3.1.5 Hydrology and Water Quality

This section discusses potential impacts to hydrology, water quality, and groundwater resources resulting from the implementation of the Proposed Project. The analysis is based on the review of existing resources, technical data, and applicable laws, regulations, and guidelines, as well as the following technical reports prepared for this Proposed Project, which are consistent with the County Guidelines for Determining Significance for Hydrology (County of San Diego 2007a), Surface Water Quality (County of San Diego 2007b), and Groundwater Resources (County of San Diego 2997c).

- *Preliminary Hydrology and Drainage Study, Tierra del Sol Solar Farm* (Appendix 3.1.5-1)
- *Preliminary Hydrology and Drainage Study, Rugged Acres Solar Farm* (Appendix 3.1.5-2)
- *Minor Stormwater Management Plan, Tierra del Sol Solar Farm* (Appendix 3.1.5-3)
- *Minor Stormwater Management Plan, Rugged Solar Farm* (Appendix 3.1.5-4)
- *Groundwater Resources Investigation Report, Tierra del Sol Solar Farm Project* (Appendix 3.1.5-5)
- *Groundwater Resources Investigation Report, Rugged Solar Farm Project* (Appendix 3.1.5-6)
- *Groundwater Resources Investigation Report, Pine Valley Mutual Water Company* (Appendix 3.1.5-7)
- *Groundwater Resources Investigation Report, Jacumba Community Services District* (Appendix 3.1.5-8).

3.1.5.1 Existing Conditions

This section describes the existing setting in the Proposed Project area and identifies the resources that could be affected by the Proposed Project. The scope of the hydrologic setting reflects the significance thresholds contained in the County's Guidelines for Determining Significance for Hydrology, Surface Water Quality, and Groundwater Resources (County of San Diego 2007a, 2007b, 2007c, respectively), which address areas including surface and groundwater quality, stormwater drainage, flood hazards, and groundwater resources. Information in this section is derived from a variety of sources, including maps and surveys from the U.S. Geological Survey (USGS), the U.S. Department of Agriculture (USDA), the County of San Diego General Plan, the aforementioned County significance guidelines, as well as the previously listed project-specific technical reports.

3.1.5.1.1 Regional Overview

Regional Climate

The project area experiences warm summer months and cool winters. Average temperatures vary greatly within the region. Mean maximum temperatures in the summer months reach the high-80s to low-90s (degrees Fahrenheit), while dropping into the high-60s (degrees Fahrenheit) in the fall months. Temperatures may fall below freezing in the winter, with snow levels occasionally below 2,500 feet. According to historical precipitation data recorded at rain gauges in Boulevard, from 1924 to 1994, the average annual precipitation in the Proposed Project area is approximately 15.55 inches per year, with 90% percent of the precipitation occurring between October and April (see Appendix 3.1.5-5). Most rain is stratiform (i.e., caused by frontal systems) in the local region with some orographic enhancement of precipitation occurring due to higher elevation of the area relative to the coast. Thunderstorms occurring in the summer months usually contribute only a small portion of yearly precipitation totals, but can often result in highly localized variability in rainfall depending on the exact location, coverage, and intensity of thunderstorm cells.

Regional Hydrology and Drainage

The Tecate Divide—a subtle north–northeast-trending ridge in the Proposed Project vicinity—separates the Rugged, LanEast, and LanWest sites to the northeast from the Tierra Del Sol site to the southwest. The divide also separates drainages that eventually discharge to the Salton Sea, from drainages that eventually discharge to the Pacific Ocean via the Tijuana River. The Tecate Divide also defines the boundary between areas governed by the Water Quality Control Plan for the San Diego Basin (west of the divide), and the Water Quality Control Plan for the Colorado River Basin (east of the divide), both of which are further discussed below in Section 3.1.5.2. The boundaries of hydrologic units, as defined by the State Water Resources Control Board (SWRCB), are shown in Figure 3.1.5-1, Regional Hydrology.

The watershed for the Rugged, LanEast, and LanWest sites is defined as the McCain Hydrologic Subarea (722.71) which is contained within the Jacumba Hydrologic Area (722.70), which in turn is part of the larger Anza-Borrego Hydrologic Unit (722.00), which is part of the Colorado River Basin (Region 7). The watershed for the Tierra del Sol site is defined as the Hipass Hydrologic Subarea (911.85) which is contained within the Campo Hydrologic Area (911.80), which in turn is part of the larger Tijuana Hydrologic Unit (911.00), which is part of the San Diego Basin (Region 9) (San Diego RWQCB 1995). The region is relatively arid, with surface waters dominated by ephemeral drainages that convey runoff during rain events. At the Tierra del Sol site, surface water generally drains to the south across the international border via several unnamed ephemeral streams located outside

of the project boundaries and thence to tributaries of the Tijuana River and eventually out to the Pacific Ocean. The Tijuana River is impounded in Mexico southeast of Tijuana by the Abelardo L. Rodríguez Dam for drinking water and irrigation. At the Rugged, LanEast, and LanWest sites, surface water is directed to the west via Tule and Walker creeks, both of which are also ephemeral, and presumed to be hydrologically connected to the northerly draining Carrizo Wash. The Carrizo Wash eventually meets dry desert flatlands, and water within the wash (if present) slows down, spreads out, and evaporates or infiltrates into the soil.

Surface Water Quality

The beneficial uses of the surface water bodies in the project area have been designated by the San Diego Regional Water Quality Control Board (RWQCB) and the Colorado River RWQCB in the Water Quality Control Plan for each respective basin (otherwise known as the Basin Plan in each region).[1] The beneficial uses provide the basis for determining appropriate water quality objectives that are needed to maintain the beneficial uses of these water bodies and are discussed further under Section 3.1.5.2, Regulatory Setting. The beneficial uses for water bodies affected by the Proposed Project are shown in Table 3.1.5-1, and definitions are provided in Table 3.1.5-2. The Basin Plan for each region also includes water quality objectives that are protective of the identified beneficial uses; the beneficial uses and water quality objectives collectively make up the water quality standards for the region. Table 3.1.5-3 presents selected quantitative surface water and groundwater quality objectives relevant to the project area.

The objective of the federal Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." Under CWA Section 303(d), the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. The closest impaired water bodies in the Proposed Project area are the Tijuana River, the Salton Sea, and Imperial Valley drains, all of which are located over 25 miles from the Proposed Project. None of the solar farms are in a watershed having high receiving water risk,[2] as defined in the Construction General Permit Guidance (SWRCB n.d.). There are no water bodies occurring within the Proposed Project area that are listed on the CWA 303(d) List (impaired water bodies) (SWRCB 2010). Water bodies in the McCain Valley generally consist of small ponds associated with ranching activities.

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1 The Basin Plan for each region is the master water quality control planning document. It designates beneficial uses and water quality objectives for waters in the state in each region (San Diego RWQCB 2011, Colorado River RWQCB 2006).

2 High Receiving Water Risk Watersheds are watersheds that drain either directly or indirectly to water bodies that are either (1) 303(d) listed as being impaired for sediment/siltation, (2) have a U.S. Environmental Protection Agency (EPA)-approved, sediment-related total maximum daily load (TMDL), or (3) have the existing beneficial uses of SPAWN (Fish Spawning), MIG (Fish Migration), and COLD (Cold Water Habitat) according to the most recent applicable Regional Board Basin Plan.

Groundwater Resources

Groundwater is the primary source of water supply for land uses in the Proposed Project area, and rural residences rely entirely on groundwater wells for their source of water. The Proposed Project is not located within a municipal water district. The entirety of the Proposed Project is located within a groundwater-dependent portion of the County. There are no Department of Water Resources (DWR)-defined groundwater basins in the vicinity of the Proposed Project, but groundwater resources are present in the area primarily within fractured rock aquifers. The County, requires new development projects to demonstrate resources are adequate to meet their anticipated groundwater demands. In accordance with the County Groundwater Ordinance, projects that propose to extract groundwater at rates greater than 20 acre-feet per year must prepare groundwater resources investigation reports that must consider the effects on the groundwater basin in a hypothetical scenario where land uses in the study area are developed to the maximum density and intensity permitted by the General Plan (County of San Diego 2013).

The three hydrogeologic units within the Proposed Project area include (1) recent alluvium, (2) decomposed granite (DG) (weathered bedrock), and (3) the underlying crystalline bedrock (Tonalite of La Posta). These hydrological units are defined on the basis of hydrogeologic properties such as porosity, hydraulic conductivity, and storage capacity. Fractured rock aquifers typically have much less storage capacity than aquifers comprised of alluvium. As a result, pumping from wells completed in fractured rock typically produces a greater decline in water levels (within the well) than a similar pumping rate for wells completed in alluvium. Additionally, because less water is typically stored in fractured rock, seasonal variations in precipitation and drought conditions result in greater variations in water levels than in similar conditions where aquifers comprise sediments (County of San Diego 2007c). One important characteristic of fractured rock aquifers is the width, orientation, continuity, and interconnectedness of fractures within the rock. Depending on whether water-producing fractures are connected, the area of influence of groundwater pumping can be limited—where fractures are not connected, the effect of extensive pumping in one well may not result in an appreciable effect on neighboring wells.

While fractured granitic rock represents the primary groundwater resource in the Proposed Project area (since most wells in the vicinity draw water from deep wells that penetrate the fractured rock), the presence of residuum[3] or alluvium may provide additional storage capacity if the water levels extend up into these layers. Water stored in alluvium and weathered granite may drain into the fractured crystalline bedrock beneath these units as water is pumped from the fractured rock. The additional storage in these surficial units may

[3] Residuum refers to weathered rock or topsoil that has formed in-place over bedrock (as opposed to "transported" soils such as alluvium and basin deposits).

significantly enhance the usability of groundwater resources in some areas relying on groundwater from fractured rock (County of San Diego 2007c). Infiltration of rainfall into these surficial units—both in the project vicinity and (perhaps more importantly) in the upland watershed area where annual rainfall is greatest—is the main mechanism by which the groundwater in the region is recharged.

The alluvium in the Proposed Project area covers the broad valley floors in the region including the McCain Valley, and based on available geologic maps and Natural Resources Conservation Service surveys (see Section 3.1.2, Geology, Soils, and Seismicity), alluvium underlies portions of the Rugged, LanEast, and LanWest sites. In all places where it occurs, the alluvium is directly underlain by Tonalite of La Posta, which is also exposed as outcroppings throughout each of the project sites' watershed areas. In most places, the alluvium is present as a thin cover over granitic rock (i.e., less than 10 feet deep); however, toward the center of the broader valleys (such as the McCain Valley), geologic information suggests that the thickness of alluvium is much greater—approximately 70 feet to 80 feet (Appendix 3.1.5-6). Water level data supports the finding that these layers of alluvium provide an important source of seasonal recharge to the subjacent bedrock aquifer (Geo-Logic Associates 2012).

Additional Water Resources

The Proposed Project would use groundwater from existing wells located on site to the maximum extent possible. However, given the limits on the well pumping capacities as well as groundwater production limits imposed by the County, the applicant has identified potential sources of additional water to provide for the peak construction-related demands of the solar project. These include the Pine Valley Mutual Water Company (PVMWC), Jacumba Community Services District (JCSD), and the Padre Dam Municipal Water District. Both PVMWC and JCSD derive their supplies from groundwater

The PVMWC has agreed to dedicate one of its water supply wells (Well No. 5) to the Rugged solar farm for the 60-day peak construction period, and anticipates being able to supply up to 16 acre-feet during the peak construction period. The PVMWC owns and operates 10 water supply wells that serve approximately 675 residences and 20 commercial entities in and around Pine Valley, California. The average production volume from the PVMWC wells between 1999 and 2012 was 270 acre-feet per year (AFY) (Appendix 3.1.5-7). Production from the well field peaked in 2007 at 319 acre-feet and has been below 250 AFY since 2010 (Appendix 3.1.5-7). Water from PVMWC Well No. 5 is suitable for use for construction activities such as dust control and to obtain optimum soil moisture for compaction during grading (Appendix 3.1.5-7).

In addition, the JCSD intends to provide water to supply project construction demands up to 48 acre-feet from one of its wells (Well No. 6), contingent upon nearby groundwater levels remaining

stable (Appendix 3.1.5-8). JCSD operates water supply wells that serve approximately 561 residents or 294 total housing units and several commercial entities. Well No. 6 was initially intended for use as a potable water well; however, during drilling a hot spring aquifer was encountered. Due to elevated temperature and fluoride, the water is limited to non-potable use (Appendix 3.1.5-8).

As a fail-safe, the applicant has identified the Padre Dam Municipal Water District as a source of water to supply the project in the event more proximal sources of water become unavailable for any reason.

Groundwater Quality

Groundwater quality in the fractured rock aquifers of San Diego County has not been as extensively studied as the unconfined alluvial aquifers. Existing water quality data for large highly utilized unconfined aquifers is continually collected by state and local water agencies as well as the California Department of Public Health and the DWR. Of California's approximately 16,000 public-supply wells, 80% are in groundwater basins designated by DWR and characterized as unconfined alluvial aquifers (USGS 2011). Fractured rock aquifers, on the other hand, are highly variable and often have low production rates. Information on groundwater quality within fractured rock aquifers is scarce and/or not publicly available. The County's Guidelines for groundwater resources do not identify the Proposed Project area as being within a specific groundwater problem area (such as an overdrafted basin or areas with high levels of naturally occurring radioactive elements) (County of San Diego 2007c).

As part of the California Groundwater Ambient Monitoring and Assessment Program, limited data was collected from hard-rock aquifers within the San Diego Drainages Hydrogeologic Province in an attempt to understand potential water quality concerns within the province (USGS 2011). The hard rock study area was the largest (at 850 square miles), and the spatial density of sampled wells (public supply wells) was very low. Nevertheless, the data may be useful and broadly representative of the Proposed Project area because the sampled wells, like the Proposed Project, are primarily completed within bedrock composed of fractured and DG.

The results by the USGS (2011) provide a general idea of potential groundwater concerns existing in the Proposed Project area. The results relevant to fractured rock aquifers are summarized below.

- **Inorganic Constituents (with health-based benchmarks):** One or more of the inorganic constituents with health-based benchmarks (i.e., Maximum Contaminant Level (MCL), Health Advisory Level, Notification Level) were high (relative to those benchmarks) in 25% of the hard rock study area; these included vanadium (V), arsenic (As), and boron (B).

Vanadium and arsenic concentrations were not correlated to either urban or agricultural land use, indicating natural sources as the primary contributors of these constituents to groundwater. Boron was positively correlated with urban land uses, suggesting that anthropogenic activities are a contributing source of boron to groundwater.

- **Inorganic constituents (with aesthetic benchmarks):** Inorganic constituents with aesthetic benchmarks that were detected at high relative-concentrations include manganese (Mn) (in 33.3% of the hard rock study area) and total dissolved solids (TDS) (in 16.7% of the hard rock study area). TDS concentrations were correlated to agricultural land use suggesting that agricultural practices are a contributing source of TDS to groundwater. Manganese concentrations were highest in groundwater with low dissolved oxygen and pH indicating that the reductive dissolution of oxyhydroxides in the bedrock may be an important mechanism for the mobilization of manganese in groundwater. TDS concentrations were highest in shallow wells and in modern (< 50 years) groundwater, which indicates anthropogenic activities are a source of TDS concentrations in groundwater.
- **Organic constituents:** Concentrations of organic constituents (e.g., fuels, hydrocarbons) above the health-based benchmarks were not detected.

The study also indicated that several samples in the hard rock study area had radioactive elements in the medium (gross alpha) to high (radon 222) range (USGS 2011). According to Figure 4 of the San Diego County Guidelines, the Proposed Project area is not located within an area identified as being a problem area for nitrates and radioactive elements (County of San Diego 2007c). This does not necessarily indicate that nitrates and radioactive elements are absent from the Proposed Project area, but that it is not in an area that has been sampled and where a problem has been identified.

3.1.5.1.2 Tierra Del Sol

This section presents information regarding hydrology and water quality that has not otherwise been discussed above in Section 3.1.5.1.1, Regional Setting, and which is unique to the Tierra del Sol site.

Topography, Hydrology, and Drainage Patterns

The property ranges in elevation from approximately 3,530 feet above mean sea level (amsl) on its southeastern border to about 3,742 feet amsl in the west–central area. According to the site reconnaissance and subsurface exploration performed by Ninyo and Moore (2012), the site is underlain by weathered to fresh granitic rock of the Tonalite of La Posta and localized areas

underlain by alluvium and colluvium.[4] Alluvial soils are primarily associated with the Mottsville soil series (unit *Mvc*) shown in Figure 3.1.2-2 in Section 3.1.2, Geology, Soils, and Seismicity. Ninyo and Moore (2012) observed surficial soils such as topsoil and minor fills to be present but generally shallow—less than 2 feet thick.

The west–central area is the highest portion of the project watershed, consisting of a low ridgeline extending from the north–northwest to the south–southeast. The topographic setting of the project results in little to no tributary stormwater run-on to the site. Most areas of the project site are moderately sloped, between 3% and 5% at the high point, gradually flattening out towards the project boundaries. The existing watercourses are incised around the high point and become shallower and spread out as the runoff flows towards the project boundaries. The stormwater runoff from the project flows in almost all directions, except directly north, from the west–central high point. Ten existing watercourses carry runoff from the project area and outlet across the western, southern, and eastern project boundaries (Appendix 3.1.5-1). Ultimately, all of the runoff from the project site flows south across the international border.

