switchyards, project substation(s), meteorological towers, and operation and maintenance facilities. The project would also introduce new temporary impervious areas through construction access roads, lay-down areas, and concrete batch plants. The total project area is 13,535 acres, and the new areas of impervious surfaces that would be introduced as a result of the project would not have a measurable effect on groundwater recharge. Any small increase in runoff would be localized and would not result in an appreciable impact to groundwater recharge.

**Mitigation Measures**

If water for project construction and operation is obtained from the Tehachapi-Cummings County Water District and trucked to the site instead of pumped from groundwater wells at the project site, Mitigation Measures 4.9-2 and 4.9-3 would not be required, and the project proponents would not be responsible for implementing a Water Supply Contingency Plan or a Groundwater Monitoring and Reporting Plan. Regardless of the water source used during project construction and operation, the project proponents would be required to implement Mitigation Measures 4.9-4 and 4.9-5 to address drainage designs and dewatering practices.
Prior to construction, the project proponent(s) shall develop and implement a Water Supply Contingency Plan. The Water Supply Contingency Plan shall be prepared by a qualified hydrogeologist and submitted by the project proponent(s) to Kern County for review and approval. The Water Supply Contingency Plan shall provide detailed procedures for conducting a groundwater investigation to determine whether the identified groundwater resource(s) to be used for the project is in overdraft conditions; such investigation may include review of historic groundwater well data, groundwater monitoring, hydrologic modeling, and/or interviews with private well owners. The project proponent(s) shall coordinate groundwater investigation efforts with the Lahontan Regional Water Quality Control Board. This groundwater investigation shall occur prior to the onset of construction in order to ensure that no groundwater resources from overdrafted basins are used to meet project needs.

The Water Supply Contingency Plan shall identify at least two groundwater supply wells for project use during construction, a primary supply well and a secondary supply well. The Water Supply Contingency Plan shall identify the well sites, proximity to other active wells, estimated total depth, well screen depth, diameter, estimated yield and water quality. If the daily yields of the primary supply well are inadequate or become inadequate to meet the project requirements, the secondary supply well shall be used in order to avoid potential drawdown impacts at wells near the primary. Use of a secondary supply well would not alter the quantity of groundwater pumped for project purposes; the purpose of the secondary supply well would be to avoid potential impacts associated with over-pumping the primary supply well.

The Water Supply Contingency Plan shall specify when the second supply well shall be used, what conditions would trigger necessary use of the second supply well, the person responsible for determining when to utilize the second supply well, and how such use shall be reported. The Environmental Monitor shall verify that the secondary supply well is installed and is capable of producing daily yields sufficient to supplement or replace the primary supply well in meeting construction water demand, as needed.

The project proponent(s) shall develop and implement a Groundwater Monitoring and Reporting Plan prior to the onset of construction of the project. The Groundwater Monitoring and Reporting Plan shall be prepared by a qualified hydrogeologist and submitted by the project proponent(s) to Kern County for review and approval. The Groundwater Monitoring and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels, water quality, and flow. Monitoring shall be performed during pre-construction, construction, and project operation with the intent to establish pre-construction and project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the project pumping wells and near potentially impacted existing private wells. The monitoring wells shall include locations up-gradient, lateral, and down-gradient of all project supply wells and a minimum of three offsite down-gradient wells. Water quality monitoring shall include annual sampling and testing for Total Dissolved Solids, which include minerals, salts, and metals dissolved in water. Water quality samples shall be drawn from project supply wells, one up-gradient well, and a minimum of two down-gradient offsite wells.

During construction, quarterly water level monitoring data reports shall be submitted by the project proponent(s) to Kern County for review. Based on the results of the
quarterly trend analyses, the project proponent(s) shall determine if the project pumping has resulted in water level decline of five feet or more below the baseline trend at nearby private wells. If drawdown of five feet or more occurs at off-site wells, the project proponent(s) shall immediately reduce groundwater pumping until water levels stabilize or recover, sustaining drawdown of less than five feet. Alternatively, the project proponent(s) shall provide compensation to the well owner, including reimbursement of increased energy costs, or deepening the well or pump setting.

