

SECTION 4.11

HYDROLOGY AND WATER QUALITY

4.11 HYDROLOGY AND WATER QUALITY

This section describes federal, state and local regulations applicable to hydrology and water quality. It also describes the regional hydrologic setting, existing hydrology/drainage (on site and off site), and existing flood hazards in the Project area. Water quality is also described in terms of groundwater beneath the Project area and surface waters in the region and the Imperial Valley.

This section also describes effects on hydrology and water quality that would be caused by implementation of the proposed Project based on the “Seville Solar 4 Project Jurisdictional Delineation,” prepared by ECORP Consulting, Inc. (ECORP 2017b) (**Appendix L**); the “Phase I ESA Report Seville 4 Solar Farm 1791 W. Hwy 78 Borrego Springs, California,” prepared by GS Lyon Consultants, Inc. (GS Lyon 2017) (**Appendix J**); the “Federal Emergency Management Agency (FEMA) Flood Hazard Map” (FEMA n.d.) (**Appendix K**); the “Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis for Allegretti Farms Solar Project Site” prepared by AEI-CASC Engineering (AEI-CASC, 2013) (**Appendix K**); the “Infiltration Test Results, Seville Solar Site, Ocotillo Wells Area of Imperial County, California,” prepared by PETRA Geotechnical, Inc. (PETRA 2012b) (**Appendix K**); the “Preliminary Geotechnical Investigation, Proposed Seville Solar Energy Facility, Allegretti Farms Site, Located East of Ocotillo Wells and South of SR-78, Imperial County, California,” prepared by PETRA Geotechnical, Inc. (PETRA 2012a) (**Appendix K**); the “Geotechnical Report, Titan Solar Facility 1791 Hwy 78 Imperial County, California”, prepared by Landmark Geo-Engineers and Geologists (Landmark 2017) (**Appendix F**); the “Memorandum RE: San Felipe Creek/Seville Solar Complex Response,” prepared by Rick Sidor of AEI-CASC Engineering (Sidor 2013) (**Appendix K**), and the *Water Supply Assessment, Seville Solar Farm Complex*, prepared by Todd Engineering (Todd 2013) (**Appendix M**).

Because no major change in drainage would occur in association with construction of the proposed Gen-Tie Line, Seville 4 Substation, IID Switching Station and extension of the existing access road would all occur in areas previously disturbed and analyzed as part of the Seville Solar Farm Complex. The analysis in this section focuses on the Project site assuming development of the HSAT configuration which would occupy 174 acres.

4.11.1 REGULATORY FRAMEWORK

A. FEDERAL

Federal Emergency Management Agency

Imperial County is a participant in the National Flood Insurance Program (NFIP), a federal program administered by the Federal Emergency Management Agency (FEMA). Participants in the NFIP must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 has adopted, as a desired level of protection, an expectation that developments should be protected from floodwater damage of the Intermediate Regional Flood (IRF). The IRF is defined as a flood that has an average frequency of occurrence on the order of one in 100 years, although such a flood may occur in any given year. Imperial County is occasionally audited by the Department of Water Resources (DWR) to ensure the proper implementation of FEMA floodplain management regulations. The Seville 4 Project site is located on Flood Insurance Rate Map (FIRM) community-panel number 06025C0950C. A small portion of the Seville 4 Project site is within Flood Zone A, defined as those areas with a one percent annual chance of flooding. The remainder of the Seville 4 site is located in Flood Zone X, an area of moderate flood hazard, between the limits of the 100-year and 500-year floods (refer to **Figure 4.11-2**).

B. STATE

The Porter-Cologne Water Quality Control Act

California established its regulations to comply with the Clean Water Act (CWA) under the Porter-Cologne Water Quality Control Act of 1967. The Porter-Cologne Act grants the State Water Resources Control

4.11 HYDROLOGY AND WATER QUALITY

Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) power to protect water quality and to adopt water quality criteria to protect Waters of the State (WS). Such waters are defined in Section 13050 of the Porter-Cologne Water Quality Control Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” Water quality criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. Reporting requirements for waste discharge to WS are set forth in Section 13260. The RWQCBs are authorized in Section 13263 to issue Waste Discharge Requirements specifying conditions for protection of water quality. Section 13181 of the Act requires the SWRCB to develop water quality reports and lists per Section 303(d) of the Federal Clean Water Act.

State Water Resources Control Board Construction General Permit Order No. 2010-0014-DWQ

The SWRCB regulates stormwater discharges from projects during construction in accordance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (NPDES No. CAS000002). Dischargers whose projects disturb one or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2010-2014-DWQ, effective February 14, 2011) (SWRCB 2012).

Construction activity subject to a Construction General Permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation. A Construction General Permit does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Program (SWPPP). The SWPPP should contain a site map(s) showing the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the proposed Project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of the BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment (SWRCB 2012).

Water Quality Control Plan Colorado River – Region 7

The Water Quality Control Plan (also known as the Basin Plan) establishes beneficial uses in the Colorado River Basin. The Basin Plan also identifies water quality objectives that protect the beneficial uses of surface water and groundwater; describes an implementation plan for water quality management in the Colorado River Region; and describes measures designed to ensure compliance with statewide plans and policies. Overall, the Basin Plan provides comprehensive water quality planning in Region 7 which encompasses all of Imperial County as well as portions of San Bernardino, Riverside and San Diego Counties. The Project area is located within the Ocotillo-Clark Valley Basin of the Colorado River Hydrologic Region (SWRCB 2006).