A 2012 jurisdictional delineation of the project site, performed by Dudek, found one small surface water body on the project site—a 0.10-acre pond—which does not meet U.S. Army Corps of Engineers (ACOE) and RWQCB criteria for jurisdictional wetlands because it is hydrologically isolated from downstream waters (Appendix 2.3-1). Complete descriptions of the jurisdictional/non-jurisdictional status of waters in the Proposed Project area and wetland criteria under the County's Resource Protection Ordinance are provided in Section 2.3, Biological Resources. The nearest blue-line streams are two unnamed tributaries to the Tijuana River—one located approximately 175 feet to 1,200 feet to the east of the eastern project site boundary (locally referred to as Rattlesnake Creek) and the other located approximately 3,500 feet to the west of the western project site boundary (Appendix 2.3-1). Non-jurisdictional swale-like drainage features were observed primarily within the north–central and southeastern portions of the site. These drainage features are characterized by unvegetated, sandy areas, mostly with bed and bank topography limited to less than 6-inch deep cuts approximately 1 foot apart. A few other short reaches (each less than 250 linear feet) have a distinctive bed and bank (approximately 1 foot deep and 1 foot wide), but the majority of the topographic low points on site, including areas adjacent to the boundaries of the site, do not support an ordinary high water mark (Appendix 2.3-1).

Flood Hazards

There are no identified flood hazards on the project site. The entire area is identified by the Federal Emergency Management Agency (FEMA) as being within Zone D (SanGIS 2012),

[4] Colluvium is the name for loose bodies of sediment that have been deposited or built up at the bottom of a slope or against a barrier on that slope, transported by gravity.

which indicates that flood risk is undetermined because the agency has not conducted a flood hazard analysis. The site is not downstream of a dam and thus would not be subject to inundation in the event of a dam failure; nor is the site subject to seiche or tsunami (due to the great distance to the ocean or large body of water). In addition, the site is not within any County-identified flood hazard areas (e.g., alluvial fan flooding area) (County of San Diego 2007a). AECOM (Appendix 3.1.5-1) performed a drainage study on the site and found that there is little to no tributary stormwater run-on to the site (i.e., little to no contributing watershed), which means the potential for substantial flood hazards would be negligible. AECOM (Appendix 3.1.5-1) subdivided the site into 10 separate drainage basins; stormwater on the site is likely to either infiltrate directly into the ground, run off via sheet flow, or, during high-intensity rainfall, may eventually be concentrated into shallow swales on the site.

Groundwater Resources

As part of a groundwater resources investigation completed on the Tierra del Sol site by Dudek (Appendix 3.1.5-5), groundwater wells on the site and in the vicinity were identified and inventoried. Five existing water wells (Wells 1–5) and one hand-dug well were identified on the project site and are associated with previous ranching and agricultural activities that occurred on the site. Two additional exploratory water wells (Wells A and B) were drilled to depths of 1,000 feet and 1,310 feet, respectively, to characterize site lithology and determine suitability for groundwater production. Well yields for on-site wells range from 2 to 61 gallons per minute (gpm) with an average well yield of approximately 12 gpm (Appendix 3.1.5-5).

Access to 13 off-site wells was provided by property owners to install sounding tubes to measure water levels before, during and after a 72-hour pump test on the production well that would supply water to the Proposed Project. In addition, 17 unique, confidential well logs were reviewed to determine well depth, production, and lithology (residuum/bedrock contact). The result of the 72-hour pump test is described in greater detail in Section 3.1.5.2.4. On-site wells are completed in DB and fractured granitic bedrock. Off-site wells are completed in alluvium, DG, and fractured granitic bedrock. In a couple cases, it appears wells were completed entirely within alluvium or weathered granite. Depths for off-site wells range from 20 to 1,000 feet. Well yields for off-site wells range from 1 to 100 gpm with an average of 19 gpm. Off-site wells are completed in alluvium, DG, and fractured granitic bedrock. The DG/bedrock contact is reported to range from 5 to 420 feet deep with an average depth of 69 feet below ground surface (bgs). Further completion details for groundwater wells on-site and in the vicinity can be found in Appendix 3.1.5-5.

3.1.5.1.3 Rugged

Information regarding hydrology and water quality that has not been discussed above in Section 3.1.5.1.1, Regional Setting, is unique to the Rugged site and is discussed below.

Topography, Hydrology, and Drainage Patterns

Elevations on the Rugged site range from approximately 3,510 feet amsl in the easternmost portion of the site, east of McCain Valley Road, to approximately 3,680 feet amsl in the northern portion of the site. Due to the rugged and valley terrain of the watershed, some areas are steep with scattered rock outcroppings, and other areas are relatively flat with existing vegetation, including oak trees. Like the Tierra del Sol site, the bedrock underlying the project site is composed of the Tonalite of La Posta, which is mantled in localized areas by alluvium or colluvium. The site encompasses a portion of Tule Creek, which is an intermittent creek that runs to the southeast in an open area between 500 and 1,000 feet wide and with a slope of about 1% (see Appendix 3.1.5-2).

A 2012 jurisdictional delineation of the project site, performed by Dudek, found the primary hydrological feature on the site is the southeast-draining Tule Creek, which is a subsurface (or near surface) riverine feature that likely daylights only during rain events (see Appendix 2.3-2). Tule Creek bisects the project area and flows in a northwest to southeast orientation, supporting an active floodplain, which in turn promotes wetland hydrology development. Tule Creek's surface proximity and flow regime is a product and result of alluvium overlying fractured and DG, which in turn overlies deep bedrock. The DG layer is pervious and allows groundwater to collect and be retained to the point of subsurface flow while the bedrock layer creates an impervious surface with the exception of fracture zones within the bedrock that result in conditions similar to a perched water table. The Tule Creek watercourse length through its watershed is 10.45 miles, and the total watershed area is approximately 24.25 square miles (or 15,522 acres) (see Appendix 3.1.5-2).

Tule Lake is located approximately 1.8 miles downstream to the southeast from the portion of the project area that crosses Tule Creek. Tule Lake was not investigated to determine connectivity with downstream waters, but it is presumed that Tule Lake does have downstream connectivity with Carrizo Wash. The Carrizo Wash eventually meets dry desert flatlands, and water within the wash (if present) slows down, spreads out, and evaporates or infiltrates into the soil.

Flood Hazards

There are no recorded 100-year floodplain limits within the project or the upstream watershed per FEMA or the County of San Diego (SanGIS 2012). The site is not downstream of a dam and thus would not be subject to inundation in the event of a dam failure; nor is the site subject to seiche or tsunami (due to the great distance to the ocean or large body of water). In addition, the

site is not within any flood hazard areas as identified on existing floodplain maps prepared by the County (e.g., alluvial fan flooding area) (County of San Diego 2007a). However, because site conditions indicate the potential for flooding in a 100-year rain event, AECOM determined the limits of the 100-year flood zone along Tule Creek as part of a drainage study for the Rugged solar farm (Appendix 3.1.5-1). Because Tule Creek drains an approximately 24.25-square-mile watershed area, it is estimated to convey 14,033 cubic feet per second during a 100-year storm event. The width of the floodplain ranges from approximately 500 to 100 feet and extends in a southeast direction across the project site (Appendix 3.1.5-1). Portions of the proposed solar tracker field would be located in the calculated 100-year floodplain of Tule Creek.

Groundwater

As part of a groundwater resources investigation completed on the site by Dudek (see Appendix 3.1.5-6), groundwater wells on the site and in the vicinity were identified and inventoried. Seven water wells currently exist on the Proposed Project site and are associated with ranching, agricultural, and recreational activities. The subsurface lithology and description of hydrogeologic units is the same as that provided in Section 3.1.5.1.2. Well depths for on-site wells range from 170 to 480 feet deep and are completed in alluvium, DG, and fractured granitic bedrock. On-site well yields range from 0.5 to 60 gpm with an average well yield of approximately 34 gpm (Appendix 3.1.5-6).

As part of the groundwater resources investigation, Dudek also collected well completion information for twenty-four unique confidential well logs in the vicinity of the Project site. Five additional wells exist off site that are associated with the Rough Acres Ranch. Other wells in the greater vicinity are used by rural residences, Indian reservations, and the McCain Conservation Camp (a low-security detention center). According to data from off-site wells at Rough Acres Ranch, McCain Conservation Camp, and the confidential well logs, depths for off-site wells range from 85 to 890 feet deep. Well yields for off-site wells range from 1.5 to 100 gpm with an average well yield of approximately 23 gpm (see Appendix 3.1.5-6).

3.1.5.1.4 LanEast

Information regarding hydrology and water quality that has not been discussed above in Section 3.1.5.1.1, Regional Setting, and is unique to the LanEast site is discussed below.

Topography, Hydrology, and Drainage Patterns

The LanEast site is a combination of relatively level land in most areas of the site with slightly higher slopes near the Walker Creek corridor and the site's southern edge. Elevations range from a low point of 3,070 feet amsl on the southeastern end of the site to 3,290 feet amsl in the northwestern corner. Slope gradients range from flat to gently sloped, with most areas of the site between 0

degrees and 5 degrees and local areas on the southeastern side up to 15 degrees. Based on topography, stormwater flow on the project site is likely to flow in an easterly or southeasterly direction. The dry, ephemeral Walker Creek passes along the southeastern portion of the site prior to entering Walker Canyon past the site's eastern boundary. Similar to Tule Creek, low-lying areas of the site underlain by alluvium are likely to support subsurface flow may daylight during rain events.

Flood Hazards

There are no recorded 100-year floodplain limits within the LanEast site or the upstream watershed per FEMA or the County of San Diego (SanGIS 2012). The site is not downstream of a dam and thus would not be subject to inundation in the event of a dam failure; nor is the site subject to seiche or tsunami (due to the great distance to the ocean or large body of water). While no flood hazards on the site have been identified by local or federal agencies, low-lying portions of the site along Walker Creek may nevertheless carry flood flows during intense rain events, such as a 100-year storm. No site-specific floodplain mapping has been completed for the LanEast site.

3.1.5.1.5 LanWest

Information regarding hydrology and water quality that has not been discussed above in Section 3.1.5.1.1, Regional Setting, and is unique to the LanWest site is discussed below.

Topography, Hydrology, and Drainage Patterns

The LanWest site consists of a combination of relatively level land on the southern and central portions of the site with rolling rock and boulder covered hills on the northwestern portion. Elevations on the site range from a low point of 3,190 feet amsl on the southeastern side of the site to 3,330 feet amsl on the northwestern side. Slope gradients range from flat to gently sloped, with most of the site between 0 degrees and 5 degrees, and local areas on the northwestern side up to 15 degrees. The mapped geologic unit underlying the LanWest solar farm consists of theTonalite of La Posta. The LanWest site is populated by two small (and limited) unvegetated ephemeral dry washes on the southern portion of the site that both transition and convert into swale features near their terminuses. Although small and limited, these ephemeral channels can be classified as single-thread, discontinuous ephemeral streams (see Appendix 2.3-4).

Flood Hazards

There are no recorded 100-year floodplain limits within the LanWest site or the upstream watershed per FEMA or the County of San Diego (SanGIS 2012). The site is not downstream of a dam and thus would not be subject to inundation in the event of a dam failure; nor is the site subject to seiche or tsunami (due great distance to the ocean or large body of water). While no flood hazards on the site have been identified by local or federal agencies, low-

lying portions of the site along the ephemeral drainages may nevertheless carry flood flows during intense rain events, such as a 100-year storm. No site-specific floodplain mapping has been completed for the LanWest site.

3.1.5.2 Regulatory Setting

Federal and State Water Quality Regulations

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

The California Legislature has assigned the primary responsibility to administer and enforce statutes for the protection and enhancement of water quality to the SWRCB and its nine RWQCBs. The SWRCB provides state-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of state and federal regulations. The nine RWQCBs throughout California adopt and implement water quality control plans that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. The RWQCB adopts and implements a Basin Plan that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code, Sections 13240–13247). The Proposed Project area is located within the jurisdiction of the San Diego RWQCB (Tierra del Sol solar farm site) and the Colorado River RWQCB (Rugged, LanEast, and LanWest solar farm sites).

Beneficial Use and Water Quality Objectives (CWA Section 303)

The San Diego RWQCB and the Colorado River RWQCB are responsible for the protection of the beneficial uses of waters within eastern San Diego County. Both of the RWQCBs use their planning, permitting, and enforcement authority to meet their responsibilities and have each adopted a Basin Plan to implement plans, policies, and provisions for water quality management.

In accordance with state policy for water quality control, the RWQCBs employ a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan for each region has identified existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction. The existing and potential beneficial uses designated in the Basin Plan for each region for the surface water bodies in or downstream from the project area are identified in Table 3.1.5-1. The existing uses of groundwater in the vicinity of the Proposed Project area, which includes both the Tijuana and the

Anza-Borrego Hydrologic Units, include: municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); Groundwater Recharge (GWR); Water Contact Recreation (REC-1); Non-Water Contact Recreation (REC-2); Warm Freshwater Habitat (WARM); Wildlife Habitat (WILD); and Rare, Threatened, or Endangered Species (RARE) (San Diego RWQCB 2011, Colorado River RWQCB 2006). These uses are defined in Table 3.1.5-2. The Basin Plan also includes water quality objectives that are protective of the identified beneficial uses; the beneficial uses and water quality objectives collectively make up the water quality standards for the region. Table 3.1.5-3 presents selected quantitative surface water and groundwater quality objectives relevant to the Proposed Project area.

The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." Under CWA Section 303(d), the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. There are no impaired waters within or near the project vicinity, although surface waters would eventually discharge indirectly to downstream water bodies, including the Tijuana River, which has several identified impairments. The Tijuana River has the following identified impairments: eutrophic, indicator bacteria, low dissolved oxygen, pesticides, phosphorus, sedimentation/siltation, selenium, solids, surfactants, synthetic organics, total nitrogen as N, toxicity, trace elements, and trash. A TMDL defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. No TMDLs have been established for the aforementioned pollutants/stressors (SWRCB 2010).

Water Quality Certification (CWA Section 401)

Section 401 of the CWA requires that an applicant for any federal permit (e.g., an ACOE Section 404 permit) obtain certification from the state that the discharge would comply with other provisions of the CWA and with state water quality standards. For example, an applicant for a permit under Section 404 of the CWA must also obtain water quality certification per Section 401 of the CWA. Section 404 of the CWA requires a permit from the ACOE prior to discharging dredged or fill material into waters of the United States, unless such a discharge is exempt from CWA Section 404. For the project area, the Colorado River RWQCB must provide the water quality certification required under Section 401 of the CWA. As discussed in Section 2.3, Biological Resources, an ACOE Section 404 permit is expected to be required for the Rugged and LanWest solar farm sites, but the Tierra del Sol site is not expected to require an ACOE Section 404 permit due to the absence of jurisdictional water features. Water quality certification under Section 401 of the CWA, and the associated requirements and terms, is required in order to minimize or eliminate the potential water quality impacts associated with the action(s) requiring a federal permit.

National Pollutant Discharge Elimination System Program (CWA Section 402)

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program. In November 1990, the EPA published final regulations that also establish stormwater permit application requirements for discharges of stormwater to waters of the United States from construction projects that encompass 5.0 or more acres of soil disturbance. Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES Program to address stormwater discharges from construction sites that disturb land equal to or greater than 1.0 acre and less than 5.0 acres (small construction activity). The regulations also require that stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4s) be regulated by an NPDES permit.

San Diego County MS4 Permit (San Diego RWQCB Order R9-2007-0001). The State of California issues a Municipal Stormwater permit (also known as an NPDES permit) to municipalities and renews it every 5 years. Under this permit, each municipality must develop a stormwater management program designed to control the discharge of pollutants into and from the MS4 (or from being discharged directly into the MS4). The purpose is to protect local water bodies since storm drains typically discharge their water into streams, bays, and/or the ocean without treatment. Order R9-2007-0001 (NPDES No. CAS 0108758) was adopted by the RWQCB San Diego Region on January 24, 2007, and established waste discharge requirements for discharge of urban runoff from the MS4 of the County of San Diego, the 18 incorporated cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority. The Tierra Del Sol site is subject to the provisions of this permit, but not the Rugged, LanEast, or LanWest sites because they are located outside the MS4 area and within the Colorado River Basin.

Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended by Order 2010-0014-DWQ). For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (i.e., Construction General Permit) in order to avoid and minimize water quality impacts attributable to such activities.[5] The Construction General Permit applies to all projects where construction activity disturbs 1.0 or more acres of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The Construction General Permit requires the

[5] SWRCB Order 2009-0009-DWQ (as amended by SWRCB Order 2010-0014-DWQ), NPDES Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities.

development and implementation of a Stormwater Pollution Prevention Program (SWPPP), which would include and specify best management practices (BMPs) designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP must contain a visual monitoring program, a chemical monitoring program for non-visible pollutants, and a sediment monitoring plan if the site discharges directly to a water body listed on the Section 303(d) list for sediment (which none of the project sites do). For those construction site that are not subject to Phase I or II municipal permits, the Construction General permit also provides standards for post construction hydromodification requirements.

For the Tierra Del Sol site, the Construction General Permit is implemented and enforced by the San Diego RWQCB. Because San Diego RWQCB has adopted a municipal permit that includes post construction requirements, the Tierra del Sol site will be required to meet the standards established in the County's Jurisdictional Urban Runoff Management Plan and through the preparation and implementation of a Storm Water Management Plan (SWMP). The Colorado River RWQCB has permitting authority over the Rugged, LanEast, and LanWest sites. Because the Colorado RWQCB has not adopted a municipal permit for the project area, Rugged, LanEast, and LanWest will be subject to the Post Construction Standards in the General Construction Permit, as well as the County of San Diego's Jurisdictional Urban Runoff Management Plan.

In either case, dischargers are required to submit a Notice of Intent (NOI) in order to obtain coverage under the Construction General Permit, at the discretion of the SWRCB and the applicable RWQCB. Dischargers are responsible for notifying the relevant RWQCB of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.