4.9-4 Prior to the onset of construction of the project, the project proponent(s) shall submit a Drainage Design Plan to Kern County for review and approval. In the Drainage Design Plan, groundcover for the new substation shall be comprised of a pervious and/or high-roughness material (for example, gravel) to the maximum extent feasible, in order to ensure maximum percolation of rainfall after construction. Detention/retention basins shall be installed to reduce local increases in runoff, particularly on frequent runoff events (up to 10 year frequency). Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimic the natural conditions as much as possible.

4.9-5 If groundwater is unexpectedly encountered during construction, operation, or decommissioning of the project, dewatering activities shall be performed in compliance with the California Stormwater Quality Association Handbook for Construction or other similar guidelines, as approved by Kern County. The project proponent(s) shall notify Kern County and the Lahontan Regional Water Quality Control Board at the onset of dewatering activities, and submit written description of all executed dewatering activities, including steps taken to return encountered groundwater to the subsurface, upon the completion of dewatering activities at the affected site(s). The Environmental Monitor shall periodically check grading activities for groundwater exposure.

Level of Significance
Impacts would be less than significant.

Impact 4.9-3: 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 Matter Which Would Result in Substantial Erosion or Siltation on Site or Off Site

Implementation of the project would introduce earth-disturbing activities and new permanent infrastructure that could alter existing drainage patterns of the area. The potential for project activities to result in substantial erosion or siltation associated with drainage pattern alterations are discussed below.

Ground Disturbance. Section 3.7 (Construction) of this EIR describes that construction of the project would include clearing, grading, and excavation activities for the installation of project infrastructure and roadways. These activities, and the presence of project infrastructure and roadways, could alter existing drainage patterns of the area.

The project site is 13,535 acres and encompasses approximately 23 percent of the Jawbone Canyon Watershed area. This is a substantial portion of the overall watershed; however, ground-disturbing activities would occur on a small percentage of the 13,535-acre site. Land clearing and grading
would be performed according to the Soil Erosion and Sedimentation Mitigation Plan as required by Section 19.64.140.K of the Kern County Zoning Ordinance, the project’s State-approved SWPPP, and any grading and building permits issued by Kern County.

As described in Section 3.5, new roads constructed for the project would use the existing road network to the greatest extent possible, and would be designed to limit disturbance and avoid sensitive resources to the extent possible. Grade adjustments would be required in most locations to accommodate maximum construction grades of 10 percent. In addition to the above, road improvements for the project would be completed in compliance with the Road Plan required per MM 4.9-1, which includes identification of any drainage within 100 feet of either edge of planned roads, as well as identification of the location and construction details of any new or modified stream crossings or drainage diversion structures. The Road Plan would be developed in coordination with and approved by the Kern County Engineering, Surveying, and Permit Services Department for review and approval.

Drainage Crossings. The project site is traversed by Cottonwood Creek, Jawbone Canyon Wash, and numerous ephemeral drainages. Prior to commencement of construction activities, the project proponents would be required to submit a grading permit and Road Plan (per MM 4.9-1) to Kern County for review and approval. Any alteration of the bed or banks of any drainage deemed by the CDFG to be jurisdictional waters of the State, including through access road improvement and construction, would not be permitted to commence prior to development and implementation of a Streambed Alteration Agreement with the CDFG.

As described in Section 3.7 (see “Site Preparation”), road construction would include the installation of water bars to allow for natural drainage of water over the road surface and to prevent road washout. Culverts and V ditches would be installed to handle excess drainage water. As described above, MM 4.9-1 requires the implementation of a Road Plan which includes identification of all locations and construction details of any new or modified stream crossings or drainage diversion structures. Road shaping would ensure proper water flow away from cut-and-fill slopes and into ditches and culverts. Erosion-control devices also will be installed or completed, and disturbed areas adjoining the roads would be restored and the appropriate erosion-control devices would be installed. All road work would be performed under final approved grading, erosion control, and stormwater quality management plans.