C. LOCAL

Imperial County General Plan

The Imperial County General Plan contains goals, objectives, policies and programs created to ensure water resources are preserved and protected. **Table 4.11-1** identifies applicable General Plan goals, objectives, policies and programs from the Conservation and Open Space Element (Imperial County 2008a) for water quality and flood hazards that are relevant to the proposed Project. In addition, two

4.11 HYDROLOGY AND WATER QUALITY

programs from the Water Element (Imperial County 1993) that directly relate to the proposed Project are also analyzed. While this EIR analyzes the proposed Project’s consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

**TABLE 4.11-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS**

General Plan Goals, Objectives, Policies and Programs	Consistent with General Plan?	Analysis
CONSERVATION AND OPEN SPACE ELEMENT		
Preservation of Water Resources		
<p>Goal 8: The County will conserve, protect, and enhance the water resources in the planning area.</p>	Yes	<p>All County projects are required to protect water during construction through compliance with an NPDES General Construction Permit, SWPPP, and BMPs. The proposed Project would be required to comply with these provisions and is therefore consistent with the intent of this goal.</p>
<p>Objective 8.4 Ensure the use and protection of the rivers and other waterways in the County. Ensure proper drainage and provide accommodation for storm runoff from urban and other developed areas in manners compatible with requirements to provide necessary agricultural drainage.</p>	Yes	<p>To ensure proper drainage and accommodate stormwater runoff, the proposed Project would rely on existing drainage patterns coupled with proposed detention basins to be located within the Seville 4 Project site. The Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis (AEI-CASC 2013) prepared for the proposed Project analyzed a worst-case scenario assuming 100 percent runoff with on-site storm water retention basins sized to fully retain the 100-year 24-hour peak flood volume resulting from precipitation. The County requirement to provide 3 inches of detention per tributary acre would be met and detained runoff would be infiltrated into the underlying soil (AEI-CASC 2013). In addition, approximately 60 acres of the Project site was previously used for agriculture and the remainder consists of vacant desert lands. Previous agricultural activities on the Property utilized groundwater for crop irrigation, which then percolated back into the ground or was collected in on-site detention basins. As such, the Property is not reliant upon or connected to IID canals and drains typically associated with agricultural land within the County.</p>

4.11 HYDROLOGY AND WATER QUALITY

**TABLE 4.11-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS**

General Plan Goals, Objectives, Policies and Programs	Consistent with General Plan?	Analysis
		Therefore, the proposed Project is consistent with this objective.
<p>Objective 8.5 Protect and improve water quality and quantity for all water bodies in Imperial County.</p>	Yes	<p>The proposed Project would protect water quality during construction through compliance with an NPDES General Construction Permit, SWPPP, and BMPs. Design features and BMPs have also been identified to address water quality for the proposed Project. Water quantity would be maintained by retaining the majority of the Project area with pervious surfaces. Although the proposed Project may not improve water quality and quantity, it would protect existing conditions and satisfy County requirements. Therefore, the proposed Project is consistent with this objective.</p>
<p>Program: Structural development normally shall be prohibited in the designated floodways. Only structures which comply with specific development standards should be permitted in the floodplain.</p>	Yes	<p>Portions of the Project area are located in Flood Zone X and Zone A (Refer to Figure 4.11-2, FEMA Flood Zone Map). No proposed Project features are proposed to be constructed in Zone A. However, current FEMA maps do not reflect an existing 7-foot high earthen berm to the west of the Property. This berm directs flows from San Felipe Creek south, thereby blocking its flow through the Property. All inverters, transformers, and switch gear would be constructed above the projected maximum flood levels and above the 100-year floodplain. Therefore, the proposed Project is consistent with this Program.</p>
WATER ELEMENT		
Protection of Water Resources from Hazardous Materials		

4.11 HYDROLOGY AND WATER QUALITY

**TABLE 4.11-1
IMPERIAL COUNTY GENERAL PLAN CONSISTENCY ANALYSIS**

General Plan Goals, Objectives, Policies and Programs	Consistent with General Plan?	Analysis
<p>Program: The County of Imperial shall make every reasonable effort to limit or preclude the contamination or degradation of all groundwater and surface water resources in the County.</p>	Yes	<p>A Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis (AEI CASC, 2013), and Geotechnical Investigation (Landmark 2017) have been prepared for the proposed Project. As noted in the discussion of Conservation and Open Space Element, Objective 8.5, the proposed Project includes design features and BMPs in addition to required compliance with a general NPDES permit and SWPPP during construction and BMPs during operation. Technical analysis of proposed drainage features indicates all runoff would be captured in on-site retention basins or percolating into the ground. Therefore, the proposed Project would not significantly contaminate ground or surface waters and is consistent with this program.</p>
<p>Program: All development proposals brought before the County of Imperial shall be reviewed for potential adverse effects on water quality and quantity, and shall be required to implement appropriate mitigation measures for any significant impacts.</p>	Yes	<p>No adverse effects on water quality are anticipated in association with implementation of the proposed Project. Therefore, the proposed Project is consistent with this program. Refer also to analysis of Conservation and Open Space Element, Objective 8.5.</p>

County of Imperial Land Use Ordinance, Title 9

Division 16 of the Land Use Ordinance addresses Flood Damage Prevention Regulation. The purpose of this division is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provision of design to protect human life and minimize damage. Division 16 of the Land Use Ordinance requires an application for development in the floodplain to be submitted to the County’s Floodplain Administrator. This division restricts floodplain uses; requires that floodplain uses be protected against flood damage; controls alteration of floodplains and stream channels; controls filling and grading in floodplains; and prevents diversion of flood flows where these would increase flood hazards in other areas.

Division 22 of the Land Use Ordinance addresses groundwater. The focus of this division is to preserve, protect and manage the groundwater within the County.

In 1998, the County adopted a comprehensive Groundwater Management Ordinance for the express purpose of preserving and managing groundwater resources within the County (Chapter 1 of Title 9). The

4.11 HYDROLOGY AND WATER QUALITY

Groundwater Management Ordinance is implemented by the Planning Commission acting upon the direction of the Board of Supervisors.