The Construction General Permit requires a risk-based permitting approach, dependent upon the likely level of risk imparted by a project. To ensure compliance and protection of water quality, the permit implements monitoring, reporting, and training requirements for management of potential stormwater pollutants. The permit contains several compliance items, including: (1) mandatory BMPs to reduce erosion and sedimentation, which may include incorporation of vegetated swales, setbacks and buffers, rooftop and impervious surface disconnection, bioretention cells, rain gardens, rain cisterns, implementation of pollution/sediment/spill control plans, training, and other structural and nonstructural actions; (2) sampling and monitoring for non-visible pollutants; (3) effluent monitoring and annual compliance reports; (4) development and adherence to a Rain Event Action Plan; (5) requirements for the post-construction period; (6) numeric action levels and effluent limits for pH and turbidity; (7) monitoring of soil characteristics on site; and (8) mandatory training under a specific curriculum.

Each of the four solar farms would disturb more than 1.0 acre of soil and would thus be subject to the provisions and requirements of the Construction General Permit. The applicant would submit an NOI to the SWRCB and obtain coverage under, and comply with, the Construction General Permit. As summarized previously, the preparation of a SWPPP would be required in accordance with the Construction General Permit. The SWPPP would include, but not be limited to, relevant measures, conditions, and obligations which would reduce or eliminate the impacts of construction activities on stormwater and receiving water quality and quantity. The Construction General Permit also contains requirements for the post-construction period. Tierra del Sol would satisfy its post construction requirements through implementation of a Water Quality Management Plan approved by the County of San Diego. Rugged, LanEast, and LanWest will need to obtain approval for their post construction plans from both the County and the Colorado RWQCB.

Porter–Cologne Water Quality Control Act

The Porter–Cologne Act (codified in the California Water Code, Section 13000 et seq.) is the basic water quality control law for California. As mentioned above, it is implemented by the SWRCB and the nine RWQCBs. The SWRCB establishes statewide policy for water quality control and provides oversight of the RWQCBs' operations. In addition to other regulatory responsibilities, the RWQCBs have the authority to conduct, order, and oversee investigation and cleanup where discharges or threatened discharges of waste to waters of the state could cause pollution or nuisance, including impacts to public health and the environment. Evident from the preceding regulatory discussion, the Porter–Cologne Act and the CWA overlap in many respects, as the entities established by the Porter–Cologne Act are, in many cases, enforcing and implementing federal laws and policies. However, there are some regulatory tools that are unique to the Porter–Cologne Act, as described below.

Dredge/Fill Activities and Waste Discharge Requirements. Actions that involve, or are expected to involve, discharge of waste are subject to water quality certification under Section 401 of the CWA (e.g., if a federal permit is being sought or granted) and/or waste discharge requirements (WDRs) under the Porter–Cologne Act. Chapter 4, Article 4 of the Porter–Cologne Act (California Water Code, Sections 13260–13274), states that persons discharging or proposing to discharge waste that could affect the quality of waters of the state (other than into a community sewer system) shall file a Report of Waste Discharge with the applicable RWQCB. For discharges directly to surface water (waters of the United States), an NPDES permit is required, which is issued under both state and federal law; for other types of discharges, such as waste discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, or discharges to waters of the state (such as isolated wetlands), WDRs are required and are issued exclusively under state law. WDRs typically require many of the same BMPs and pollution control technologies as required by NPDES-derived permits.

Further, the WDRs' application process is generally the same as for CWA Section 401 water quality certification, though in this case it does not matter whether the particular project is subject to federal regulation.

General WDRs for Discharges to Land with a Low Threat to Water Quality in the Colorado RWQCB Region. In SWRCB Order 2003-0003-DWQ, the SWRCB adopted General Waste Discharge Requirements (General WDRs) for discharges to land that are considered to be a low threat to water quality and are of low volume with minimal pollutant concentrations. All WDRs must implement the Basin Plan and require dischargers (e.g., the applicant) to comply with all applicable Basin Plan provisions and water quality objectives. The General WDRs establish minimum standards and monitoring requirements with respect to a few specific categories of discharge, including boring waste discharge, small dewatering projects (e.g., temporary dewatering during construction excavation activity), and miscellaneous discharges such as small, inert solid waste disposal operations. As discussed in the environmental setting, the Rugged, LanEast, and LanWest solar farms are unlikely to encounter shallow groundwater. However, the actual presence or absence of shallow groundwater is dependent on local geologic and climatic conditions, and thus it is possible that locally perched groundwater could be encountered.

There is a small chance that the Rugged, LanEast, and LanWest solar farms would require dewatering during subgrade excavation associated with foundation installations, in which case, any dewatering activity that would discharge to the land surface would need to comply with the provisions of these General WDRs (or, alternatively, the applicant and/or its contractor would need to obtain an individual WDR). Accordingly, to obtain coverage under these General WDRs and ensure compliance with the applicable Basin Plan, the applicant and/or its contractor would submit the following to the RWQCB: an NOI to comply with these General WDRs, which include, but may not be limited to a project map, evidence of California Environmental Quality Act (CEQA) compliance, the requisite fee, a discharge monitoring plan, and any additional information requested by the applicable RWQCB. RWQCB staff would determine whether or not coverage under the applicable General WDRs is appropriate and, if so, would notify the applicant by letter of coverage. In the event of any conflict between the provisions of the General WDRs and the Basin Plan, the more stringent provision would prevail.

General WDRs for Discharges to Land with a Low Threat to Water Quality in the San Diego RWQCB Region. In 2008, the San Diego RWQCB adopted Order R9-2008-0002 General WDRs for discharges from groundwater extraction and similar discharges to surface water within the San Diego Region, except for San Diego Bay. The General WDRs establish minimum standards and monitoring requirements with respect to all discharges of groundwater to surface waters within the San Diego Region from construction groundwater extraction.

As discussed in the environmental setting, the Tierra del Sol solar farm is unlikely to encounter shallow groundwater. However, the actual presence or absence of shallow groundwater is dependent on local geologic and climatic conditions, and thus it is possible that perched groundwater could be encountered. In such cases where the Tierra del Sol solar farm would require dewatering during subgrade excavation associated with foundation installations, any dewatering activity that would discharge to the land surface would need to comply with the provisions of these General WDRs (or, alternatively, the applicant and/or its contractor would need to obtain an individual WDR). Accordingly, to obtain coverage under these General WDRs and ensure compliance with the applicable Basin Plan, the applicant and/or its contractor would submit the following to the RWQCB: an NOI to comply with these General WDRs, which may include, but may not be limited to a project map, evidence of CEQA compliance, the requisite fee, a discharge monitoring plan, and any additional information requested by the applicable RWQCB. RWQCB staff would determine whether or not coverage under the applicable General WDRs is appropriate and, if so, would notify the applicant by letter of coverage. In the event of any conflict between the provisions of the General WDRs and the Basin Plan, the more stringent provision would prevail.

San Diego RWQCB Conditional Waiver No. 7. Conditional Waiver No. 7 authorizes, with conditions, discharges to land from short-term recycled water projects so long as the project does not include a permanent recycled water delivery and/or distribution systems and does not exceed 365 days. The Tierra del Sol solar farm would require coverage under this condition waiver, or individual WDR, as applicable, in the event it uses imported recycled water for the purposes of short-term dust control and/or grading.

General waiver conditions which must be adhered to include the following:

1. Prevent all windblown spray and surface runoff of recycled water on to property not owned or controlled by the discharger by implementation of management measures (MMs) and/or best management practices (BMPs).
2. Recycled water discharged to land must not adversely affect the quality or beneficial uses of underlying groundwater.
3. The San Diego RWQCB and/or other local regulatory agencies must be allowed reasonable access to the site in order to perform inspections and conduct monitoring.
4. The use of recycled water must comply with the requirements of California Code of Regulations Title 22, Section 60310(a) through (j), unless sufficient information is provided to demonstrate that a proposed alternative is protective of water quality and human health.

5. Recycled water cannot be used for groundwater recharge unless sufficient information is provided to demonstrate that it will be protective of water quality and human health.

Specific waiver conditions for short-term recycled water projects include:

1. The operator of a short-term project proposing to discharge recycled water must file a Notice of Intent containing information about the operator, location of the project, source of the recycled water, planned period of and frequency of discharge of recycled water, and the MMs/BMPs or other measures that will be taken to eliminate or minimize the discharge of pollutants that might affect surface water and groundwater quality.
2. The Notice of Intent must include a letter from the permitted recycled water agency supplying the recycled water stating that the project will comply with recycled water regulations in California Code of Regulations Title 22, Division 4, Chapter 3, Articles 1 through 10. The letter shall also specify any monitoring and/or reporting required by the recycled water agency to demonstrate compliance with California Code of Regulations Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 2, 3, 4, 5, and 5.1.
3. Sufficient information demonstrating that the operator will comply with waiver conditions and applicable recycled water regulations must be submitted before the discharge may begin.
4. The Notice of Intent is valid for 365 days after the submittal of a complete Notice of Intent. A new Notice of Intent must be filed with the San Diego Water Board if the short-term project will exceed 365 days. A new Notice of Intent must be received by the San Diego Water Board at least 60 days prior to the expiration of the previous Notice of Intent. If no new Notice of Intent is received 60 days prior to the expiration of the previous Notice of Intent, the short-term recycled water project must cease operation 365 days after a complete Notice of Intent has been submitted.

If recycled water dischargers are not in compliance with waiver conditions, they can be issued a Notice of Violation and required to correct deficiencies in order to be eligible for Conditional Waiver No. 7. If recycled water dischargers violate any waiver conditions, the San Diego Water Board has the option to terminate the conditional waiver for the discharge and begin regulating the discharge with individual WDRs and/or take other enforcement actions.

State Maximum Contaminant Levels

As part of the California Safe Drinking Water Act, the State Department of Health Services (DHS) sets primary and secondary standards for drinking water supplies. Maximum contaminant levels (MCLs) set by DHS are either as stringent or more stringent than federal MCLs.

CCR Title 22 Standards for the Use of Recycled Water

Title 22 contains standards for the use of recycled water for general construction purposes as detailed in Chapter 3, Article 3, Section 60307—Use of Recycled Water for Other Purposes. Recycled water used for soil compaction, mixing concrete, and/or dust control on roads and streets provided the water meets at least disinfected secondary-23 recycled water standards. Disinfected secondary-23 recycled water means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last 7 days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

In addition, Chapter 3, Article 4, Section 60310—Use Area Requirements, states that no irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well and that any use of recycled water shall comply with the following: (1) any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency; (2) spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities; and (3) drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

Federal and State Flood Hazard Regulations

National Flood Insurance Act

The National Flood Insurance Act of 1968 established the National Flood Insurance Program (NFIP) to provide flood insurance within communities that were willing to adopt floodplain management programs to mitigate future flood losses. The act also required the identification of all floodplain areas within the United States and the establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing Flood Insurance Rate Maps (FIRMs) that delineate the areas of known special flood hazards and their risk applicable to the community.

National Flood Insurance Reform Act

The National Flood Insurance Reform Act of 1994 resulted in major changes in the NFIP. The act, which amended the Flood Disaster Protection Act of 1973, provided tools to make NFIP more effective in achieving its goals of reducing the risk of flood damage to properties and reducing federal expenditures for uninsured properties that are damaged by flood. The act

requires mitigation insurance and establishes a grant program for state and community flood mitigation planning projects.

Cobey–Alquist Floodplain Management Act

Under this act, local governments are encouraged to plan, adopt, and enforce land use regulations for floodplain management to protect people and property from flooding hazards. This act also identifies requirements that jurisdictions must meet to receive state financial assistance for flood control. The County has used the guidelines established by this legislation to produce ordinances, such as the Flood Damage Prevention Ordinance, which promote public health, safety, and general welfare, and minimize public and private losses due to flood conditions in specific areas throughout the County. Furthermore, the act has influenced the direction of Board of Supervisors (BOS) policy decisions, such as defining watercourses in the County of San Diego subject to flood control.

Local Plans, Policies and Regulations

The following local/regional regulations pertaining to hydrology and water quality would apply to the Proposed Project.

County of San Diego Code of Regulatory Ordinances Sections 67.801–67.814, Watershed Protection, Stormwater Management, and Discharge Control Ordinance

The County's Watershed Protection, Stormwater Management, and Discharge Control Ordinance (WPO) was adopted in March 2008 and revised in January 2010. The purpose of the WPO is to protect water resources and improve water quality by controlling the non-stormwater conveyance system and receiving waters, to cause the use of management practices by the County and its citizens that would reduce the adverse effects of polluted run-off discharges on waters of the state, to secure benefits from the use of stormwater as a resource, and to ensure the County is compliant with state and federal law. The WPO establishes standards and requirements that are legally enforceable by the County within the County's jurisdiction. Projects that require a permit (i.e., administrative permit, Major Use Permit, grading permit, etc.) are required to demonstrate compliance with the WPO. Section 67.804, for example, specifically addresses waste discharge and prohibits the discharge of pollutants to the stormwater system unless they are permitted through the NPDES program.

As part of the revised ordinance, Priority Development Projects are required to incorporate low-impact development (LID) techniques. Adopted in 2008, the LID Handbook was developed to compliment the WPO by providing guidance regarding LID techniques and practices. LID design considerations for proposed private projects may include the following: (1) draining runoff from impervious areas into pervious areas based on the capacity to treat/hold runoff; (2) designing pervious areas to receive and treat runoff by using swales, detention, and/or

bioretention, and using amended soils to increase infiltration; (3) using porous pavements where appropriate; (4) conserving natural areas, trees, vegetation, and soils; (5) constructing streets, sidewalks, and parking areas to the minimum widths necessary for public safety, thereby retaining pervious areas; (6) minimizing the impervious footprint of the project and disconnecting impervious surfaces; (7) minimizing soil compaction (under planned green/open areas); and (8) minimizing disturbance to natural drainages.

In addition, the revised ordinance requires compliance with hydromodification. Hydromodification is generally defined as the change in natural watershed hydrologic processes and runoff characteristics (infiltration and overland flow) caused by urbanization or other land use changes that result in increased stream flows, sediment transport, and morphological changes in the channels receiving the runoff. Rugged, LanEast and Lanwest are exempt from hydromodification requirements because they lie east of the Tecate (Pacific/Salton) Divide and within the Colorado River Basin, and they are not considered Priority Development Projects. Even though Tierra del Sol is located west of the Tecate (Pacific/Salton) Divide and within the Pacific Basin, it is also exempt from hydromodification requirements because it is not considered a Priority Development Project according to the checklist in the Intake Form for Priority Development Projects within the Standard Urban Stormwater Mitigation Plan.

County of San Diego Grading Ordinance

The County Code Title 8, Division 7, Excavation and Grading, Clearing and Watercourses,[6] echoes protections at the federal level by prohibiting any actions or development that would impede water flows, and addresses grading and clearing near watercourses. The Grading Ordinance requires that projects involving more than 200 cubic yards of grading, clearing, and/or removal of natural vegetation obtain a grading permit (see Section 1.5.1, Project Approvals/Permits). Grading permits are discretionary and require compliance with CEQA. Additional information specific to grading permit requirements is discussed in Section 3.1.2, Geology, Soils, and Seismicity.

Chapter 6 of the ordinance exists to protect persons and property against flood hazards by prohibiting the alteration of the surface of land so as to reduce the capacity of a watercourse and prohibit any action that impairs, impedes, or accelerates the flow of water in a watercourse in such a manner that adversely affects adjoining properties. The ordinance prohibits any land alteration or construction of structures in, upon, or across a watercourse without first obtaining a permit. Enforcement occurs at the time that grading plans or improvement plans are reviewed during the grading permit process. The lines of inundation need to be shown on the plot plan in

[6] The ordinance defines a watercourse as any surface water body (including any arroyo, canal, channel, conduit, creek, culvert, ditch, drain, gully, ravine, reservoir, river, stream, wash, waterway, or wetland), in which waters from a tributary drainage area of 100 acres or larger flow in a definite direction or course, either continuously or intermittently, and any area adjacent thereto which is subject to inundation from a 100-year flood.

order to comply with the Grading Ordinance Section 87.602 (a). The County Official shall not approve the grading plans or improvement plans unless he or she determines that the proposed grading does not create an unreasonable hazard of flood or inundation to persons or property. Even though none of the project sites are within an identified flood hazard area, as defined by either FEMA or the County, the provisions of this ordinance would apply to the Rugged, LanEast, and LanWest solar farm sites because they would result in land alteration and construction of structures within a watercourse as defined in the ordinance. The Tierra del Sol solar farm would not affect a watercourse and therefore would not be subject to this ordinance.

County of San Diego Zoning Ordinance

Further, Sections 5307(b) and (c) of the Sensitive Resource Area Regulations in the County's Zoning Ordinance prohibit permanent, occupied structures in the floodway and floodplain fringe and require any structures to be constructed to withstand periodic flooding. These properties are designated with an "F" Flood Plain Special Area Regulation. In addition to the 100-year flood hazard areas, the terms "floodplain," "floodway," and "floodplain fringe" are used to describe low-lying areas near rivers and other watercourses that could be affected by occasional flooding. In acknowledgement that certain areas are subject to periodic inundation, the County's Flood Damage Prevention Ordinance contained in Section 811.101 of the County Code exists to minimize the risk associated with flood events. This ordinance applies to all areas of special flood hazards and areas of flood-related erosion hazards. It seeks to control the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel flood waters. The lines of inundation need to be shown on the plot plan accompanying building and development plans in order to comply with the Zoning Ordinance Section 7358 (a)(6).