MM 4.9-4, identified above, requires the design and implementation of a Drainage Design Plan which includes downstream drainage discharge points provided with erosion protection and designed such that flow hydraulics exiting the site mimic the natural conditions as much as possible. Compliance with MMs listed below, as well as compliance with existing laws and regulations identified in section 4.9.3, would ensure that the project would not result in significant adverse impacts associated with drainage crossings such that substantial erosion or siltation would occur on- or off-site.

Surface Runoff. The rate and amount of surface runoff is determined by multiple factors, including topography, amount and intensity of precipitation, amount of evaporation that occurs in the watershed, and amount of precipitation and imported water that infiltrates to the groundwater. The project would not alter any precipitation amounts or intensities, nor would it require significant amounts of additional water to be imported into the project area. Grading would occur at turbine locations, substation site(s), the O&M building site, and along access roads to accommodate project infrastructure and maximum road grade requirements of 10 percent. Although grading activities
may require substantial earth-moving activities in some locations, this ground disturbance would be spread over the project’s 13,535-acre site and would not alter the overall topography of the area. Impervious surfaces that would result from construction of the project would not substantially interfere with groundwater infiltration, as described under Impact 4.9-2. The project would not alter precipitation amounts or intensities, evaporation rates, or the amount of precipitation that infiltrates into the groundwater. Additionally, the amount of imported water used for construction of the project (such as water used for dust suppression) would not substantially alter groundwater infiltration rates. Therefore, the rate or amount of surface runoff resulting from the project would not substantially change relative to existing conditions.

**Flood Hazard Areas.** Encroachment of a turbine tower or other project-related permanent infrastructure into a stream channel or floodplain, including FEMA-designated Flood Hazard Areas, could result in flooding of or erosion damage to the encroaching structure, diversion of flows and increased flood risk for adjacent property, or increased erosion on adjacent property. As described under Section 4.9.2 (see “Surface Water”), portions of the project site are FEMA-designated Flood Hazard Areas, Flood Zone A, which are subject to inundation by the 100-year flood. Any construction that takes place within areas designated as Flood Zone A within the jurisdiction of unincorporated Kern County would be required to comply with the requirements and construction design specifications of the Kern County Floodplain Management Ordinance. The project would not result in significant adverse impacts related to Flood Hazard Areas such that substantial erosion or siltation on- or off-site would occur.

**Beneficial Uses.** As described in Section 4.9.2 (see “Surface Water”), drainages on the project site and in the surrounding area are identified in the Basin Plan for the Lahontan Region as minor surface waters with designated Beneficial Uses such as MUN, AGR, GWR, REC-1, REC-2, WARM, and WILD (see “Surface Water” for descriptions of these Beneficial Uses). As described, the Lahontan RWQCB has expressed concern that implementation of the project would require realignment, channelization, lining, and/or infilling of surface waters that could adversely affect the Beneficial Uses. Based on the above discussion, the project would alter drainage patterns on the project site, but such alterations would be localized and existing drainage patterns would be restored to the maximum extent feasible. In addition, project access roads would cross drainages on the project site, but would not alter the course of a stream or river. Roads would be designed to minimize alterations to existing drainage patterns. The introduction of new impervious infrastructure and increased soil compaction associated with access roads would also result in increased surface water runoff, but such effects would be localized, and would be minimized to the maximum extent feasible through the restoration of existing drainage patterns. The project would not realign, channelize, line, or infill surface waters on the project site. Although surface waters on the project site would be affected by implementation of the project, such effects would not result in significant adverse impacts to designated Beneficial Uses of surface waters on the project site.

**Mitigation Measures**

Mitigation measures identified in other issue area sections of this EIR that would help to minimize or avoid the potential for project activities to result in adverse impacts associated with drainage pattern alterations. Mitigation Measure 4.9-1 is presented in this section, under Impact 4.9-1. Please see Section 4.4 (Biological Resources) for the full text of Mitigation Measure 4.4-30, and Section 4.6 (Geology and Soils) for the full text of Mitigation Measures 4.6-5 and 4.6-6.
• MM 4.9-1 requires the applicant to submit a road plan to the County for approval at least 60 days prior to commencement of construction activities, thereby facilitating the identification and implementation of any necessary Best Management Practices to control erosion and/or sedimentation, and the identification and prevention of any potential disturbances to drainages and/or riparian areas. The road plan shall clearly identify all planned road construction and improvements to existing roads, all drainage crossings, and all sensitive habitat within 100 feet of road improvements.