The Commission, charged by the Board of Supervisors with the regulation of groundwater, can request preparation of an annual report on groundwater supplies and conditions, determine the need for and recommend groundwater management activities (see Section 92202.00), recommend groundwater extraction standards and charges, and establish standards for artificial recharge, among other things.

The Groundwater Ordinance provides the County with various regulatory tools that are designed to avoid or minimize the impact of existing and proposed groundwater extraction activities on groundwater resources and other users. For example, Section 92201.13 provides a remedy for water users who are aggrieved by well interference (defined as a substantial water level decline in a short time period in a localized area caused by extraction) or other impairment or infringement of the groundwater use caused by the extraction activities of another party. In such cases, the Commission may issue any order that it determines necessary to provide the petitioning water user with an adequate remedy. The Groundwater Ordinance also requires that existing extraction facilities be registered with the County.

County of Imperial Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans within Imperial County

The “County of Imperial Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans within Imperial County” (Imperial County 2008d) provides drainage design standards for development throughout the County. Specific standards applicable to the proposed Project include:

- Retention volume of 3 inches of rainfall with no assumed infiltration or evaporation for developed impervious areas.
- Retention basins are to empty within 72 hours after receiving water.
- Finished pad elevations for buildings shall be at or above the 100-year flood elevation.
- Finished floors shall be 6 inches above the 100-year flood.
- Drainage report required for all developments.

Imperial Irrigation District

The Imperial Irrigation District’s (IID) Water Department has been serving the Imperial Valley’s water needs for 100 years. The IID provides raw Colorado River water for irrigation and also for non-potable residential and industrial use. The Project does not propose the use of IID water, and no IID water infrastructure is available within the Project site.

4.11.2 ENVIRONMENTAL SETTING

A. SEVILLE 4 SOLAR PROJECT

Hydrologic Setting

The Project area is located within the Anza Borrego Hydrologic Unit of the Salton Sea watershed in the Colorado River region. The hydrologic unit code is 18100200 of the USDA National Resources Conservation Services (NRCS). The Salton Sea Watershed encompasses an area of approximately 8,000 square miles that extends from San Bernardino County in the north to the Valley of Mexicali (Republic of Mexico) in the south (**Figure 4.11-1**). The Salton Sea lies at the lowest point in the watershed, approximately 227 feet below mean sea level (msl), and collects runoff and agricultural drainage from most of Imperial County, a considerable portion of Riverside County, small portions of San Bernardino and San Diego Counties, as well as the northern portion of the Valley of Mexicali. The principal sources of inflow to the Salton Sea

4.11 HYDROLOGY AND WATER QUALITY

include: the Alamo River, New River, Whitewater River/Coachella Valley Storm Channel, direct drainage from Imperial and Coachella Valleys, subsurface inflow from groundwater, San Felipe Creek, Salt Creek, other smaller local drainages, and direct precipitation.

Existing Hydrology/Drainage

The Seville 4 Project site is comprised of flat-lying, very low gradient desert lands and approximately 60 acres of idle farmland. An existing tamarisk windbreak extends east to west along a portion of the northern boundary of the Project site. The overall slope of the Project site is to the southeast at an estimated average low gradient of 0.4 percent. Elevations across the Project site range from a high of approximately 44 feet below msl at the northwest corner to a low of approximately 59 feet below mean sea level at the southwest corner (as discussed in Chapter 2, Project Description).

San Felipe Creek, in its natural state, previously flowed through the Project site in a southeasterly direction. The former San Felipe Creek bottom was filled to create a near level surface for use as agricultural fields. In the 1970's, a berm approximately 7-feet high was constructed to the west of the Property in the center of Section 22 and the north half of Section 27. This berm protected farmlands in the southeastern quarter of Section 22 and the north half of Section 26 from storm water flowing down washes and arroyos from the northwest, including San Felipe Creek. The berm diverted these waters to the south of the Property into Fish Creek Wash in Section 27, T12S, R9E, SBBM. Fish Creek Wash then aligns east-southeast approximately five miles before joining the San Felipe Creek channel in Section 32, T12S, R10E (EMA 2013a).

Six soil types are found within the Seville 4 Project site: Meloland fine sand, Indio Loam, Indio-Vint Complex, Rositas fine sand (0 to 2 percent slopes), and Vint Find Sandy Loam (refer to Table 4.6-3 in Section 4.3, Geology & Soils). Based on the Unified Soil Classification System, the permeability of these soils ranges from high to medium (GS Lyon 2017, p 9).