County of San Diego Code of Regulatory Ordinances Sections 86.601–86.608, Resource Protection Ordinance

The Resource Protection Ordinance (RPO) regulates development within environmentally sensitive lands and resources, including wetlands, floodways, and floodway fringes. The RPO prohibits development of permanent structures for human habitation or as a place of work in a floodway. Uses permitted in a floodway pursuant to Section 86.604(c) of this ordinance include agricultural, recreational, and other such low-intensity uses, provided, however, that no use shall be permitted that would substantially harm the environmental values of a particular floodway area. Modifications to the floodway must meet design criteria, and concrete or riprap flood control channels are allowed only when specific findings are made. Additionally, Section 86.604(d) of the RPO allows uses permitted by zoning and those that are allowable in the floodway in the floodplain fringe when the specific criteria are met. The criteria include, but are not limited to, a finding that the proposed development would not unduly accelerate the flow of

water, or cause other changes in hydrology that would substantially increase erosion and scour to the detriment of downstream waters, and that development below the elevation of the 100-year flood shall be capable of withstanding periodic flooding.

On-Site Wastewater Treatment System Ordinance

Chapter 3, Division 8, of Title 6 of the San Diego County Code (2011) establishes the requirements for On-site Wastewater Treatment Systems (OWTS) in the County. The purpose of this chapter is to implement state laws and regulations associated with waste discharge requirements (SWRCB and the California RWQCB for the San Diego Region) and implement additional standards for septic systems and graywater systems that are necessary to protect the health and safety of the San Diego County community. It also makes it unlawful for any person to cause, suffer, or permit the disposal of sewage, human excrement, or other liquid wastes, in any place or manner except through and by means of an approved plumbing and drainage system and an approved sewage disposal system.

Provided that no public sanitary sewer system is available, the ordinance allows for installation of OWTS provided that the requirements and standards of the ordinance are complied with, and a permit issued by the Department of Environmental Health (DEH) is obtained. Standards and requirements include, but are not limited to soil percolation tests to determine soil suitability, the selection of a treatment system appropriate for the site conditions, and specific setback requirements from lakes, streams, ponds, slopes, and other utilities and structures. Chapter 6, Division 8, of Title 6 of the County Code pertains to Septic Tank and Cesspool Cleaners, which establishes processes, fees, and requirements for the examination, cleaning, and collection of sewage from septic tanks and cesspools.

San Diego County BOS Policy I-45, Definition of Watercourses in the Subject of Flood Control

The purpose of this policy is to define those watercourses in the County of San Diego that are subject to flood control so that appropriate responsibility can be determined. The policy was developed because consideration of flood control methods is essential in the land-use decision-making process and the failure of flood control systems may result in property damage and loss of life. The policy provides for maps that specifically designate the watercourses that are subject to flood control, thus eliminating uncertainty and providing a clear and easily accessible record of the district's areas of concern. Specifically, the policy defines flood control as those watercourses which serve 1 square mile or more of watershed shown on the map on file with the Clerk of the Board as Document No. 468904.

San Diego County BOS Policy I-68, Proposed Projects in Flood Plains with Defined Floodways

This policy was developed to identify procedures to be used when proposed projects impact floodways as defined on County floodplain maps. The policy defines procedures to be implemented for the following types of proposals: (1) major construction that would change the floodplain or floodway, (2) relocation of a floodway, (3) partial filling of the floodplain fringe, (4) erosion and sedimentation in a floodplain, (5) increased flood flows, and (6) concrete or riprap facilities.

County of San Diego Groundwater Ordinance

The County adopted the San Diego County Groundwater Ordinance in 1991; it was last amended in 2013. The ordinance establishes regulations for the protection, preservation, and maintenance of groundwater resources. The purpose of the ordinance is to ensure that development would not occur in groundwater-dependent areas of the County unless adequate supplies are available to serve both existing and proposed uses (County of San Diego 2013). Section 67.722 (All Other Projects) regulates all areas within the County outside Borrego Valley and any future groundwater impacted basins. For discretionary permit applications, the following findings must be made: (1) For projects using greater than 20 acre-feet per year or 20,000 gallons per day, that groundwater resources are adequate to meet the groundwater demands both of the project and the groundwater basin if the basin were developed to the maximum density and intensity permitted by the General Plan, and (2) for all other projects, that groundwater resources are adequate to meet the groundwater demands of the project.

San Diego County General Plan

Updated (and adopted) in August 2011, the San Diego County General Plan guides future growth in the unincorporated areas of the County and considers projected growth anticipated to occur within various communities.

Land Use Element

The Land Use Element includes a requirement to document and annually review floodways and floodplains (LU-6.12) and to encourage sustainable use of groundwater and properly manage groundwater recharge areas (LU-8). Specifically Goal LU-8 includes the following policies:

- **Policy LU-8.1:** Require land use densities in groundwater dependent areas to be consistent with the long-term sustainability of groundwater supplies, except in the Borrego Valley.
- **Policy LU-8.2:** Require development to identify adequate groundwater resources in groundwater dependent areas, as follows:

  - In areas dependent on currently identified groundwater overdrafted basins, prohibit new development from exacerbating overdraft conditions, and
  - In areas without current overdraft groundwater conditions, evaluate new groundwater-dependent development to assure a sustainable long-term supply of groundwater is available that will not adversely impact existing groundwater users.
- **Policy LU-8.3:** Discourage development that would significantly draw down the groundwater table to the detriment of groundwater-dependent habitat.

Conservation and Open Space Element

The Conservation Element identifies and describes the natural resources of the County of San Diego and includes policies and action programs to conserve those resources. The Conservation and Open Space Element identifies policies necessary to achieve (a) long-term viability of the County's water quality and supply through a balanced and regionally integrated water management approach (Goal COS-4), and (b) protection and maintenance of local reservoirs, watersheds, aquifer-recharge areas, and natural drainage systems to maintain high-quality water resources (Goal COS-5).

Safety Element

The Public Safety Element was developed to introduce safety considerations into the planning and decision-making processes in order to reduce the risk of injury, loss of life, and property damage associated with the hazards identified in the element. The Safety Element identifies policies necessary to (a) minimize personal injury and property damage losses resulting from flood events (Goal S-9), and (b) ensure that floodways and floodplains that have acceptable capacity to accommodate flood events (Goal S-10). These goals are achieved through policies encouraging the improvement and development of floodplain maps, regulating the types of development that can occur in floodplains, and ensuring that development outside of floodplains employ proper stormwater design and management practices necessary to increase the volume of stormwater entering waterways. The element also proposes policies and recommendations aimed at hazard mitigation, disaster preparedness, and emergency response. Chapter 3 of the element, Geologic Hazards, addresses non-seismic hazards, specifically slope instability/erosion and landslides, which can cause flooding.

Boulevard Subregional Plan Area

Located within the Mountain Empire Subregion, the Boulevard Subregional Plan area encompasses approximately 55,350 acres and includes several unincorporated communities including (but not limited to) Boulevard, Live Oak Springs, and Tierra del Sol. Policies of the Boulevard Subregional Plan that are associated with the Proposed Project include:

- **Policy CM 8.1.1:** Prohibit development and the exportation or sale of groundwater that would adversely impact the ground and surface water resources.
- **Policy CM 8.2.1:** Require that any new proposed development require sufficient set back from each other to avoid the potential to contaminate and/or overload the aquifer with pollutants.
- **Policy CM 8.2.1:** Require that the source and quality of water that is imported into the area via tanker trucks or other means, for use on major construction projects, would be verified and validated to avoid contamination of local surface and groundwater resources.
- **Policy CM 8.5.2:** Require all engineered drainage projects to maximize stormwater filtration on-site to prevent the loss of groundwater recharge and unnecessary erosion.
- **Policy CM 8.7.1:** Encourage Zero Waste Management goals through increased recycling and reuse.

3.1.5.3 Analysis of Project Effects and Determination as to Significance

The Proposed Project consists of four renewable energy solar farms in southeastern San Diego County. The following impact analysis has been separated into discussions for each of the four solar farms: Tierra del Sol, Rugged, LanEast, and LanWest, as well as a combined discussion of the Proposed Project as a whole. For the purposes of this Program EIR, the Tierra del Sol and Rugged solar farms are analyzed at a project level, whereas the LanEast and LanWest solar farms are analyzed at a programmatic level as sufficient project-level data has not been developed at this time.

3.1.5.3.1 Hydrology and Drainage Patterns

Guidelines for the Determination of Significance

For the purpose of this Program Environmental Impact Report (EIR), the County's *Guidelines for Determining Significance: Hydrology* (County of San Diego 2007a) applies to both the direct impact analysis and the cumulative impact analysis. These significance guidelines have been developed by the County to address questions c), d), and e) in the CEQA Guidelines, Appendix G. A significant impact would result if:

- The project would increase water surface elevation in a watercourse within a watershed equal or greater than 1 square mile, by 1 foot or more in height and in the case of the San Luis Rey River, San Dieguito River, San Diego River, Sweetwater River, and Otay River, 2/10 of a foot or more in height.
- The project would result in increased velocities and peak flow rates exiting the project site that would cause flooding downstream or exceed the stormwater drainage system capacity serving the site.

- The project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site.

Analysis

Tierra del Sol

The approximately 420-acre Tierra del Sol solar farm would not affect a watercourse with a watershed greater than 1 square mile, because the site has little to no run-on. The site is flat to gently sloped and is located on a topographic high point relative to surrounding areas to the west, south, and east. Rainfall, if sufficient in intensity to generate surface water runoff (as opposed to infiltrating directly into the ground), would result in runoff towards the east, south, and west edges of the site but would not result in appreciable stormwater run-on. The runoff would mainly be in the form of sheet flow, although there is localized evidence (e.g., channels, swales, and/or ditches) that flow may concentrate or channelize, most likely during high-intensity rainfall events. Stormwater runoff from the site would eventually discharge to off-site unnamed ephemeral drainages to the west and east. While portions of the site show evidence of concentrated flow, the small channels, swales and/or ditches exiting the site do not have watersheds greater than 1 square mile (the largest affected watershed is about 130 acres, or 0.2 square mile) (see Appendix 3.1.5-1). Therefore, the first significance criterion above—whether project would increase water surface elevation—is not applicable to the Tierra del Sol site.

The Tierra del Sol solar farm may result in minor, localized alterations to existing drainage patterns on the site, but these alterations would not be significant enough to result in substantial erosion or siltation, or result in increased velocities and peak flow rates sufficient to cause or worsen off-site flooding hazards. The following discussion demonstrates why the second and third significance criteria above—whether the project would substantially alter the existing drainage pattern of the site or area or result in increased velocities and peak flow rates exiting the project site—are **less than significant** with respect to the Tierra del Sol site**.**

Grading would occur over limited areas including internal access roads, the operation and maintenance (O&M) area, the substation, inverter pads, and in cases where trackers require flat concrete pad foundations (the preferred method of installation, however, would be via vibratory pile driver). Grading would not be performed in a manner that would substantially alter topography or substantially change the boundaries of the approximately 10 existing watersheds on the site. Minor amounts of impervious areas would be added during construction, such as transformer pads, sub-station pads, foundation posts for the solar panels, the O&M building, and pads for substation structures. Access roads and the parking area would consist of permeable material (DG). About 0.63% (or 2.63 acres) of the project site would be composed of impervious

surface when construction is complete, versus the 0.1% (or 0.5 acre) of the area that is currently covered by impervious surfaces. However, impervious surfaces on the site would be largely dispersed across the project site and physically segregated such that stormwater flows would have little opportunity to accumulate or accelerate beyond pre-project conditions.

A hydrology and drainage study of the Tierra del Sol solar farm performed by AECOM (Appendix 3.1.5-1) confirms that existing drainage patterns and peak flow rates would generally be maintained. Table 2.9-4 compares the pre-project and post-project peak flow rates (discharge and velocity) leaving the project's 10 existing watersheds. In all but three watersheds, the analysis showed no increase in peak discharges and velocities leaving the site in a 100-year storm event, with the greatest increase being a 6.5% increase in discharge from existing conditions (see Appendix 3.1.5-1). An increase in discharge of 6.5% or less (or of 2.4% or less in velocity) from just 3 of the 10 watersheds is unlikely to cause noticeable effects with respect to flooding, erosion, or siltation on or off site. According to the preliminary drainage design, the additional increase in runoff is to be detained within an infiltration trench and allowed to infiltrate into the soil. The approximate volume of additional runoff that would be captured by infiltration trenches is 20,000 cubic feet (Appendix 3.1.5-1).

As described above, the project would not substantially affect hydrology and drainage patterns due to the limited alteration of topography and small amount of new impervious surface; nevertheless, the applicant would implement water quality BMPs during both the construction phase and the O&M phase of the project. Many of the water quality BMPs to be implemented seek to address the problem of excess sediment loads in stormwater runoff, which is caused by substantial increases in the rate, volume, and location of stormwater runoff. Water quality BMPs to be implemented during the construction phase of the project would be governed under the statewide Construction General Permit (described in greater detail in Section 3.1.5.2, Regulatory Setting) and implemented through a construction SWPPP. The exact location and type of BMPs to be installed during construction would depend on site-specific conditions, construction schedule, and proposed activities, all of which would be outlined in the construction SWPPP. Standard BMPs typically included in a construction SWPPP include perimeter controls, stabilization of exposed soils not actively being used for construction, proper use and containment of hazardous materials, preventing release of fuels and greases (e.g., drip pans under vehicles), and good housekeeping practices. The provisions of the Construction General Permit ensure that site-specific conditions are taken into consideration when developing the construction SWPPP, that personnel developing and implementing the construction SWPPP are qualified, and that BMPs are adequately monitored and maintained.

The design of the project would also include BMPs to control stormwater runoff during the operating life of the project, including those described in the applicant's Minor Stormwater Management Plan (SWMP). The SWMP includes use of hydraulic stabilization (such as

hydroseeding and bonded fiber matrix); silt fences, fiber rolls, and gravel bags; stabilizing site egress and ingress; LID road design; and energy dissipaters and infiltration trenches built into the project design in order to minimize the rate, volume, and sediment load of stormwater runoff that would be discharged from the site (see Appendix 3.1.5-3). The infiltration trenches to be included in the design are sized to accommodate the minimal increase in peak discharges leaving the site in a 100-year storm event. The swales would be constructed with fiber roll check dams in place to capture the sediment that erodes off the site. Gravel bag check dams would be placed prior to the swales exiting the project site, in order to capture sediment. At the outlet of the swale, outlet protection would be provided to prevent scour and erosion. The velocities in the earthen channels within the tracker areas would be non-erosive, but the perimeter channels would convey flows with erosive velocities and are proposed to be protected by lining them with gravel or cobble.

The preparation and implementation of a SWMP is required under the Watershed Protection, Stormwater Management, and Discharge Control Ordinance and is in compliance with state law. The applicant would also show drainage patterns, inlets, points of entry into natural drainage channels, energy dissipaters, vegetated swales, infiltrations trenches and any other applicable drainage features as part of Preliminary Grading Plans submitted to the County as part of the grading permit process.

As part of the project, the applicant would prepare an operational stormwater pollution prevention plan (operational SWPPP), which would be designed to meet the regulatory standards and requirements outlined in Section 3.1.5.1. This would include the implementation of a SWMP, as required by the Watershed Protection, Stormwater Management, and Discharge Control Ordinance; post-construction standards required under the statewide general construction permit; site design, source control, and, in some cases, treatment control BMPs necessary under the County's MS4 permit; and other applicable water quality provisions, such as WDRs for Discharges to Land with a Low Threat to Water Quality. Due to the favorable characteristics of the project site (e.g., small watersheds and no watercourses), the minimal grading and impervious surfaces proposed compared to the size of the site, and the applicant-prepared operational SWPPP designed to comply with state and local water quality regulations, the impacts of the Tierra del Sol solar farm with respect to hydrology and drainage patterns would be **less than significant**.

Rugged

Development proposed for the Rugged solar farm would occur partially within the Tule Creek corridor, and thus would affect a watercourse with a watershed greater than 1 square mile (the Tule Creek watershed contributing to the project site is 24.25 square miles). This would result in a significant impact if the development associated with the solar farm were

to result in a 1 foot or more increase in water surface elevations (such as during a 100-year flood). Since there are no established regulatory flood zones for Tule Creek, the analysis (provided in Appendix 3.1.5-2) determined the 100-year inundation limits in order to determine the expected flow width, depth, and velocity along the corridor and to evaluate if there would be any adverse effects on off-site properties upstream or downstream of the Rugged site. The analysis found that the average post-project difference in water surface elevation and velocity upstream of the project would be -0.14 feet and 0.22 feet per second respectively and downstream would be 0.03 feet and 0.09 feet per second. These differences would not meet the first significance criterion above. Therefore, the impact of the Rugged solar farm with respect to the first significance criterion above—whether the project would result in an increase in water surface elevations within Tule Creek—would be **less than significant**.

In compliance with the San Diego County Grading Ordinance, any structures (e.g., inverters, access roads, or tracker masts) placed within the limits of the 100-year flood, as determined by Appendix 3.1.5-2, would need to be shown to be able to withstand flooding, or be flood-proofed. The proposed O&M building would not be located in the 100-year flood zone determined by AECOM. Trackers would not constitute significant impediment to flow due to the minor portion of the flood zone's cross-sectional area occupied by tracker masts (e.g., small diameter) and would be built to withstand wind loads, which would be higher than the load imposed by a flood flow.

The following discussion demonstrates why the second and third significance criteria above—whether the project would substantially alter the existing drainage pattern of the site or area or result in increased velocities and peak flow rates exiting the project site—are **less than significant** with respect to the Rugged site**.** The Rugged site is about 765 acres, which is close to twice as large as the Tierra del Sol site, and it would affect a greater number of distinct watersheds (21 different watersheds). The type of development, level of grading, and percentage of impervious surface would be similar to the Tierra del Sol site. About 0.29% (or 2.19 acres) of the project site would be composed of impervious surface when construction is complete, versus the 0.06% (or 0.45 acre) of the area that is currently covered by impervious surfaces. These impervious surfaces would largely be disconnected from one another and would not require substantial cuts and fills. According to pre- and post-project maps of the Rugged site, the boundaries of each of the existing sub-watersheds would remain the same (see Appendix 3.1.5-2). Further, Table 3.1.5-5 shows the results of a comparison between pre-project and post-project peak flows performed by AECOM. None of the 21 watersheds would experience an increase in peak discharge in a 100-year storm although one of the watersheds (Tule Creek) would experience a 1.42% increase in peak flow velocity; refer to Appendix 3.1.5-2 for further details. This means that on average of only once in 100 years, the increase in the velocity of stormwater flows leaving the site would only be 1.42%; at all other times, the increase would be less or none.