• MM 4.4-30 requires the applicant to demonstrate compliance with all required water quality permits prior to commencement of any construction activities. All required water quality permits would be maintained and made available on-site at all times during construction of the project.

• MMs 4.6-5 and 4.6-6 would minimize the potential impacts of grading and would require implementation of specific Best Management Practices to reduce the potential for water quality degradation through erosion and sedimentation, as specified in the Soil Erosion and Sedimentation Control Plan.

Mitigation Measures 4.9-1, 4.4-30, 4.6-5, and 4.6-6, summarized above, would be implemented to minimize or reduce this potential impact. In addition, as discussed above under Impact 4.9-1, construction-related erosion and sedimentation as a result of soil disturbance would be less than significant with implementation of Best Management Practices required by the Kern County Grading Code and Floodplain Management Ordinance, and compliance with the National Pollutant Discharge Elimination System General Construction Permit. No additional mitigation measures are required.

Level of Significance
Impacts would be less than significant.

Impact 4.9-4: 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 Substantial Flooding on Site or Off Site

As discussed under Impact 4.9-3, implementation of the project would not substantially alter existing drainage pattern of the site or area and would not alter the course of a stream or river or substantially alter surface runoff. Although the amount of surface runoff within the project area would not change, the pattern and concentration of this runoff could be altered by grading activities associated with the project. As described under Section 4.9.2 (Environmental Setting), there are multiple ephemeral drainages across the project site, which convey surface runoff in response to storm events. The discussion under Impact 4.9-3 describes that implementation of the project would not permanently alter the course of any drainages or substantially alter drainage patterns on or off the project site, although some drainage crossings would be required to accommodate access road alignments. These crossings would be designed to mimic natural drainage patterns to the maximum extent feasible, and any effects to surface runoff patterns and/or rates would be localized. Infrastructure associated with the project is not anticipated to be placed in an existing stream channel or FEMA-designated Flood Hazard Area.

The potential for development of the project to alter the existing drainage patterns would be minimized through compliance with design-specifications and BMPs required by the Kern County...
Grading Code and Floodplain Management Ordinance. Any increase in surface water runoff resulting from permanent project features would be minor and location-specific, and would not influence surface runoff in a manner which would result in flooding on-site or off-site.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the Kern County General Plan as well as the Kern County Grading Code and Floodplain Management Ordinance requirements. In addition, mitigation measures identified in other issue area sections of this Environmental Impact Report that would help to minimize or avoid the potential for project activities to result in adverse impacts associated with drainage pattern alterations. Mitigation Measure 4.9-1 is presented in this section, under Impact 4.9-1. Please see Section 4.4 (Biological Resources) for the full text of Mitigation Measure 4.4-30, and Section 4.6 (Geology and Soils) for the full text of Mitigation Measures 4.6-5 and 4.6-6.

- **MM 4.9-1** requires the applicant to submit a road plan to the County for approval at least 60 days prior to commencement of construction activities, thereby facilitating the identification and implementation of any necessary Best Management Practices to control erosion and/or sedimentation, and the identification and prevention of any potential disturbances to drainages and/or riparian areas. The road plan shall clearly identify all planned road construction and improvements to existing roads, all drainage crossings, and all sensitive habitat within 100 feet of road improvements.

- **MM 4.4-30** requires the applicant to demonstrate compliance with all required water quality permits prior to commencement of any construction activities. All required water quality permits would be maintained and made available on-site at all times during construction of the project.

- **MMs 4.6-5 and 4.6-6** would minimize the potential impacts of grading and would require implementation of specific Best Management Practices to reduce the potential for water quality degradation through erosion and sedimentation, as specified in the Soil Erosion and Sedimentation Control Plan.

**Level of Significance**

Impacts would be less than significant.