On-Site Drainage

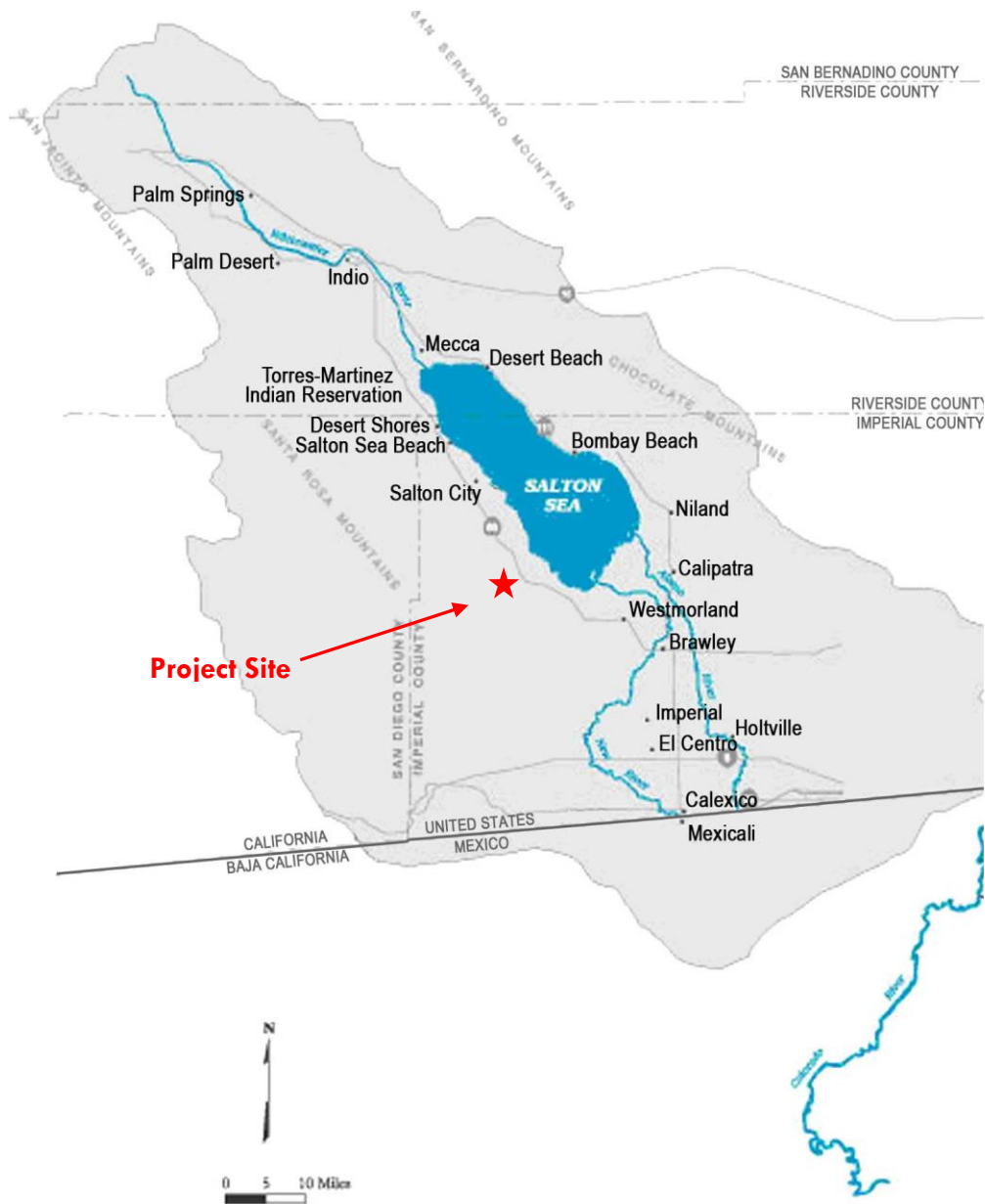
Approximately 60 acres of the Project site was formerly used for agricultural cultivation. The Project site is undeveloped and unpaved. Fish Creek Wash is to the south of the proposed Seville 4 Project site. Tarantula Wash crosses the northeastern corner of the Project site in a generally southeasterly direction. San Felipe Creek previously bisected the Property, but is now diverted south by an existing 7-foot high earthen flood control berm west of the Project site as described above (PETRA 2012a, p. 2).

Water supply to the Seville 4 Project site was pumped from groundwater wells on adjacent lots during previous agricultural use. Agricultural activities on the Allegretti Farms land to the west of Lot 8 were suspended within the last few years. The most recent farming occurred in 2012 on a small area of Lot 3. Currently, there is no applied water on-site and any runoff from precipitation leaves the site via natural channels.

Off-site Drainage

The Project site is situated between Tarantula Wash and San Felipe Creek. In its natural state, San Felipe Creek previously flowed through the Property in a southeasterly direction. As described above, San Felipe Creek is currently diverted south of the Project site by an existing 7-foot high earthen berm to the west of the Property. Tarantula Wash crosses through the northeastern corner of the Lot 8 and would conceivably drain to Salton Sea and is considered Jurisdictional Waters of the U.S.

4.11 HYDROLOGY AND WATER QUALITY



Source: DWR, 2011.

FIGURE 4.11-1
SALTON SEA WATERSHED MAP

4.11 HYDROLOGY AND WATER QUALITY

Existing Flooding

The Seville 4 Project site is located on FEMA FIRM community-panel number 06025C0950C (FEMA 2013). Historic portions of San Felipe Creek that previously crossed the Property are within a FEMA area designated as Flood Zone A (100-year flood zone) (**Figure 4.11-2**). Flood Zone A is defined as those areas with a one percent annual chance of flooding. The remainder of the Project site is within Flood Zone X, an area of moderate flood hazard, between the limits of the 100-year and 500-year floods. As noted above, an existing 7-foot high earthen flood control berm running along the western boundary of the Property diverts flows from the historic creek flood zone away from the Project site.

Groundwater

The Project area is within the Ocotillo Valley Groundwater Basin (Groundwater Basin Number 7-25), which covers 223,000 acres (348 square miles) underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties (**Figure 4.11-3**). The Basin is bounded by the Santa Rosa Mountains on the north and northeast, the Coyote Creek and Superstition Mountains on the west and south, and the Salton Sea and surface drainage divides on the east. Clark Valley drains internally toward Clark (dry) Lake and the remainder of the valley drains to the Salton Sea. Average annual precipitation in the Ocotillo Valley Groundwater Basin area is approximately five inches (DWR 2004).

The Ocotillo Valley Groundwater Basin is an alluvium-filled valley and is underlain by non-water-bearing crystalline bedrock. The valley fill in Clark Valley and upper Ocotillo Valley is likely similar to that of Borrego Valley, which has been more thoroughly studied. The water-bearing sediments are likely Pliocene to Holocene stream, alluvial fan, lake and eolian deposits. In the adjacent Borrego Valley Groundwater Basin, these deposits form three aquifers that can reach more than 1,800 feet thick (DWR 2004).