Compliance with requirements imposed by state and local water quality regulations (SWPPPs and SWMP) means the Rugged solar farm will implement (during both the construction and post-construction phase) the same or similar BMPs to control erosion and dissipate flows as discussed above for the Tierra del Sol solar farm. The only difference (in terms of the type of BMPs to be implemented) would be that the Rugged solar farm would not include infiltration trenches, because the results of the hydrologic analysis indicates that there would be no increase in discharge volume in a 100-year storm event. The other BMPs discussed above for the Tierra del Sol site would be implemented on the Rugged site, and would effectively control the potential erosive effect of minimal increases in peak flow velocity.

As part of the project, the applicant would prepare an operational SWPPP, which would be designed to meet the regulatory standards and requirements outlined in Section 3.1.5.1. This would include the implementation of a SWMP, as required by the Watershed Protection, Stormwater Management, and Discharge Control Ordinance; post-construction standards required under the statewide general construction permit; site design, source control, and, in some cases, treatment control BMPs necessary under the County's MS4 permit; and other applicable water quality provisions, such as WDRs for Discharges to Land with a Low Threat to Water Quality.

For the same reasons discussed for the Tierra del Sol site, the impact with respect to increases in velocities and peak flow rates on the Rugged solar farm project site would be **less than significant**.

LanEast and LanWest

The Walker Creek corridor would cross the proposed LanEast and LanWest solar farms and thus, like the Rugged site, these solar farms would be subject to the portion of the Grading Ordinance addressing watercourses and flood hazards. Because plans for LanEast and LanWest have not been fully developed to a project-level of detail, no site-specific hydrology study or flood mapping has been prepared for the LanEast and LanWest solar farms to date.

For both LanEast and LanWest, the type of development is similar to the Tierra del Sol and Rugged sites, such that the same conclusions are likely to be reached—that the solar farms would have minimal impacts on peak flow rates, volumes, and depths. For both LanEast and LanWest, the amount of grading and extent of impervious surfaces would be minimal compared to the total site area, and general drainage patterns would be maintained. Access roads and parking areas would be surfaced using DG, a permeable material. In addition, like the Tierra del Sol and Rugged solar farms, the LanEast and LanWest solar farms would be required to comply with state and County regulations relating to hydrology, including Construction General Permit requirements; the Watershed Protection, Stormwater Management, and Discharge Control Ordinance; and the Grading Ordinance.

If the County Flood Plain Administrator determines that base flood elevations or depths need to be established along the Walker Creek corridor, the solar farms would also be subject to the Flood Damage Prevention Ordinance and the RPO, should it be found that they include development within the calculated 100-Year floodplain of Walker Creek. In either case, the regulatory environment is sufficient to ensure that both LanEast and LanWest would be designed to minimize increases in peak flow rates and mimic pre-project conditions to the greatest extent feasible. As a result, the impact with respect to increases in velocities and peak flow rates on the LanEast and LanWest solar farm sites would be **less than significant**.

Proposed Project

As previously described, the Proposed Project would result in minor changes in the rate, volume, and location of stormwater runoff, and would have minor effects on watercourses with respect to all three CEQA significant criteria listed above. This is because the level of grading and the amount of new impervious surfaces would be minimal compared to the total area of each project and because the Proposed Project will implement a construction SWPPP and an operational SWPPP in compliance with all applicable state and local regulations and ordinances that seek to control substantial increases in the rate, volume, and location of stormwater discharges and flood flow. Finally, because each of the solar farms individually would result in less-than-significant impacts, the impact of the Proposed Project as a whole would be **less than significant**.

3.1.5.3.2 Flood Hazards

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's *Guidelines for Determining Significance: Hydrology* (County of San Diego 2007a) applies to both the direct impact analysis and the cumulative impact analysis. These significance guidelines have been developed by the County to address questions g), h), and i) in the CEQA Guidelines, Appendix G. No projects within the existing unincorporated County are likely to be inundated by a tsunami or seiche. Therefore, the County has not adopted guidelines for tsunami or seiche, and the project can be considered to have no impact with respect to seiche or tsunami.

A significant impact would result if:

- The project would result in placing housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area or other special flood hazard area, as shown on a FIRM, a County Flood Plain Map, or County Alluvial Fan Map, which would subsequently endanger health, safety, and property due to flooding. Flooding includes mudflows and debris flows.

- The project would place structures within a 100-year flood hazard or alter the floodway in a manner that would redirect or impede flow resulting in any of the following: a) alter the Lines of Inundation resulting in the placement of other housing in a 100-year flood hazard, or b) increase water surface elevation in a watercourse with a watershed equal to or greater than 1 square mile by 1 foot or more in height and, in the case of the San Luis Rey River, San Dieguito River, San Diego River, Sweetwater River, and Otay River, 2/10 of a foot or more in height.

Analysis

The Proposed Project does not involve housing, and all structures to be placed on the project sites would be anchored, including the masts and inverters, and all structures associated with the O&M area and substation. None of the project sites are located within a 100-year floodplain area or other special flood hazard area as shown on a FIRM, a County Flood Plain Map, or County Alluvial Fan Map. In addition, none of the solar farms are downstream of a dam or located in an area likely to be affected by mudflows or debris flows. Therefore, the first significance criterion above—placing housing, habitable structures, or unanchored impediments to flow in a 100-year floodplain area or other special flood hazard area—is not applicable to the Proposed Project.

However, the Rugged, LanEast, and LanWest sites are crossed by Tule and Walker creeks, which would be subject to 100-year flood-flows that have not been identified or characterized by FEMA or the County. Even though the solar farms are not located within regulatory flood zones, per the Grading Ordinance Section 87.602 (a) and the Zoning Ordinance Section 7358 (a)(6), the lines of inundation need to be shown on the plot plans for the Proposed Project so that construction plans can be properly reviewed by County Officials prior to approving the Major Use Permit.

Tierra del Sol

The Tierra del Sol solar farm is not anticipated to be subject to significant flood hazards because it is not crossed by a watercourse and has little to no stormwater run-on, as discussed in Section 3.1.5.3.1, Hydrology and Drainage Patterns. Therefore, there would be **no impact** of the Tierra del Sol site with respect to flood hazards.

Rugged

As discussed in Section 3.1.5.3.1, Hydrology and Drainage Patterns, and shown in Table 3.1.5-5, the Rugged solar farm would have a little to no effect on the 100-year floodplain associated with Tule Creek. Appendix 3.1.5-2 includes maps of the estimated limits of the 100-year floodplain under both pre-project and post-project conditions. The limits of the

100-year floodplain under both scenarios (pre-project and post-project conditions) were generally the same. In small localized areas, the limits were slightly changed, but in no case do the limits change in such as manner as to newly place housing or other structures within the limits of the 100-year flood. In addition, the Rugged solar farm would be subject to Chapter 6 of the Grading Ordinance, which is designed to protect persons and property against flood hazards by prohibiting the alteration of the surface of land in a manner that reduces the capacity of a watercourse. It also prohibits any action that impairs, impedes, or accelerates the flow of water in a watercourse in such a manner that adversely affects adjoining properties. The ordinance prohibits any land alteration or construction of structures in, upon, or across a watercourse without first obtaining a permit. Enforcement occurs at the time that grading plans or improvement plans are reviewed during the grading permit process. The County Official shall not approve the grading plans or improvement plans unless he or she determines that the proposed grading does not create an unreasonable hazard of flood or inundation to persons or property. For these reasons, the impact with respect to flood hazards is **less than significant**.

LanEast and LanWest

Similar to the Rugged site, the LanEast and LanWest solar farms would have minimal impacts on peak flow rates, volumes, and depths (see Section 3.1.5.3.1). For both LanEast and LanWest, the amount of grading and extent of impervious surfaces would be minimal compared to the total site area and general drainage patterns would be maintained. Access roads and parking areas would be surfaced using DG, a permeable material.

Because plans for the LanEast and LanWest solar farms have not been fully developed to a project-level of detail, no site-specific hydrology study or flood mapping has been prepared to date. However, similar to the Rugged solar farm, both the LanEast and LanWest solar farms would be required to show lines of inundation on the plot plans, per the Grading Ordinance Section 87.602 (a) and the Zoning Ordinance Section 7358 (a)(6), and would likewise be subject to Chapter 6 of the Grading Ordinance, which is designed to protect persons and property against flood hazards. In accordance with the provisions of the Grading Ordinance, grading and development plans associated with LanEast and LanWest would not be approved without being accompanied by the hydrology and flood studies necessary to demonstrate that the solar farm components would not perform any action that impairs, impedes, or accelerates the flow of water in a watercourse in such a manner that adversely affects adjoining properties. For these reasons, the impact with respect to flood hazards for both the LanEast and LanWest sites would be **less than significant**.

Proposed Project

As stated previously, the Proposed Project area is not located within a 100-year floodplain area or other special flood hazard area as shown on a FIRM, a County Flood Plain Map, or County Alluvial Fan Map. In addition, none of the solar farms are downstream of a dam or located in an area likely to be affected by mudflows or debris flows. Although the Rugged, LanEast, and LanWest sites are crossed by Tule and Walker creeks, which would be subject to 100-year flood-flows that have not been identified or characterized by FEMA or the County, the impact would be **less than significant**. This is because in accordance with Chapter 6 of the Grading Ordinance, grading and development plans associated with each project would not be approved without being accompanied by the hydrology and flood studies necessary to demonstrate that the Proposed Project would not perform any action that impairs, impedes, or accelerates the flow of water in a watercourse in such a manner that adversely affects adjoining properties.

3.1.5.3.3 Surface Water and Groundwater Quality

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's *Guidelines for Determining Significance: Surface Water Quality* (County of San Diego 2007b) and *Guidelines for Determining Significance and Report Format and Content Requirements: Groundwater Resources* (County of San Diego 2007c) applies to both the direct impact analysis and the cumulative impact analysis. The following significance guidelines have been developed by the County to address questions a), e), and f) in the CEQA Guidelines, Appendix G. A significant impact would result if:

- The project is a development project listed in County of San Diego, Code of Regulatory Ordinances (Regulatory Ordinances), Section 67.804(g), as amended and would not comply with the standards set forth in the County Stormwater Standards Manual, Regulatory Ordinances Section 67.813, as amended, or the Additional Requirements for Land Disturbance Activities set forth in Regulatory Ordinances, Section 67.
- The project would drain to a tributary of an impaired water body listed on the CWA Section 303(d) List, and would contribute substantial additional pollutant(s) for which the receiving water body is already impaired.
- The project would drain to a tributary of a drinking water reservoir and would contribute substantially more pollutant(s) than would normally run off from the project site under natural conditions.
- The project would contribute pollution in excess of that allowed by applicable state or local water quality objectives or would cause or contribute to the degradation of beneficial uses.

- The project would not conform to applicable federal, state, or local "Clean Water" statutes or regulations including but not limited to the Federal Water Pollution Control Act; California Porter–Cologne Water Quality Control Act; and the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance.
- The project would exceed the Primary State or Federal MCLs in groundwater for applicable contaminants.

Analysis

Tierra del Sol

Water Quality Impairments

As discussed in Section 3.1.5.2, Regulatory Setting, there are no impaired water bodies in the vicinity of the proposed Tierra del Sol solar farm. The Tierra del Sol project, however, is within the watershed of the Tijuana River, which is an impaired water under the CWA Section 303(d). The Tijuana River is impaired for sediment, pesticides, phosphorus, selenium, solids, surfactants, synthetic organics, total nitrogen as N, toxicity, and trace elements. Stormwater runoff and non-stormwater discharges associated with construction and operation of the proposed solar farm are unlikely to cause or contribute to water quality impairments related to pesticides, phosphorus, selenium, solids, surfactants, synthetic organics, total nitrogen as N, toxicity, and trace elements as listed on the CWA 303(d) List of Water Quality Limited Segments.

Conceptually, the Tierra del Sol site is hydrologically connected to the Tijuana River because it is within its watershed. However, due to the arid climate and the site's distance away from the river (over 25 miles away), stormwater runoff from the project site is unlikely to reach the Tijuana River before infiltrating into the ground or evaporating. The solar farm would not contribute to sediment loads in the Tijuana River for two reasons. First, the stormwater and authorized non-stormwater discharges from the Tierra del Sol site would represent a negligible fraction of the watershed contributing to the impaired segment of the Tijuana River. The watershed for the Tijuana River is 1,750 square miles, whereas the portion of that watershed affected by the project is less than 1 square mile (i.e., 0.05% of the total area). Second, water within the Tijuana River is impounded in Mexico southeast of Tijuana by the Abelardo L. Rodríguez Dam for drinking water and irrigation purposes. Contributions of project runoff to suspended sediment load (however unlikely) would settle out in the lake behind the dam, prior to reaching the impaired segment of the Tijuana River in the United States. Release of trash and sediment from the Tierra del Sol site would be controlled and minimized through preparation and implementation of a construction SWPPP and an operational SWPPP, as described in Section 3.1.5.3.1, Hydrology and Drainage Patterns.

Drinking Water Reservoirs

The Tierra del Sol site does not drain to a drinking water reservoir in the United States; however, it drains to the Abelardo L. Rodriguez Dam in Mexico, which impounds water for drinking water and irrigation. As discussed in Section 3.1.5.3.1, Hydrology and Drainage Patterns, the Tierra del Sol solar farm would implement measures to minimize adverse effects to water quality runoff exiting the solar farm site. Regardless, the amount of water discharged from the project site in response to local rainfall is negligible when considered in the context of the total discharge entering the dam from the entire watershed. Therefore, the Tierra del Sol solar farm contribution of pollutant(s) to the drinking water reservoir, if any, would not be substantial.

Stormwater Quality

As discussed in Section 3.1.5.3.1, Hydrology and Drainage Patterns, as well as Section 3.1.5.2, Regulatory Setting, a range of state and local water quality regulations and ordinances apply to the project which require the applicant to submit and implement a project-specific SWPPP during construction and a Minor SWMP for O&M activities.

Because the solar farm is greater than 1 acre in size, the applicant would be required to submit an NOI to the San Diego RWQCB in order to obtain approval to carry out construction activities under the Construction General Permit. This permit would include a number of design, management, and monitoring requirements for the protection of water quality and the reduction of construction phase impacts related to stormwater (and some non-stormwater) discharges. Permit requirements would include the preparation of a SWPPP, implementation and monitoring of BMPs, implementation of best available technology for toxic and non-conventional pollutants, implementation of best conventional technology for conventional pollutants, and periodic submittal of performance summaries and reports to the San Diego RWQCB. The SWPPP would apply to the project as a whole and would include reference to the major construction areas, such as the proposed trackers, O&M area, materials staging areas, substation site, access roads, and work associated with telecommunications and gen-tie facilities.

BMPs to be implemented in accordance with a construction SWPPP and an operational SWPPP that address alteration of drainage patterns, velocity and peak flow rates, and erosion control have already been discussed in Section 3.1.5.3.1. Additional BMPs to be implemented would also address other water quality concerns during construction and post construction such as inadvertent release of pollutants (e.g., hydraulic fluids and petroleum); proper management of hazardous materials; spill control containment and avoidance measures; frequent site inspections; cleanup of trash and debris; and proper management of portable restroom facilities (e.g., regular service).

For areas such as the proposed substation and O&M areas, a Spill Prevention and Control Countermeasures (SPCC) Plan would be required (40 CFR 112.1–112.7) if sufficient quantities of oil or other hazardous substances are present. Typical SPCC Plan secondary containment features include curbs and berms designed and installed to contain spills, should they occur. These features would be part of the applicant's final engineering design for the project and would be incorporated into the facility's operational SWPPP to minimize the potential for hazardous materials to be released off site or to otherwise adversely affect water quality. The Tierra del Sol solar farm would not involve in the long-term use or storage of hazardous materials other than mineral oil. These measures would ensure that construction-related pollutants are not released to surface water or groundwater.

Non-Stormwater Discharges

Non-stormwater discharges during construction could include construction-related dewatering discharges (to keep excavations free of water) and dust control.

Dewatering

These discharges are subject to regulation under the San Diego General Dewatering Permit. Most construction-related grading and excavation activities would be unlikely to encounter groundwater, due to their shallow nature and the arid setting. The Tierra del Sol site is located in a geologic setting that is unlikely to feature a shallow groundwater table. Nevertheless, the potential to encounter shallow groundwater is highly dependent on local geologic and climatic conditions and the depth of construction-related excavations, and therefore it is possible that construction-related dewatering discharges could be required. As detailed in Section 3.1.4, Hazards and Hazardous Materials, an Environmental Site Assessment performed on the Tierra del Sol site found no evidence of existing hazardous materials or contamination on the site or on adjacent properties, which means that, if encountered, groundwater would most likely be free of contaminants, and discharge to surface water would not likely violate Basin Plan standards.

Nonetheless, any dewatering activity that would discharge to the land surface would need to comply with the provisions of the San Diego General Dewatering Permit. Accordingly, to obtain coverage under this General WDRs and ensure compliance with the Basin Plan, the applicant and/or its contractor would submit the following to the San Diego RWQCB: an NOI to comply with these General WDRs, a project map, evidence of CEQA compliance, the requisite fee, a discharge monitoring plan, and any additional information requested by the San Diego RWQCB. RWQCB staff would then determine whether or not coverage under the General WDRs is appropriate and, if so, would notify the applicant by letter of coverage. This permit process is the mechanism by which the San Diego RWQCB would ensure that discharges of groundwater would not violate basin plan standards. If contaminated

groundwater is unexpectedly discovered during discharge monitoring, the applicant would be required to notify the RWQCB and pass groundwater through a treatment unit prior to being discharged to land or surface water.