**Impact 4.9-5: Create or Contribute Runoff Water Which Would Exceed Stormwater Drainage System Capacity or Provide a Substantial Additional Source of Polluted Runoff**

The project site is essentially undeveloped, but it is currently and has historically been used as grazing land for cattle. The project area is drained by natural stream channels and does not rely on constructed stormwater drainage systems. Construction of the project would introduce impervious surfaces associated with project components, and may require imported water for dust suppression activities, but would not have the potential to substantially increase the amount of stormwater runoff. As stated above, the pattern and concentration of runoff could be altered by project activities, such as grading of access roads, but the amount of runoff across the project site would not be substantially altered.

The project’s potential to result in surface water contamination, including through the introduction of polluted runoff, is discussed under Impact 4.9-1 (Violate Any Water Quality Standards or Waste Discharge Requirements). As discussed under Impact 4.9-1, the project would not result in a
significant adverse impact to water quality.

The project would not overwhelm stormwater drainage systems or create a substantial additional source of polluted runoff.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the Kern County General Plan as well as Kern County Grading Code and Floodplain Management Ordinance requirements. No mitigation measures are required.

**Level of Significance**

Impact would be less than significant.

**Impact 4.9-6: Otherwise Substantially Degrade Water Quality**

Construction of the project would include soil-disturbing activities that could result in erosion and sedimentation, as well as the use of harmful and potentially hazardous materials required to operate vehicles, equipment, and project components. The transport of disturbed soils or the accidental release of potentially hazardous materials could result in water quality degradation. However, as discussed under Impacts 4.9-1 and 4.9-5, the potential for water quality impacts to occur would be minimized through implementation of identified MMs, as well as through compliance with applicable water quality related permits. These permits may include but are not limited to the following: a Streambed Alteration Agreement from the CDFG, a CWA Section 404 permit from the USACE, a SWPPP for compliance with Section 402 of the CWA coverage under the NPDES General Construction Permit, a CWA Section 401 certification from the Lahontan RWQCB, and a grading permit and Hazardous Materials Business Plan approval from Kern County.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the Kern County General Plan as well as Kern County Grading Code and Floodplain Management Ordinance requirements. As discussed under Impact 4.9-1, project impacts to water quality would be less than significant with the implementation of mitigation measures. No additional sources of water quality degradation would be introduced as a result of the project, and no additional mitigation measures are required.

**Level of Significance**

Impacts would be less than significant.

**Impact 4.9-7: Place Structures Within a 100-year Flood Hazard Area Which Would Impede or Redirect Flood Flows**

The discussion presented under Impact 4.9-3 (see “Flood Hazard Areas”) describes that portions of the project site are FEMA-designated Flood Hazard Areas, Flood Zone A, which are subject to inundation by the 100-year flood. These Flood Hazard Area designations are associated with lower elevations on the project site, including Cottonwood Creek and its main tributaries, and Jawbone Canyon Wash. Any construction that takes place within areas designated as Flood Zone A within the jurisdiction of unincorporated Kern County would be required to comply with the requirements and construction design specifications of the Kern County Floodplain Management Ordinance. The project would not result in significant adverse impacts related to Flood Hazard Areas such that
substantial erosion or siltation on- or off-site would occur. As described under Impact 4.9-3, the project would not result in significant adverse impacts associated with Flood Hazard Areas.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the Kern County General Plan as well as Kern County Grading Code and Floodplain Management Ordinance requirements. No mitigation measures are required.

**Level of Significance**

Impacts would be less than significant.

**Impact 4.9-8: Result in Inundation by Seiche, Tsunami, or Mudflow**

**Seiche.** A seiche is a large wave generated in an enclosed body of water in response to ground shaking. The project is not located within a dam inundation area or within the inundation area for any other natural body of water and would therefore not be subject to seiche hazards.

**Tsunami.** A tsunami is a wave generated in a large body of water (typically the ocean) by fault displacement or major ground movement. The project is not situated near the coast and would not be subject to any tsunami hazards.