Restrictive Structures

The northwest-trending Coyote Creek Fault and Superstition Mountain Fault bound the basin on the south. Water level differences of 100 feet on opposite sides of the Coyote Creek fault indicate the fault is a barrier to groundwater flow. The San Jacinto Fault and San Felipe Hills Fault also displace rocks in the basin; however, it is not known if these faults are barriers to groundwater movement (DWR 2004).

Recharge Areas

Groundwater recharge to the Ocotillo Valley Groundwater Basin likely occurs through percolation of runoff from the Santa Rosa Mountains north and east of the valley (DWR 2004).

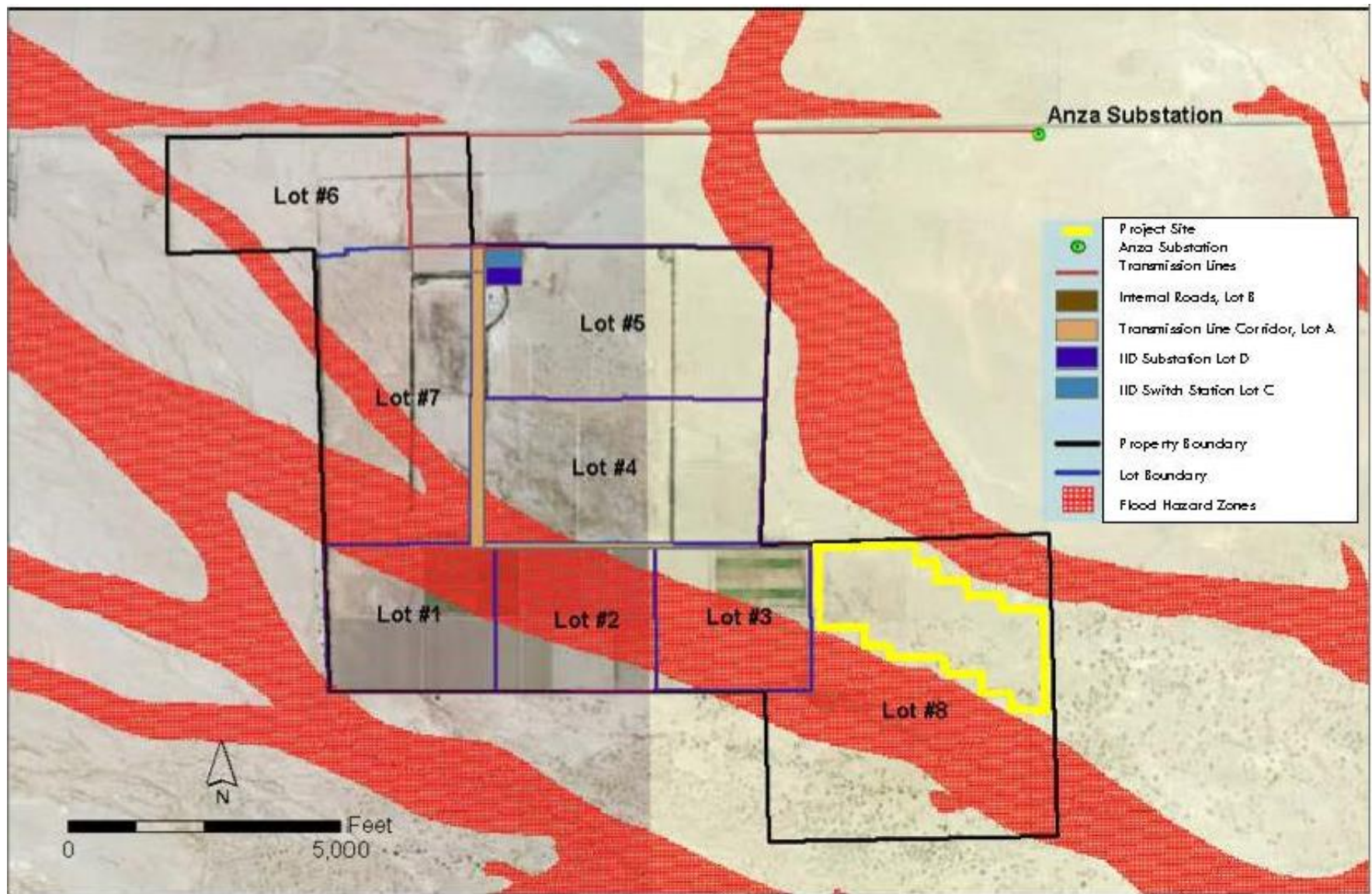
Groundwater Level Trends

Groundwater levels near Clark Lake did not change appreciably from 1952 through 1980. During the same period, water levels south of Coyote Mountain declined approximately 30 feet. Groundwater generally flows southeastward through the Ocotillo Valley Groundwater Basin; however, water levels suggest that some groundwater may flow southwestward out of Clark Valley and spill over the Coyote Creek Fault into the Borrego Valley Groundwater Basin (DWR 2004).

Groundwater Storage

According to DWR's Bulletin 118, the groundwater storage capacity estimated for Clark Valley is approximately 450,000-acre feet (AF) and the capacity estimated for Ocotillo Valley is approximately 5,800,000 AF. These estimates add to approximately 6,250,000 AF. Bulletin 118 notes that the quantity of groundwater in storage is unknown (DWR 2004).