Dust Control

Non-stormwater discharges during construction would also include periodic application of water for dust control purposes. Since the practice of dust control is necessary during windy and dry periods to prevent wind erosion and dust plumes, water would be applied in sufficient quantities to wet the soil, but not so excessively as to produce runoff from the construction site. Water applied for dust control would either quickly evaporate or locally infiltrate into shallow surface soils. This means that water applied for dust control is unlikely to appreciably affect groundwater or surface water features and thus has little to no potential to cause or contribute to exceedances of water quality objectives contained in the Basin Plan, regardless of whether off-site sources of water are imported for the purposes of dust control. If off-site recycled water is used, it would be required to comply with Title 22 standards for the use of recycled water for "other" purposes, which includes soil compaction, concrete mixing and dust control (22 CCR Division 4, Chapter 3, Article 3, Section 60307). This includes the requirement to use at least disinfected secondary-23 recycled water (see regulatory setting for definition). Title 22 also imposes limits on the use of recycled water intended to be protective of domestic wells on nearby properties (22 CCR Division 4, Chapter 3, Article 4, Section 60310). For example, Padre Dam is permitted to provide recycled water to construction projects (including for use in dust control and grading) only because it has been authorized to do so under Order No. 97-49, *Waste Discharge Requirements and Water Reclamation Requirements for the Production and Purveyance of Recycled Water for Padre Dam Municipal Water District, San Diego County*.

As the Tierra del Sol site is located outside of the Padre Dam service area, in order to address water quality requirements for use of recycled water for construction, San Diego RWQCB Conditional Waiver No. 7 for Discharges of Recycled Water to Land shall be obtained. Discharges to land from short-term recycled water projects without permanent recycled water delivery and/or distribution systems that do not exceed 365 days are eligible to obtain Conditional Waiver No. 7. The proposed use of recycled water from Padre Dam for dust control and grading will occur on an as-needed basis over an approximate 1-year construction period. The majority of the demand would be required over approximately a 60-day period during site clearing and grading. The proposed use of recycled water for dust control and grading is not anticipated to pose a threat to groundwater or surface waters. Depths to groundwater in the area range between 8.83 and 93.0 feet bgs. Short-term spraying of water for dust control and grading is not likely to affect groundwater quality. Conditions of the waiver require the applicant to implement BMPs to ensure all discharged recycled water will remain on the solar farm site and will not pose a threat to the quality of waters of the state. Therefore, the use of the water from Padre Dam is also consistent with Boulevard Subregional Plan policy **CM 8.2.1**

Groundwater from the JCSD non-potable well is proposed to be imported to the Tierra del Sol site to meet construction water demands. Non-potable JCSD groundwater from Well No. 6 is slightly elevated above the drinking water MCL for fluoride, pH, and odor. However, consistent with Boulevard Subregional Plan policy **CM 8.2.1**, water quality analyses indicate that groundwater pumped from Well No. 6 is suitable for use for construction activities such as dust control and to obtain optimum soil moisture for compaction during grading (Appendix 3.1.5-8).

Operation and Maintenance

During operation and maintenance, non-stormwater discharges would also include landscape irrigation, periodic tracker panel washing, and possibly use of an on-site wastewater disposal system to serve the proposed O&M building. A permit issued by the DEH would be required prior to installing a septic system, which would prevent such systems from being installed in soil types or locations that may cause water quality problems for the groundwater or nearby surface waters (see regulatory setting and the discussion of septic systems in Section 3.1.2, Geology, Soils, and Seismicity). Water used for panel washing would be sourced from either on-site water wells or a local water purveyor. Each panel washing truck would carry water treatment equipment and truck-mounted panel washing booms. Water would be treated to ensure a hardness level of 7 milligrams per liter (mg/L) or less and to remove impurities. Each panel would require approximately 24 gallons of water to be applied as high pressure steam. Non-stormwater discharges resulting from panel steam washing would either evaporate in the air, on the panel surface, or be infiltrated into the ground. For the same reasons described above for dust control, such activities have little to no potential to cause or contribute to exceedances of water quality objectives contained in the Basin Plan, even if off-site sources of water are imported.

Overall, the operational SWPPP to be prepared as part of the project would include a description of these activities, their potential to generate non-stormwater discharges, and measures to ensure compliance with the San Diego Basin Plan, and would be part of obtaining required coverage under waste discharge requirements, as applicable, and demonstrating compliance with Title 22 standards for the construction-related use of recycled water. Therefore, these activities would not violate basin plan standards, or otherwise cause a significant threat to water quality.

Groundwater Quality

With respect to groundwater quality impacts, water quality analyses on the Tierra del Sol site indicate that all constituents sampled are below EPA and State of California MCLs. A table of results for the full suite of groundwater well constituents sampled on the Tierra del Sol site are available in Appendix 3.1.5-5. Inorganic constituents detected in water quality samples included aluminum, copper, fluoride, iron, manganese, nitrate reported as $N0_3$ and (as N), nitrate + nitrite

(sum as nitrogen), and zinc. All detections were below the primary or secondary applicable MCLs, and most were several orders of magnitude below health-based thresholds. This indicates that the groundwater quality produced from Well B is suitable for potable use. Further, any potential threat to groundwater quality as a result of construction, operation, and maintenance of the site would be addressed with a SWPPP during construction and a SWMP during the operating life of the Tierra del Sol solar farm, as described earlier.

ACOE Section 404 Waters

Issues regarding land disturbance within jurisdictional waters and wetlands (i.e., requiring an ACOE Section 404 permit) are discussed in Section 2.3, Biological Resources.

Conclusion

For the previously stated reasons, the proposed Tierra del Sol solar farm would not violate applicable water quality objectives or waste discharge requirements, and would comply with all federal, state, and local laws addressing water quality in both stormwater and non-stormwater discharges. Therefore, the Tierra del Sol solar farm would not exceed the significance thresholds identified earlier, and impacts would be **less than significant**.

Rugged

Water Quality Impairments

Similar to the Tierra del Sol solar farm, there are no impaired water bodies in the vicinity of the proposed Rugged solar farm. In addition, there are no downstream impaired water bodies to which runoff from the site would eventually discharge. Even though the Rugged solar farm would not drain to water bodies listed as impaired under Section 303(d) of the CWA, release of trash, sediment, and other pollutants from the Rugged site would be controlled and minimized through preparation and implementation of a both Construction and Operational SWPPPs, as described in Section 3.1.5.3.1, Hydrology and Drainage Patterns.

Drinking Water Reservoirs

The Rugged solar farm does not drain to a drinking water reservoir. Therefore, the Rugged solar farm would not contribute substantially more pollutant(s) to a drinking water reservoir than would normally run off from the project site under natural conditions.

Stormwater Quality

Similar to the Tierra del Sol solar farm, stormwater quality during both construction as well as operation and maintenance of the Rugged solar farm would be controlled and minimized through

preparation and implementation of Construction and Operational SWPPPs, as described in Section 3.1.5.3.1, Hydrology and Drainage Patterns.

Non-stormwater Discharges

Similar to the Tierra del Sol solar farm, non-stormwater discharges associated with the Rugged solar farm could include construction-related dewatering discharges (to keep excavations free of water), dust control applications, periodic panel washing, landscape irrigation, and possibly use of an on-site wastewater disposal system to serve the project's O&M building. The Rugged site has a somewhat greater potential to require construction-related dewatering discharges than the Tierra del Sol site because it is partially located in alluvial sediments associated with Tule Creek corridor (which may feature a perched water table). Specific components requiring excavation that would be proposed in these areas would be limited to inverters, tracker masts, and supporting infrastructure (e.g., 34.5-kilovolt (kV) underground collection circuits). However, these activities would not violate basin plan provisions or otherwise degrade water quality for the same reasons discussed above for the Tierra del Sol site. The applicant could not perform these activities without first obtaining permits from either the SWRCB (General or individual WDRs, as applicable for the type of discharge) or the County of San Diego, DEH (for OWTS). Off-site imports of water for the purpose of dust control during peak construction period would be in compliance with Title 22 standards and would be regulated under similar discharge requirements, as discussed for the Tierra del Sol site.

As the Rugged solar farm is located within the Colorado River Basin RWQCB, an individual WDR would be required to use recycled water for construction use. Groundwater from the PVMWC is proposed to be imported to the Rugged site to meet construction water demands. PVMWC groundwater from Well No. 5 is slightly elevated near the drinking water MCL for nitrate. Consistent with Boulevard Subregional Plan policy **CM 8.2.1,** water quality analyses indicate that groundwater pumped from Well No. 5 is suitable for use for construction activities, such as dust control, and to obtain optimum soil moisture for compaction during grading (Appendix 3.1.5-7).

Overall, the operational SWPPP to be prepared as part of the project would include a description of these activities, their potential to generate non-stormwater discharges, measures to ensure compliance with the San Diego Basin Plan, and would be part of obtaining required coverage under waste discharge requirements, as applicable, and demonstrating compliance with Title 22 standards for the construction-related use of recycled water. Therefore, these activities would not violate basin plan standards, or otherwise cause a significant threat to water quality.

Groundwater Quality

Groundwater would be produced from three wells on the Rugged site: 6a, 6b, and 8. A table of results for the full suite of groundwater well constituents sampled on the Rugged site are available in Appendix 3.1.5-6. Water quality analysis of wells 6a and 6b indicates that all constituents sampled are below U.S. Environmental Protection Agency (EPA) and State of California drinking water MCLs. The constituents sampled included both those required (nitrate and bacteria) and recommended (TDS and radionuclides) by the County of San Diego. Therefore, project impacts with respect to groundwater quality would be less than significant for wells 6a and 6b, and water produced from Well 6b would be suitable for potable use.

However, water quality analysis of Well 8 indicates that elevated gross alpha and uranium concentrations were detected (Appendix 3.1.5-6). These radionuclides are naturally occurring in bedrock aquifers in San Diego County. As detailed in Section 3.1.4, Hazards and Hazardous Materials, an Environmental Site Assessment performed on the Rugged site found no evidence of existing hazardous materials or contamination on the site or on adjacent properties that would suggest the presence of an anthropogenic source of radionuclide contamination. Therefore, these concentrations can be considered non-anthropogenic in origin. The uranium concentration detected in Well 8 was 21.5 (+/- 2.70) pico curies per liter (pCi/L), compared to the applicable California drinking water MCL of 20 pCi/L (Appendix 3.1.5-6). While the result slightly exceeds the applicable MCL, the analytical error for uranium reported by the laboratory indicates that the actual concentration is statistically more likely to be above the MCL but has potential that it may be less than the MCL.

In either case, however, water produced from Well 8 would not be used to supply drinking water to the proposed O&M building and would be used solely for the purposes of meeting the construction-related demands of the project (e.g., for dust control during clearing, grubbing, and mass grading), or for uses associated with period panel washing and irrigation in the long-term. Potable water supply on the Rugged site would be met using wells 6a and 6b, for which all constituents analyzed were below the drinking water MCLs. Therefore, the potential exceedance of the California drinking water MCL for Well 8 would not represent a significant impact, since it would not be used for potable supply, and because the concentrations detected are naturally occurring.

With respect to Basin Plan objectives, application of groundwater from Well 8 to the soil, either via landscape irrigation or panel washing, could redistribute these low levels of radionuclides to either the air or soil (through evaporation), or the shallow groundwater aquifer (through infiltration). However, the groundwater quality objective for radionuclides contained in the Water Quality Control Plan for the Colorado Basin states the following:

> Radionuclides shall not be present in waters in concentrations which are deleterious to human, plant, animal or aquatic life or that result in the

> accumulation of radionuclides in the food web to an extent which presents a hazard to human, plant, animal or aquatic life. Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the levels specified in the California Code of Regulations Title 22, Chapter 15, Article 5, Section 64442.

Although water from Well 8 contains naturally occurring radionuclides that, at least for uranium, may exceed the California drinking water MCLs, the use of water from Well 8 would not contribute to an exceedance of the water quality objective because (1) the water is unlikely to reach groundwater or surface water prior to evaporating; (2) there is sufficient assimilative capacity to dilute slightly elevated uranium concentrations to below the MCL and (3) based on water quality testing performed for Well 8, the water has been found to be suitable for non-potable use.

Any potential threat to groundwater quality as a result of construction, operation, and maintenance of the project would be addressed with a SWPPP during construction and a SWMP during the operating life of the project, as described earlier.

ACOE Section 404 Waters: Issues regarding land disturbance within jurisdictional waters and wetlands (i.e., requiring an ACOE Section 404 permit) are discussed in Section 2.3, Biological Resources.

Conclusion: For the previously stated reasons, the proposed Rugged solar farm would not violate applicable water quality objectives or waste discharge requirements, and would comply with all federal state and local laws addressing water quality in both stormwater and non-stormwater discharges. Therefore, the Rugged solar farm would not exceed the significance thresholds identified earlier, and impacts would be **less than significant**.

LanEast and LanWest

Water Quality Impairments: Similar to the Tierra del Sol solar farm, there are no impaired water bodies in the vicinity of the proposed LanEast and LanWest solar farms. In addition, there are no downstream impaired water bodies to which runoff from the site would eventually discharge. Even though the project would not drain to water bodies listed as impaired under Section 303(d) of the CWA, release of trash, sediment and other pollutants from the LanEast and LanWest sites would be controlled and minimized through preparation and implementation of both Construction and Operational SWPPPs, as described in Section 3.1.5.3.1, Hydrology and Drainage Patterns.

Drinking Water Reservoirs: The LanEast and LanWest solar farms do not drain to a drinking water reservoir. Therefore, they would not contribute substantially more pollutant(s) to a drinking water reservoir than would normally run off from the two sites under natural conditions.

Stormwater Quality: Similar to the Tierra del Sol solar farm, stormwater quality during both construction as well as operation and maintenance of the LanEast and LanWest solar farms would be controlled and minimized through preparation and implementation of Construction and Operational SWPPPs, as discussed in greater detail earlier, and in compliance with state and local water quality regulations.

Non-stormwater Discharges: Similar to the Rugged solar farm, non-stormwater discharges associated with the LanEast and LanWest solar farms could include construction-related dewatering discharges (to keep excavations free of water), periodic panel washing, and possibly use of an on-site wastewater disposal system to serve the project's O&M building. However, these activities would not violate basin plan provisions or otherwise degrade water quality for the same reasons discussed above for the Rugged site. The applicant could not perform these activities without first obtaining permits from either the SWRCB (General WDRs for Discharges to Land with a Low Threat to Water Quality) or the County of San Diego, DEH (for OWTS). Panel washing would be performed in a manner that does not pose a threat to water quality because the water used would be clean/treated and would either evaporate in the air, on the panel surface, or be infiltrated into the ground.

Groundwater Quality: Because the LanEast and LanWest solar farms have not been fully developed to a project-level of detail, no specific on-site groundwater quality testing has been conducted. However, based on the similarities of the groundwater setting and the lack of any identified potential sources of groundwater contamination in the vicinity, it is not expected that groundwater at the LanEast and LanWest sites would be contaminated. If the groundwater quality from on-site wells was found to be unsuitable for the potable use, for example due to naturally occurring radionuclides, the use of the well would be limited to non-potable uses, such as grading and dust control, or be accompanied by a treatment unit necessary to produce potable water. In either case, a groundwater investigation would be required in compliance with the County groundwater ordinance and CEQA guidelines, and its results would inform whether water of suitable quality for its intended use can be produced from the well.

Any potential threat to groundwater quality as a result of construction, operation, and maintenance of the LanEast and LanWest solar farms would be addressed with Construction and Operational SWPPPs, as described above, and in compliance with state and local water quality regulations.

ACOE Section 404 Waters: Issues regarding land disturbance within jurisdictional waters and wetlands (i.e., requiring a ACOE Section 404 permit) are discussed in Section 2.3, Biological Resources.

Conclusion: For the previously stated reasons, the proposed LanEast and LanWest solar farms would not violate applicable water quality objectives or waste discharge requirements, and would comply with all federal state and local laws addressing water quality in both stormwater and non-

stormwater discharges. Therefore, the LanEast and LanWest solar farms would not exceed the significance thresholds identified earlier, and impacts would be **less than significant**.

Proposed Project

As discussed earlier, the Proposed Project would not exceed the significance thresholds identified earlier, and would have a less-than-significant impact with respect to water quality because (1) the Proposed Project does not directly discharge to an impaired water body; (2) construction and operational sources of pollutants, including sediment, trash, and fuels, would be addressed through implementation of Construction and Operational SWPPPs (including a SWMP for each of the solar farms); (3) none of the solar farm sites drain to a drinking water reservoir in the United States; (4) the potential non-stormwater discharges associated with the solar farms would require approval from the San Diego RWQCB or the SWRCB (General WDRs for Discharges to Land with a Low Threat to Water Quality) and the County of San Diego, DEH (for OWTS); and (5) adverse effects to groundwater quality would not occur because groundwater to be used for potable purposes does not exceed state and federal MCLs and because potential threats to groundwater quality as a result of construction, operation, and maintenance of the Proposed Project would be addressed with the Construction and Operational SWPPPs.

3.1.5.3.4 Groundwater Resources

Guidelines for the Determination of Significance

For the purpose of this EIR, the County's *Guidelines for Determining Significance, Report Format and Content Requirements: Groundwater Resources* (County of San Diego 2007c) applies to both the direct impact analysis and the cumulative impact analysis. The following significance guidelines have been developed by the County to address question b) in the CEQA Guidelines, Appendix G. The County's significance guidelines applicable to projects within alluvial and desert basins, or those applicable to residential projects or subdivision projects involving multiple owners, are not included below because the project is a non-residential project within a fractured rock basin.