**Mudflow.** A mudflow is a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity. Mudflow events are caused by a combination of factors, including soil type, soil profile, precipitation, and slope. Mudflow may be triggered by heavy rainfall that the soil is not able to sufficiently drain or absorb. As a result of this super-saturation, soil and rock materials become unstable and eventually slide away from their existing location. Soils most susceptible to mudflow are saturated, loose, non-plastic, uniformly graded, and fine-grained sand deposits. If mudflow occurs on the project site, foundations within the mudflow area may be subject to settlement. However, the tower site locations identified for the project are situated where surface or near-surface bedrock is present (Kleinfeld West, Inc., 2010). Project infrastructure would not be subject to inundation by mudflow.

**Mitigation Measures**

The project would comply with the goals, policies, and implementation measures of the Kern County General Plan, as well as Kern County Grading Code and Floodplain Management Ordinance requirements. No mitigation measures are required.

**Level of Significance**

No impact would occur.

**Cumulative Setting Impacts and Mitigation Measures**

**Cumulative Setting**

The geographic scope for cumulative impacts to hydrology and water quality includes the Jawbone Canyon Watershed, within which the project site is located. Potential hydrology and water quality impacts associated with the construction and operation of the project, including water quality degradation due to erosion, sedimentation, or the release of hazardous materials, would be limited to this geographic scope.

With regard to the violation of any water quality standards or waste discharge requirements (Impact 4.9-1), it is reasonably anticipated that all projects in the cumulative scenario will be required to comply with the same water quality standards and waste discharge requirements as the project. Such violations could occur through the creation of erosion, sedimentation, and/or polluted runoff, through the accidental release of potentially hazardous materials required during construction or operational activities, or through the discharge of contaminated groundwater during dewatering activities. MMs would be implemented to ensure that the project’s impact relevant to violation of water quality standards and waste discharge requirements would be less than significant. This impact of the project would be temporary, localized, and less than significant. Therefore, it is considered unlikely that this impact of the project would combine with similar impacts of other projects. No cumulative impact would occur regarding the violation of water quality standards or waste discharge requirements.

With regard to the potential for substantial depletion of groundwater supplies or interference with groundwater recharge (Impact 4.9-2), the project would either pump water from one of two existing groundwater wells, or would import water from the Tehachapi-Cummings County Water District. Local overdraft conditions are not currently known for the Kelso Lander Valley and Fremont Valley Groundwater Basins, but MMs identified for the project would ensure that construction or operation of the project would not include pumping of groundwater from an overdrafted groundwater basin, would not cause a groundwater basin to be in overdraft conditions, and would not resulting in significant adverse effects associated with groundwater well drawdown or changes in groundwater recharge rates and patterns. Therefore, cumulative impacts of the project to area groundwater supplies would be less than significant.

With regards to the alteration of existing drainage patterns in a matter which would result in substantial erosion or siltation on- or off-site (Impact 4.9-3) or which would result in substantial flooding on- or off-site (Impact 4.9-4), the project would not substantially alter existing drainage patterns of the project site and, with the implementation of MMs identified under Impact 4.9-1, would not result in substantial erosion, siltation, or flooding on- or off-site. This impact of the project is not expected to combine with similar impacts of other projects in the cumulative scenario. No cumulative impacts would occur regarding the alteration of existing drainage patterns.

With regards to the creation or contribution of stormwater runoff which would exceed stormwater drainage system capacity or provide a substantial additional source of polluted runoff (Impact 4.9-5), or otherwise degrade water quality (Impact 4.9-6), the project would not introduce a substantial impact and would not have the potential to combine with similar impacts of other projects. No cumulative impact would occur.

With regards to the placement of structures within a 100-year flood zone which would impede or redirect flood flows (Impact 4.9-7), or the potential to cause or be subject to damage through inundation by mudflow (Impact 4.9-8), the project would not introduce a substantial impact and would not have the potential to combine with similar impacts of other projects. No cumulative impact would occur.

Mitigation Measures

Mitigation measures identified under Impacts 4.9-1 through 4.9-8 would minimize or avoid potential hydrology and water quality impacts of the project, and reduce the potential for impacts of
the project to combine with similar impacts of other projects in the cumulative scenario. No cumulative mitigation measures have been identified.

**Level of Significance after Mitigation**

Cumulative impacts would be less than significant.