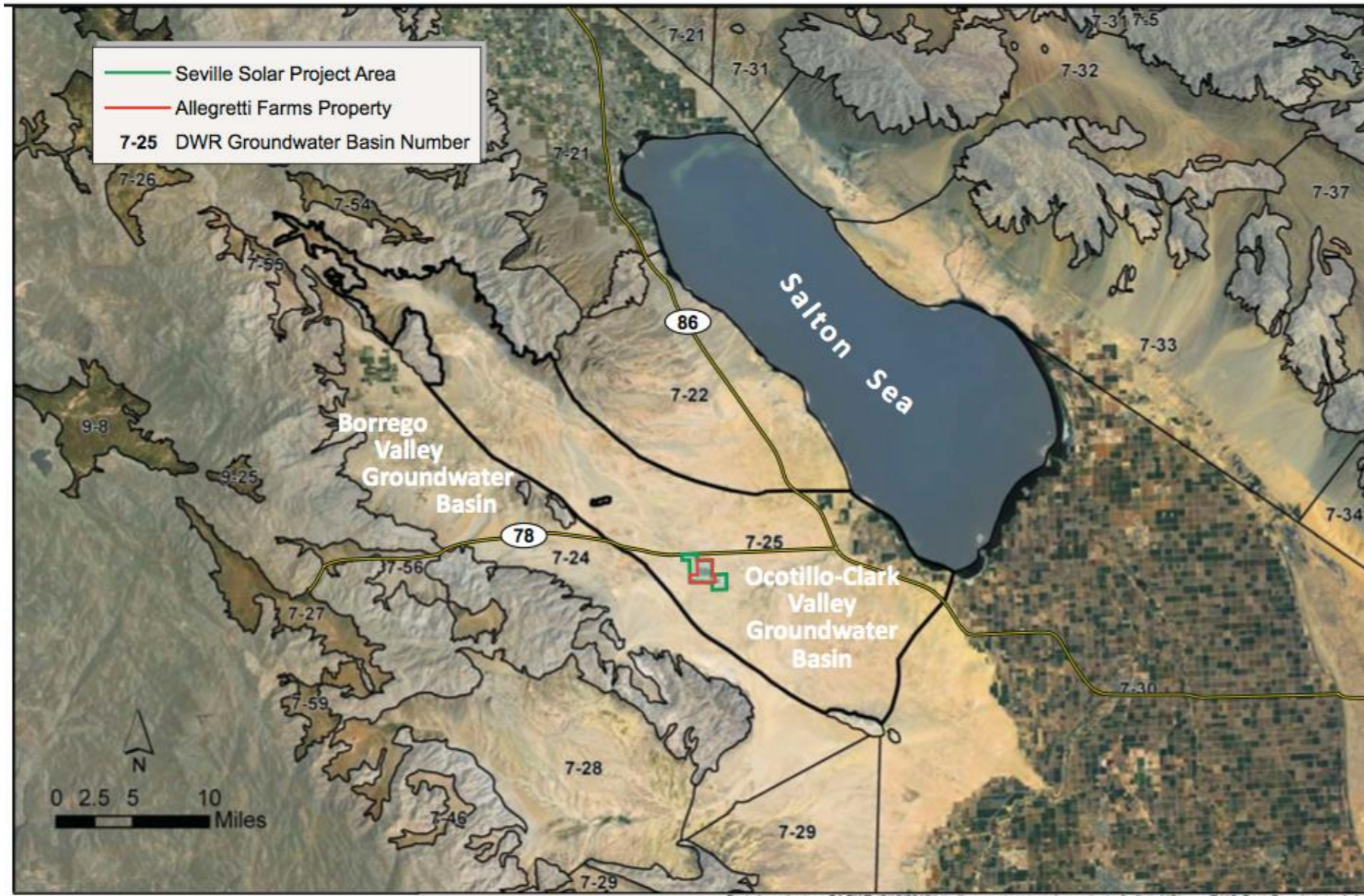
4.11 HYDROLOGY AND WATER QUALITY



Source: AEI CASC 2013.

**FIGURE 4.11-2
FLOOD ZONE A (100 YEAR FLOOD ZONE)**

4.11 HYDROLOGY AND WATER QUALITY



Source: Todd 2013.