A significant impact would result if:

- The project would reduce the level of groundwater in storage to 50% or less as a result of groundwater extraction, as shown using a soil moisture balance, or equivalent analysis, conducted using a minimum of 30 years of precipitation data, including drought periods.
- The project would result in a result in a decrease in water level of 20 feet or more in off-site groundwater wells after a 5-year projection of drawdown, or a decrease in saturated thickness of 5% or more in the off-site wells, if site-specific data indicates

water bearing fractures exist which substantiate an interval of more than 400 feet between the static water level in each off-site well and the deepest major water bearing fracture in the well(s).

- The project would result in any additional groundwater use in a fractured rock basin that has been demonstrated to be in an overdraft condition.

Analysis

The Proposed Project would rely on groundwater for water supply for the construction and operational phases of the project. Groundwater from on-site wells would only provide a fraction of the estimated peak construction-related demands of the Proposed Project, which would require water for clearing, grading, grubbing, and the accompanying dust-suppression activities. For example, on the Tierra del Sol site, construction water would be required to be imported to the project to meet peak construction demand, which would range from 76,000 gallons per day (gpd) to 272,000 gpd over the first 50 days of project construction (Appendix 3.1.5-5). The on-site water well only has a production capacity of 87,840 gpd, so the remainder would have to be obtained from off-site sources. A discussion of whether sufficient water supplies would be available to serve the short-term and long-term needs of the project is provided in Section 3.1.9, Utilities and Service Systems. This analysis focuses on the effects of the project on the volume of groundwater stored in the aquifer and potential effects on groundwater levels in neighboring wells.

Groundwater resources can typically be accessed by a pumping well from the area that approximately coincides with the surface water divide or watershed from which the water well is located. Though surface boundaries such as ridgelines do not preclude subsurface groundwater flow between watersheds, they are suitable to approximate available recharge. For this analysis, the watershed areas were identified broadly by the large tributary areas in which the proposed water supply wells for each of the solar farms are located, and were also evaluated against the CEQA significance criteria using an area of 0.5-mile radius surrounding the proposed production wells. Based on the characteristics of the fractured-rock aquifer the vastness of the tributary watersheds compared with the Proposed Project water needs, and the generally sparse number of water users within these areas, a 0.5-mile radius around each of the proposed production wells is considered as a reasonable area to address local quantitative impacts of the project for the purposes of this analysis (i.e., larger areas with few water users result in lesser project impacts, while smaller areas with more adjacent water users result in greater potential impacts).

Tierra del Sol

An evaluation of existing water wells in the site area was conducted in January 2012 by Dudek (Appendix 3.1.5-5). A drilling program to develop additional project water supply, consisting of

the installation of two exploratory wells, was completed in April 2012. One of the exploratory wells (Well B) was enlarged and completed as a production well in July 2012 to supply water for construction and operation of the project including water for potable use. Starting in August 2012, a monitoring well network consisting of 6 existing on-site wells and 11 off-site wells was established to determine baseline conditions of groundwater levels and evaluate potential impacts to groundwater levels resulting from the project. Well B was tested in October 2012 to satisfy requirements of the County's *Guidelines for Determining Significance and Report Format and Content Requirements: Groundwater Resources* (County of San Diego 2007c).

The main findings of the groundwater resource investigation report (Appendix 3.1.5-5) are as follows:

- The total water demand for the project construction is expected to be 16.1 million gallons, or about 50 acre-feet over a 1-year period. Of the total construction water demand, 18 acre-feet (rounded) is anticipated to be supplied from the on-site supply well (Well B) with up to 32 acre-feet supplied from off-site sources.
- Annual project operating demand, post-construction, would be 1.8 million gallons or approximately 6 AFY (rounded).
- There is sufficient long-term availability of groundwater for the project (includes 18 acre-feet for project construction and ongoing operating demand of 6 AFY) based on a water budget analysis, which indicated that groundwater storage would not be reduced to a level of 50% or less over a 30-year period because of project pumping.
- Based on the results of groundwater modeling, drawdown due to 90-day peak construction water demand and over the entire 1 year project construction period, at the nearest residential wells (RM-1 and RM-2) both located approximately 784 feet from Well B, is projected at 19.9 feet and 19.9 feet, respectively. After 5 years, which includes 1 year of project construction and 4 years of operation, drawdown at Wells RM-1 and RM-2 is projected at 14 feet. Thus, well interference is not predicted to exceed the County threshold of significance that results in a decrease in water level of 20 feet or more in the off-site wells after a 5-year projection of drawdown.

The results of the groundwater investigation show that the County significance thresholds for groundwater storage and well interference (first two significance criteria above) would not be met or exceeded, either during construction or during operation and maintenance. Under the most conservative scenario, which included existing conditions, project-related water demands, full buildout of the general plan, and use of the Tierra del Sol rain gauge (which represents a likely underestimate of the actual rainfall on the site), the minimum volume of groundwater in storage over the modeled 30-year period was approximately 311 acre-feet, or 80% of the

maximum groundwater storage capacity (Appendix 3.1.5-5). The groundwater basin has not been demonstrated to be in overdraft condition; therefore, the third County significance threshold does not apply to the project. For these reasons, the impact of the Tierra del Sol solar farm with respect to groundwater resources is **less than significant**.

Although thresholds for significant impacts to groundwater resources would not be exceeded, there is the potential for smaller decreases in water levels in the shallow aquifer to have adverse impacts on groundwater-dependent habitat, as discussed in Section 2.3, Biological Resources. To ensure that County significance thresholds related to groundwater-dependent habitat are not exceeded, the applicant will implement a Groundwater Monitoring and Mitigation Plan (GMMP) in accordance with **M-BI-PP-14**. As part of **M-BI-PP-14**, the applicant will monitor water levels on site and at neighboring property water wells during both construction and operation of the Tierra del Sol solar farm.

Although the analysis indicates that CEQA significance threshold for well interference (in this case is 20 feet) is not expected to be exceeded, the GMMP imposes a threshold of 10 feet because the GMMP is being implemented to mitigate for potential impacts to groundwater-dependent habitat. Although there is limited evidence to indicate that the shallow aquifer system is hydraulically connected to the deep water-bearing fractures (from which the production well would be drawing), the GMMP has established a stricter threshold in order to protect groundwater-dependent habitat from the potential for water level declines of lesser magnitude within the shallow aquifer system.

Additionally, as part of **PDF AQ-1**, the project includes the following measures which would also minimize reliance on groundwater for the purposes of dust control:

- During construction, soil stabilizers would be applied to disturbed areas not actively being used in order to minimize the amount of water needed for dust control.
- During operation and maintenance, soil stabilizers would be applied on a yearly basis to minimize the amount of water needed for dust control.

As discussed in Section 3.1.9, Utilities and Service Systems, off-site sources of groundwater would need to be utilized to meet the portion of the Tierra del Sol solar farm's construction-related water demands that cannot be met using the on-site well. The remaining construction water demand would be supplied by the Jacumba Community Services District (JCSD) and, if necessary, the Padre Dam Municipal Water District (PDMWD) (Appendix 3.1.5-5). The estimated water demand to be met by JCSD's Well 6 is expected to be up to 10.4 million gallons, or 32 acre-feet over an approximate 130 day period. A separate investigation analyzing the effect of the additional water pumping from JSCD's well has shown that well interference and groundwater in storage impacts would be **less than significant** (Appendix 3.1.5-7).

The PDMWD derives its water supplies from surface water, and thus would not have impacts related to groundwater pumping if water imports were required from this source. Although groundwater investigation of the well has shown that well interference and groundwater in storage impacts are not expected to be significant, A GMMP similar in scope and nature to the on-site GMMP described in **M-BI-PP-14** will also be implemented on the JCSD well. The GMMP would ensure that any unanticipated impacts to groundwater storage, well interference, and/or groundwater dependent habitat are detected and reversed through curtailment or cessation of pumping (Appendix 3.1.5-7).

Rugged

A groundwater resources investigation report was prepared by Dudek (Appendix 3.1.5-6) to evaluate the direct and indirect impacts of Rugged Solar Farm on groundwater resources, with consideration to water to be used for other anticipated projects in the area including Tule Wind project, the Rough Acres Foundation Campground Facility, and continuing ongoing uses at the Rough Acres Ranch. A new production well (Well 6b) was drilled on the project site in August 2012. Additionally, existing Well 8 was re-drilled and well casing installed to a deeper depth. Starting in November 2012, a monitoring well network consisting of seven existing on-site wells was established to determine baseline conditions of groundwater levels and evaluate potential impacts to groundwater levels resulting from the project. Wells 6b and 8 were tested in December 2012 and January 2013 to satisfy requirements of the County's *Guidelines for Determining Significance and Report Format and Content Requirements: Groundwater Resources* (County of San Diego 2007c).

The main conclusions of the groundwater resource investigation report (Appendix 3.1.5-6) are as follows:

- The short-term water demand for the project construction is expected to be 19.4 million gallons, or 59 acre-feet over an approximate 1 year period. Of the total construction demand, 44 acre-feet will be supplied from on-site supply wells with up to 16 acre-feet supplied from off-site sources.
- Annual project operating demand, post-construction, is expected to require approximately 2.83 million gallons, or 8.7 AFY. All operational water demands will be supplied from on-site wells.
- There is sufficient long-term availability of groundwater for the project (includes 44 acre-feet for project construction and ongoing operating demand of 8.7 AFY) based on a water budget analysis, which indicated that groundwater storage was not reduced to a level of 50% or less because of project pumping.
- Modeling results on Well 6a and 6b indicate that at the end of peak project well production

(occurs during first 60 days of construction), drawdown at the nearest property line with a residential well (1,742 feet away) is projected at 4.3 feet. After 1 year of pumping, including peak construction demand, the drawdown is estimated to be 4.6 feet. After 5 years, which includes 1 year of project construction and 4 years of operation, drawdown at the nearest property line with a residential well is projected at 2.6 feet.

- Modeling results on Well 8 indicate well interference due to peak project well production (occurs during first 60 days of construction) results in an estimated drawdown of 1.3 feet at the nearest off-site well (McCain Conservation Camp well, located approximately 1,800 feet away). At the end of project construction (Year 1), drawdown at the McCain Conservation Camp Well is projected at 4.1 feet. After 5 years, which includes 1 year of project construction and 4 years of operation, drawdown at the McCain Conservation Well is projected at 3.5 feet

The results of the groundwater investigation show that the County significance thresholds for groundwater storage and well interference (first two significance criteria above) would not be exceeded, either during construction or during operation and maintenance. The most conservative scenario modeled included (1) existing groundwater uses (including one-time construction demands for existing projects), (2) the groundwater uses proposed as part of the Project, and (3) the groundwater uses proposed for the Rough Acres Foundation Campground Facility construction combined with full general plan build-out. The minimum volume of groundwater in storage over the modeled 30-year period was approximately 1,057 acre-feet, or 70% of the maximum groundwater storage capacity for Well 6b, and approximately 773 acre-feet, or 77% of the maximum groundwater storage capacity for Well 8 (Appendix 3.1.5-6). Recharge rates that factored into the results were based on precipitation estimates derived from the Tierra del Sol rain gauge, which represents a likely underestimate of the actual rainfall on the site. No drawdown on off-site wells was observed during 72-hour pump tests conducted on both Well 6b and Well 8, and drawdown of groundwater modeled at the nearest property line after 5 years was 2.6 and 3.5 feet for Well 6b and 8, respectively. The modeled drawdown assumed that the drawdown in the fractured rock aquifer results in equal drawdown in the alluvial aquifer; however, the available information indicates that drawdown in the alluvial aquifer would be less than drawdown in the fractured rock aquifer.

These results show that neither the significance criteria for groundwater in storage nor well interference would be exceeded. Further, the groundwater basin has not been demonstrated to be in overdraft condition; therefore the third County significance threshold does not apply to the project. For these reasons, the impact of the Rugged solar farm with respect to groundwater resources is **less than significant**.

Although thresholds for significant impacts to groundwater resources would not be exceeded, there is the potential for smaller decreases in water levels in the shallow aquifer to have adverse impacts on groundwater-dependent habitat, as discussed in Section 2.3, Biological Resources. To ensure that County significance thresholds related to groundwater-dependent habitat are not exceeded, the applicant will implement a Groundwater Monitoring and Mitigation Plan (GMMP) in accordance with **M-BI-14**. As part of **M-BI-14**, the applicant will implement an extensive monitoring program as well as management actions to ensure no adverse impacts would occur with respect to well interference at neighboring property water wells during both construction and operation of the Rugged solar farm. Water level and maximum pumping thresholds would be set for the project to ensure groundwater pumping does not significantly impact off-site well users.

As discussed in Section 3.1.9, Utilities and Service Systems, off-site sources of groundwater would need to be utilized to meet the portion of the proposed project's construction-related water demands that cannot be met using the on-site well. The remaining construction water demand would be supplied by the JCSD, Pine Valley Mutual Water Company (PVMWC), and if necessary the PDMWD. The estimated water demand to be met by JCSD's Well 6 and/or PVMWC Well No. 5 is expected to be up to 5.2 million gallons, or 16 acre-feet over an approximate 65-day period. Two separate investigations analyzing the effect of the additional water pumping from both JSCD and PVMWC have shown that well interference and groundwater in storage impacts in both cases would be **less than significant** (Appendix 3.1.5-7, Appendix 3.1.5-8). The Padre Dam Municipal Water District derives its water supplies from surface water, and thus would not have impacts related to groundwater pumping if water imports were required from this source. Although groundwater investigations of the wells have shown that well interference and groundwater in storage impacts are not expected to be significant, A GMMP similar in scope and nature to the on-site GMMP described in **M-BI-PP-14** will also be implemented in both cases. The GMMP would ensure that any unanticipated impacts to groundwater storage, well interference, and/or groundwater dependent habitat are detected and reversed through curtailment or cessation of pumping (Appendix 3.1.5-7, Appendix 3.1.5-8).

LanEast and LanWest

Because plans for the proposed LanEast and LanWest solar farms have not been fully developed to a project-level of detail, sufficient information necessary to provide a quantitative analysis of impacts to groundwater has not been developed. While it is reasonable to assume that groundwater wells would supply both the LanEast and LanWest solar farms with water (with peak demands being met with imported water from off-site sources, if needed), neither the specific construction and operational water demands nor the location and production rates of existing (or proposed) groundwater wells are known.

Nevertheless, the LanEast and LanWest solar farms would be located within the same groundwater basin, would consist of the same type and intensity of development (i.e., solar energy production), and would differ only in terms of their smaller footprint and electrical generation capacity. Further, the peak construction-related water demands of LanEast and LanWest would not overlap with either Rugged or Tierra del Sol because construction of both LanEast and LanWest would commence following the completion of the Rugged solar farm. In the event the applicant were to pursue entitlements for these projects, they would be subject to the County Groundwater Ordinance as well as the County Guidelines for Determining Significance: Groundwater Resources, which would require a groundwater investigation if the projects chose to utilize on-site groundwater resources for use during the construction phase of each of the projects. Performance standards contained within both the Groundwater Ordinance and the County Guidelines require groundwater use to be less than significant. Water level and maximum pumping thresholds would be set for the project to ensure groundwater pumping does not significantly impact off-site well users. If construction of the LanEast and LanWest solar farms would require off-site imports of groundwater, off-site impacts to groundwater would be evaluated and (if necessary) mitigated in a similar manner as described for above the Rugged and Tierra del Sol projects, in accordance with the County Groundwater Ordinance and Guidelines. The impact of the LanEast and LanWest solar farms with respect to groundwater resources would therefore be **less than significant**.

Proposed Project

The groundwater resources investigation reports conducted for both the Tierra del Sol and the Rugged sites have concluded that the County's Significance thresholds for both groundwater in storage and well interference would not be exceeded. While the plans for the proposed LanEast and LanWest solar farms have not been fully developed to a project-level of detail (which means quantitative analyses cannot yet be completed), investigation requirements and performance standards contained within both the Groundwater Ordinance and the County Guidelines would ensure that impacts to groundwater resources would be less than significant. Any off-site sources of water imported for the purpose of construction, if derived from groundwater sources, must come from a permitted source entitled to provide the water. The PVMWC and the JCSD have agreed to supply the applicant with groundwater to meet its short-term construction-related demands. According to project-specific analyses, these districts can provide water of suitable quality to the applicant without exceeding county thresholds for water in storage and well interference (Appendix 3.1.5-7, Appendix 3.1.5-8). If these sources are unavailable to supply water to the project, water will be imported from Padre Municipal Water District, which derives its water from surface water (Padre Dam).

Because the solar farms would each individually have less-than-significant impacts with respect to groundwater resources, and because the peak construction water demands of the proposed solar

farms would not overlap, the impact of the Proposed Project as a whole would be **less than significant**. To address the potential for impacts to groundwater-dependent habitat, a GMMP would be implemented, in accordance with **M-BI-14**, in which the applicant commits to monitoring water levels on site and at neighboring property water wells during both construction and operation of the Proposed Project.

3.1.5.4 Cumulative Impact Analysis

The geographic scope of cumulative effects on hydrology and water quality differs somewhat depending on the issue being addressed. The geographic scope for surface water quality and hydrology is typically watershed-based, whereby projects contributing flow to the same water bodies as the Proposed Project would be considered. For groundwater impacts, the geographic scope of cumulative effects would be the groundwater sub-basin affected by the Proposed Project. As the affected basin is a fractured rock aquifer, which contains water in pore space between fractures which can often be discontinuous and isolated from one another, the ultimate connectivity of groundwater resources is often unclear and difficult to define. The impacts to groundwater of each individual solar farm included in the Proposed Project was conservatively constrained to within 0.5 mile of the proposed solar farms to look at impacts to the local area surrounding each project given the short-term nature of high groundwater use during the construction phase. Project impacts to both surface water and groundwater resources were found to be less than significant in all cases because they did not exceed County thresholds. In the cumulative context, for wells within the same sub-basin, each well's extraction adds to the cumulative drawdown of the basin as a whole, even if the volume relative to total basin storage is negligible or minor. Projects considered in the cumulative scenario include other utility-scale renewable energy projects in the vicinity, including wind and solar projects and their supporting infrastructure, as well as projections based on assumed general plan buildout.