**FIGURE 4.11-3
GROUNDWATER BASINS**

4.11 HYDROLOGY AND WATER QUALITY

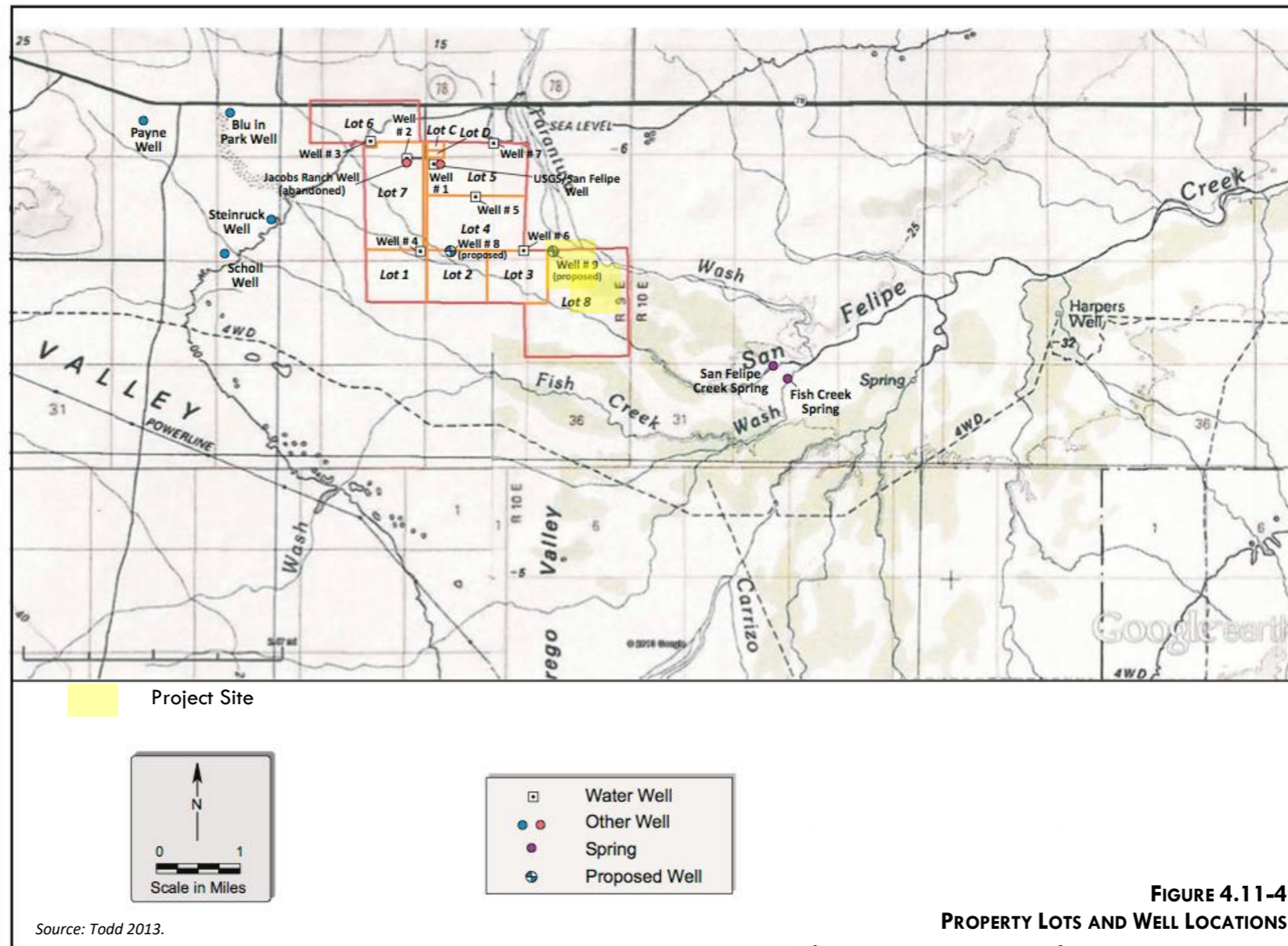


FIGURE 4.11-4
PROPERTY LOTS AND WELL LOCATIONS

4.11 HYDROLOGY AND WATER QUALITY

Groundwater Budget (Type C)

Annual recharge to the basin is estimated to be approximately 1,200 acre-feet per year (AF/Y) for the Clark Valley portion of the basin and approximately 1,100 AF/Y for the Ocotillo Valley portion (DWR 2004).

Groundwater at the Property was previously used for irrigation purposes. Two groundwater wells were initially drilled to provide the water necessary for farming: the San Felipe Well and the Jacobs Domestic Well (EMA 2013a). Seven more water wells were drilled for agricultural uses between 1965 and 1982 (Figure 4.11-5).

Aquifers

A shallow and deep aquifer is located in the Project area. Water levels in the shallow aquifer are approximately 100 feet higher than the deep aquifer. The deep aquifer has better water quality than the shallow aquifer. Total Dissolved Solids (TDS) concentrations are approximately three to four times greater in the shallow aquifer. TDS concentrations in the Allegretti wells have been on the order of 1,200 to 1,800 milligrams per liter (mg/L) between 1962 and 2002. Allegretti Well #7 had slightly better quality (TDS concentrations of 880 and 930 mg/L) when sampled in 1982 and 1995, indicative of better water quality in the upper part of the deep aquifer. The secondary maximum contaminant level (MCL) derived from human welfare considerations (e.g., taste, odor, laundry staining) for TDS is 500 mg/L. The shallow aquifer is unconfined and appears to feed the San Felipe and Fish Creek Wash located southeast of the Property. The deep aquifer is at least partially confined. Existing wells on the proposed solar farm complex site pump water from the deep aquifer. However, in the vicinity of the Project area, irrigation return flows do not return to the deep aquifer because of the presence of a perched shallow aquifer (Todd 2013, p. 7).

The Preliminary Geotechnical Investigation (GS Lyon 2013) prepared for the Seville Solar Farm Complex identified perched groundwater in one bore hole at a depth of 43 feet below ground surface. Other records have identified groundwater at a depth of 77 to 91 feet below ground surface approximately one mile to the west of the Seville Solar Farm Complex. Both of these groundwater sources may be perched, disconnected from the lower aquifer. The regional groundwater table is expected to be at depths greater than 150 feet (PETRA 2012a, p. 6). Depth to groundwater may fluctuate due to localized geologic conditions, precipitation, irrigation, drainage and construction practices in the region. Based on the regional topography, groundwater flow is assumed to be generally towards the southeast within the vicinity of the Property. Flow directions may also vary locally within the Project area.

In the vicinity of the Property, five wells exist to the west (Payne, Gann, Scholl, Steinruck, and Blu-In Park wells) and five wells exist to the east (two United States Geological Survey [USGS] test wells, Harpers well, and two Three Flags Ranch wells). The Allegretti wells are the main pumpers of the deep aquifer. Other wells that pump the deep aquifer (Payne, Gann, and Blu-In Park) pump small quantities for dust control and landscape irrigation. Historic use for the Blu-In Park well has been approximately two acre-feet per year (AF/Y). A conditional use permit (CUP) has been issued allowing for a new well on an adjacent parcel to supply up to 10 AF/Y to the 187-space Blu-In RV Park. Water use for the existing Blu-In Park well remains limited to two AF/Y. The Three Flags Ranch wells were pumped briefly in the mid-1980s to irrigate 1,000 to 1,200 acres of citrus. Pumping was soon replaced with Colorado River water from the Imperial Irrigation District (Todd 2013).