3.1.5.4.1 Hydrology, Drainage Patterns, and Water Quality

In the absence of regulatory controls, the primary cumulative effect of the Proposed Project in the cumulative scenario would be to alter the natural hydrology of the region through increases in the area covered by impervious surfaces, to develop access roads and utility corridors, and to increase the potential for the release of non-point source pollutants (i.e., motor fuels, trash, and sediment). The typical effect of substantial increases in impervious surfaces is that peak flows within the watershed's drainages are greater in magnitude, shorter in duration, and more responsive to storm events, since a greater portion of precipitation is carried by surface runoff rather than percolated into the soil. New roads and/or transmission line corridors can often block or redirect stormwater flows if improperly designed. These effects are undesirable with respect to flood hazards, water quality, and habitat quality.

However, the Proposed Project, along with other projects occurring in the area, would be required to comply with applicable federal, state, and local water quality regulations. The project, along with other projects over 1 acre in size (which includes most of the projects in the cumulative scenario), would be required to obtain coverage under the NPDES Construction General Permit, which requires project proponents to identify and implement stormwater BMPs that effectively control erosion and sedimentation and other construction-related pollutants. Further, nearly all projects identified in the cumulative scenario would meet the definition of "new development and redevelopment projects" under the San Diego County MS4 Permit. Such projects are required to implement site design, source control, and, in some cases, treatment control BMPs necessary to control the volume, rate, and water quality of stormwater runoff from the project during long-term operations. This is implemented locally by San Diego County by requiring new development projects to submit and implement a SWMP, as described in Section 3.1.5.2, Regulatory Setting.

The various NPDES permits required are aimed at maintaining the beneficial uses of the water bodies in the RWQCB Basin Plan, and meeting water quality objectives associated with specific pollutants of concern. Because adverse water quality and major hydrologic alterations are linked to the large-scale, cumulative effects of development projects as well as industrial and/or agricultural land uses, the provisions within the various NPDES permits, by their nature, seek to address cumulative conditions. Additionally, depending on the location and nature of individual projects in the cumulative scenario, they would be required to comply with County of San Diego ordinances, including the Grading Ordinance; the Watershed Protection, Stormwater Management, and Discharge Control Ordinance; the Flood Damage Prevention Ordinance; and/or the RPO; all of which are described above in Section 3.1.5.2, Regulatory Setting. These federal, state, and local regulations would ensure that the project impacts to hydrologic resources and water quality **would not be cumulatively considerable**.

3.1.5.4.2 Groundwater Resources

As discussed earlier, the Proposed Project would not result in significant impacts on groundwater resources because it would not result in significant depletion of groundwater in storage (i.e., more than 50% using a minimum of 30 years of precipitation data including drought periods) or substantial well interference (i.e., greater than a 20-foot drawdown in the nearest groundwater well after a 5-year projection of drawdown). As detailed in Appendices 3.1.5-5 and 3.1.5-6, the scenarios used to model the total groundwater in storage over a 30-year period include other projects in the cumulative scenario that would also use the well, or that would use wells within a 0.5-mile radius; as well as an assumption that the maximum number of residences permitted by the general plan within a 0.5-mile radius would eventually be built. Included in the 30-year water-balance was the initial 1-year construction period during which high groundwater use would occur. Since the water balance analysis found that over a 30-year period groundwater in storage would not be depleted more than

50% within a 0.5-mile radius, the contribution to impacts in the wider context of the entire subbasin would not be cumulatively considerable. Therefore, the less-than-significant conclusion regarding groundwater in storage is equally applicable to the cumulative scenario.

For these reasons, the Proposed Project **would not result in a cumulatively considerable impact.** Any off-site groundwater sources imported for short-term use during the peak construction period would have to come from a source that is permitted to provide the water and thus subject to the County Groundwater Ordinance, which requires the purveyor to demonstrate its impacts on groundwater resources is less than significant.

3.1.5.5 Conclusion

Hydrology and Drainage Patterns

Each of the proposed solar farms would result in minor changes in the rate, volume, and location of stormwater runoff, and would have minor effects on watercourses, because the level of grading and the amount of new impervious surfaces would be minimal compared to the total area of each project. Because each of the proposed solar farms would be subject to a variety of state and local regulations and ordinances that seek to control substantial increases in the rate, volume, and location of stormwater discharges and flood flow, and because each of the solar farms individually would result in less-than-significant impacts, the impact of the Proposed Project as a whole would be less than significant.

Flood Hazards

The Proposed Project area is not located within a 100-year floodplain area or other special flood hazard area as shown on a FIRM, a County Flood Plain Map, or County Alluvial Fan Map. In addition, none of the solar farms are downstream of a dam or located in an area likely to be affected by mudflows or debris flows. Although the Rugged, LanEast, and LanWest sites are crossed by Tule and Walker creeks, which would be subject to 100-year flood-flows that have not been identified or characterized by FEMA or the County, the impact would be less than significant. This is because in accordance with Chapter 6 of the Grading Ordinance, grading and development plans associated with each project would not be approved without being accompanied by the hydrology and flood studies necessary to demonstrate that the Proposed Project would not perform any action that impairs, impedes, or accelerates the flow of water in a watercourse in such a manner that adversely affects adjoining properties.

Surface Water and Groundwater Quality

The Proposed Project would have a less-than-significant impact with respect to water quality because (1) the Proposed Project does not directly discharge to an impaired water body; (2) construction and operational sources of pollutants, including sediment, trash, and fuels, would be addressed through implementation of both Construction and Operational SWPPPs and SWMPs for each of the solar farms; (3) none of the project sites drain to a drinking water reservoir in the United States; (4) the potential non-stormwater discharges associated with the solar farms would require approval from the San Diego RWQCB or the SWRCB (General WDRs for Discharges to Land with a Low Threat to Water Quality) and the County of San Diego, DEH (for OWTS); and (5) adverse effects to groundwater quality would not occur because groundwater to be used for potable purposes does not exceed state and federal MCLs and because potential threats to groundwater quality as a result of construction, operation, and maintenance of the solar farms would be addressed through compliance with a Construction SWPPP during construction and an Operational SWPPP during the operating life of the solar farms.

Groundwater Resources

The groundwater resources investigation reports conducted for both the Tierra del Sol and the Rugged sites have concluded that the County's Significance thresholds for both groundwater in storage and well interference would not be met (Appendices 3.1.5-5 and 3.1.5-6). While the proposed LanEast and LanWest solar farms have not been fully developed to a project-level of detail (which means quantitative analyses cannot yet be completed), the applicant would be required to demonstrate that groundwater, if derived from on-site wells, would not result in significant impacts to groundwater resources, in accordance with the County Groundwater Ordinance and Guidelines. Because the solar farms would each individually have less-than-significant impacts with respect to groundwater resources, and because the peak construction water demands of the solar farms would not overlap, the impact of the Proposed Project as a whole would be less than significant. To ensure that County significance thresholds related to groundwater impacts are not exceeded, a GMMP has been prepared for both the Tierra del Sol and Rugged solar farms, in accordance with **M-BI-PP-14**, in which the applicant commits to (1) monitor water levels and groundwater storage on site and at neighboring property water wells during both construction and operation of the Proposed Project, and (2) implement corrective measures if monitoring indicates County thresholds may be exceeded.

Table 3.1.5-1
Beneficial Uses of Waters Within the Study Area

	MUN[a]	AGR	IND	GWR	REC 1	REC 2	WARM	WILD	RARE
Surface Water									
Campo									
Unnamed intermittent streams	+	X	X		X	X	X	X	
Anza-Borrego									
Walker Creek	P	X		X	X	X	X	X	
Carrizo Creek		X		X	X	X	X	X	X
Tule Creek	P	X		X	X	X	X	X	
Boundary Creek	P	X		X	X	X	X	X	
Unlisted Perennial and Intermittent Streams	P			I X	I PX	I X	I X	I X	[b]
Washes (ephemeral streams)				I	I	I	[c]	I	
Groundwater									
Campo	X	X	X						
Anza-Borrego hydrologic unit	X[d]	X	X						

Sources: San Diego RWQCB 2011; Colorado River RWQCB 2006.
Notes:
[a] Refer to Table 3.1.5-2 for definition of abbreviations.
[b] Rare, endangered, or threatened wildlife may exist in or utilize some of these waterways. If the RARE beneficial use may be affected by a water quality control decision, responsibility for substantiation of the existence of rare, endangered, or threatened species on a case-by-case basis is upon the California Department of Fish and Wildlife on its own initiative and/or at the request of the applicable RWQCB; and such substantiation must be provided within a reasonable time frame as approved by the RWQCB.
[c] Use, if any, to be determined on a case-by-case basis.
[d] Groundwaters are important to sustain vegetation for wildlife habitat in some areas where surface waters are not present.
X = Existing Beneficial Uses
P = Potential Uses
I = Intermittent Uses
+ = Exempted by the applicable RWQCB from the municipal use designation under the terms and conditions of SWRCB Resolution No. 88-63, Sources of Drinking Water Policy.

Table 3.1.5-2
Definitions of Beneficial Uses of Surface Waters

Beneficial Use	Description
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Industrial Service Supply (IND)	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
Groundwater Recharge (GWR)	Uses of water for natural or artificial recharge or groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
Water Contact Recreation (REC 1)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing,

Table 3.1.5-2
Definitions of Beneficial Uses of Surface Waters

Beneficial Use	Description
	skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.
Non-contact Water Recreation (REC 2)	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Warm Freshwater Habitat (WARM)	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Rare, Threatened, or Endangered Species (RARE)	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.

Sources: San Diego RWQCB 2011; Colorado River RWQCB 2006.

Table 3.1.5-3
Selected Water Quality Objectives

Watershed/Water Body	Water Quality Objectives (mg/L or as noted)					
	Total Dissolved Solids (TDS)	*Chlorine (Cl)*	*Sulfate (SO_4)*	*Sodium (%Na)*	*Nitrate (NO_3)*	*Turbidity (NTU)*
Inland Surface Waters						
Campo Hydrologic Area	500	250	250	60	—	20
Groundwater Basins						
Campo Hydrologic Area	500	250	250	60	45	5

— Narrative objectives apply.
Source: San Diego RWQCB 2011, Colorado River RWQCB 2006.

Table 3.1.5-4
Pre- and Post-Project Peak Flow Summary (Tierra del Sol Site)

Drainage Area No.	Area (acres)	Discharge in a 100-Year Storm (cubic feet per second)			Velocity in a 100-Year Storm (feet per second)		
		Pre-Project	*Post-Project*	*Percent Change*	*Pre-Project*	*Post-Project*	*Percent Change*
100	34.20	28.83	28.83	0.0%	6.27	6.27	0.0%
200	24.30	20.64	20.64	0.0%	4.95	4.95	0.0%
300	**28.60**	**27.35**	**28.60**	**4.4%**	**7.76**	**7.85**	**1.1%**
400	**24.70**	**21.22**	**22.20**	**4.4%**	**5.56**	**5.63**	**1.2%**
500	4.70	4.70	4.70	0.0%	2.64	2.64	0.0%
600	**91.8**	**58.17**	**62.23**	**6.5%**	**6.05**	**6.20**	**2.4%**
700	6.10	7.03	7.03	0.0%	3.79	3.79	0.0%
800	29.50	22.38	22.38	0.0%	4.37	4.37	0.0%
900	129.70	73.20	73.20	0.0%	5.89	5.89	0.0%
1000	51.30	35.71	35.71	0.0%	5.76	5.67	-1.6%

Source: See Appendix 3.1.5-1.

Table 3.1.5-5
Pre- and Post-Project Peak Flow Summary (Rugged Site)

Drainage Area No.	Area (acres)	Discharge in a 100-Year Storm (cubic feet per second)			Velocity in a 100-Year Storm (feet per second)		
		Pre-Project	*Post-Project*	*Percent Change*	*Pre-Project*	*Post-Project*	*Percent Change*
Tule Creek (101)	**15,522**	**14,033**	**14,033**	**0%**	**8.45**	**8.57**	**1.42%**
204	418	444	444	0%	9.30	9.30	0%
302	45	59	59	0%	6.10	6.10	0%
402	20	29	29	0%	5.31	5.31	0%
502	13	18	18	0%	4.58	4.58	0%
603	102	97	97	0%	8.97	8.97	0%
705	734	683	683	0%	9.36	9.36	0%
802	78	71	71	0%	5.85	5.85	0%
902	65	70	70	0%	6.03	6.03	0%
1004	579	407	407	0%	9.57	9.57	0%
1103	151	123	123	0%	5.82	5.82	0%
1202	104	115	115	0%	7.12	7.12	0%
1303	46	44	44	0%	5.32	5.32	0%
1403	83	74	74	0%	4.70	4.70	0%
1502	78	73	73	0%	5.32	5.32	0%
1602	18	21	21	0%	4.28	4.28	0%
1702	20	23	23	0%	4.28	4.28	0%
1803	91	71	71	0%	5.41	5.41	0%

Table 3.1.5-5
Pre- and Post-Project Peak Flow Summary (Rugged Site)

Drainage Area No.	Area (acres)	Discharge in a 100-Year Storm (cubic feet per second)			Velocity in a 100-Year Storm (feet per second)		
		Pre-Project	*Post-Project*	*Percent Change*	*Pre-Project*	*Post-Project*	*Percent Change*
1903	136	122	122	0%	6.42	6.42	0%
2004	503	374	374	0%	9.18	9.18	0%
2102	10	11	11	0%	3.86	3.86	0%

Source: See Appendix 3.1.5-2.

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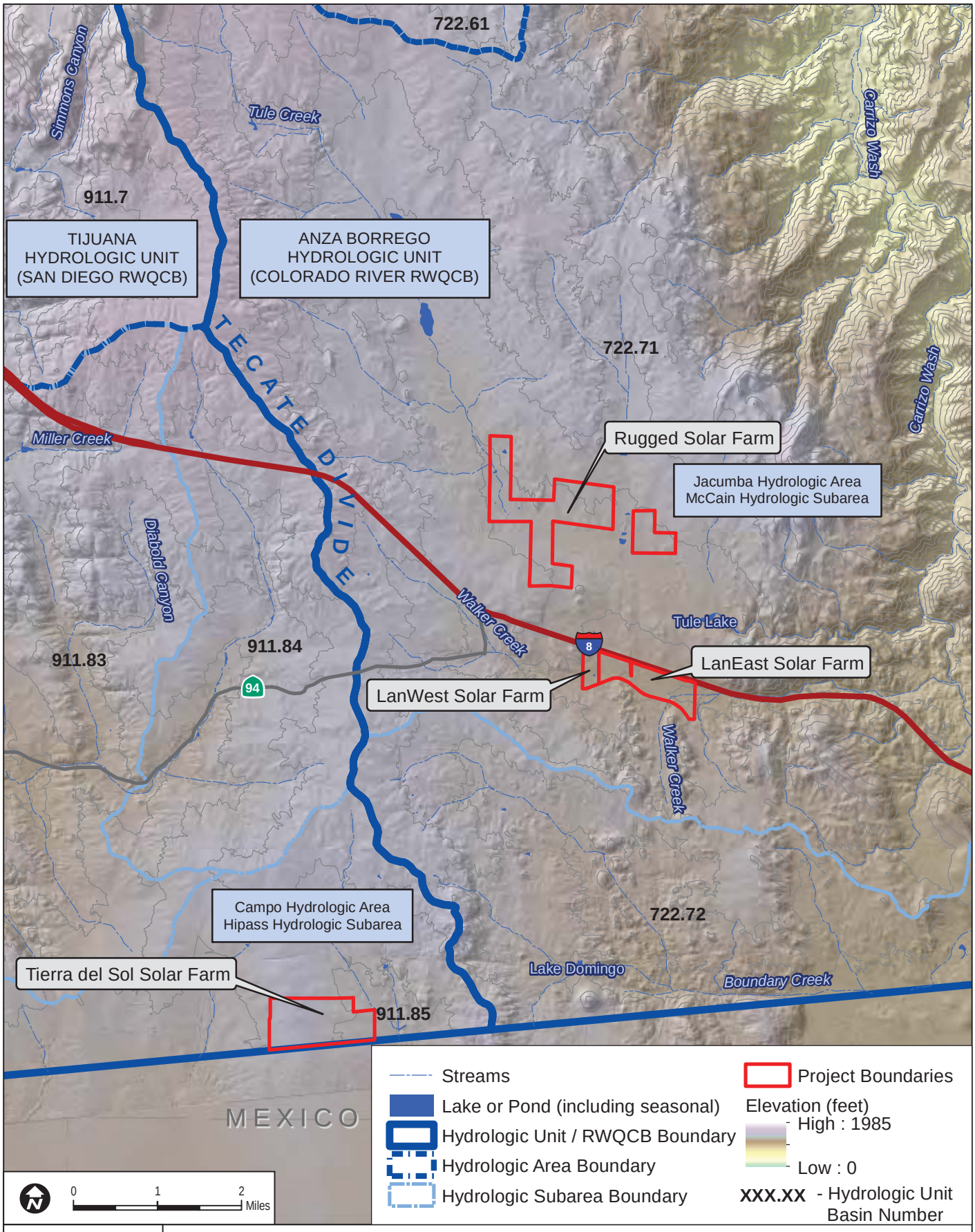

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SOURCE: U.S. Geological Suvey National Hydrography Dataset, San Diego RWQCB 1995

FIGURE 3.1.5-1

Regional Hydrology

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