Existing Water Quality

Surface Water Quality

While surface waters are not anticipated to be impacted by the Project or used as a water supply source, the discussion of surface water quality provides context on the condition of surface waters relevant to the Project area.

4.11 HYDROLOGY AND WATER QUALITY

The Project area is located within the Anza Borrego Planning Area of the SWRCB's *Water Quality Control Plan, Colorado River Basin Plan* which includes the Clark, West Salton Sea, and Anza-Borrego Hydrologic Units (SWRCB 2006). It covers 1,000 square miles in the southwest corner of the region, mostly in San Diego and Imperial Counties, with a small segment in Riverside County. Elevations in the Anza Borrego Planning Area range from 230 feet below sea level at the Salton Sea to over 6,000 feet along the western boundary. The major communities in the Planning Area are Salton City and Borrego Springs. Drainage within the Planning Area flows to the Salton Sea except for two small areas of internal drainage in Clark and Borrego Valleys in the northwest corner of the Anza Borrego Planning Area (SWRCB 2006).

Average annual precipitation ranges from less than 3 inches along the eastern boundary of the Anza Borrego Planning Area (near Imperial Valley) to 25 inches in the mountain divide between the Salton Sea and Pacific Ocean drainages. Runoff is created by winter precipitation (especially in the higher elevations) and summer thunderstorms. Perennial flow includes reaches of Coyote and San Felipe Creeks (SWRCB 2006).

The Salton Sea is the major surface water feature in the vicinity of the Project area, and excess surface water flows in the Project area drain to the Salton Sea. The Salton Sea is 30 miles long, approximately 10 to 15 miles wide, with an average depth of 30 feet. It has an area of approximately 360 square miles, and its surface elevation, although variable, is approximately 227 feet below mean sea level. The Salton Sea is a saline water body with no outlet, occurring in a fault-controlled sub-sea level basin. The Sea serves as a reservoir to receive and store agricultural drainage and seepage waters, but also provides important wildlife habitat and is used for recreational purposes which include boating and fishing. Replenishment of the Salton Sea is predominantly from farm drainage and seepage, and occasional and sometimes significant storm runoff from the Coachella Valley, Imperial Valley, and Anza Borrego area. The gross contributing watershed comprises approximately 7,500 square miles (SWRCB 2006).

Salinity concentrations in the Salton Sea are slightly higher than those of ocean water, with TDS at approximately 54,000 parts per million (ppm) (DWR 2015, p. 1-1). Historic data on the Salton Sea shows a gradual increase in the concentration of dissolved salts. This increase has resulted from the high evaporation rates and continual inflow of drainage waters with high salt loads from canals and laterals in Imperial Valley and from agricultural activity in Mexico.

At present, the primary water quality problem facing the Salton Sea continues to be increasing salinity and associated selenium buildup. Approximately five million tons of salt per year are carried into the Salton Sea. Selenium entering the Salton Sea originates from the Colorado River which contains approximately one to two part per billion (ppb) of selenium (DWR 2015, p. 2-7). As the Colorado River water is brought into Imperial Valley by various canals, the selenium becomes concentrated due to the evaporation and evapotranspiration that occurs during farming of agricultural fields. The agricultural drains then carry this selenium enriched water into the Salton Sea. The New and Alamo Rivers contain approximately seven to eight parts per billion of selenium (ppb) when they reach the Sea. The selenium is taken up and concentrated by small organisms (e.g. fish), which in turn, are eaten by larger organisms (e.g. birds).

Groundwater Quality

The following description of groundwater quality was taken from Bulletin 118, California's Groundwater, Ocotillo-Clark Valley Groundwater Basin (DWR 2004). The Project proposes use of groundwater for construction and operations.

Characterization

Sodium or calcium dominant cation found in groundwater near Clark Lake, in the northern part of the Ocotillo-Clark Valley Groundwater Basin. The dominant anions are sulfate and chloride. TDS content

4.11 HYDROLOGY AND WATER QUALITY

ranges from 560 to 1,983 milligrams per liter (mg/L) and averages approximately 950 mg/L. Groundwater in the southern part of the basin has sodium chloride-sulfate or sodium chloride character. Measured TDS content ranges from 955 to 4,656 mg/L and averages approximately 2,500 mg/L. TDS content often increases through time for wells with multiple measurements and increases from northwest to southeast in the basin (DWR 2004).

Impairments

High TDS, sulfate, chloride, and fluoride concentrations locally impair groundwater for domestic and irrigation use (DWR 2004).

B. SEVILLE 4 SUBSTATION

A new Seville 4 Substation would be constructed in the common development interest Lot D of Tract Map No. 00988. The proposed Substation will be located in FEMA Flood Zone X, an area of moderate flood hazard, between the limits of the 100-year and 500-year floods. The Seville 4 Substation would take delivery of the 34.5 kV power from the Project collection station transmission line, and increase the voltage of the electricity to 92 kV for metering and delivery to the IID electric grid. The substation would include a transformer, circuit breakers, meters, disconnect switches microwave or other communication facilities and an electrical control building. The Project's power would then be transmitted by the IID to the point of interconnection with the utility which has agreed to purchase the output from the Seville 4 Solar Project pursuant to a power purchase agreement (PPA).

C. GEN-TIE LINE

The proposed 2.4-mile Gen-Tie Line extending from the Seville 4 Solar Project's collector station to the proposed Seville 4 Substation on Lot D would be located on lands within the Seville Solar Farm Complex. The proposed Gen-Tie Line is located within the same watershed and hydrologic unit as the Project area (Anza Borrego Hydrologic Unit of the Salton Sea watershed in the Colorado River region). A portion of the Gen-Tie Line is located in Flood Zone A, defined by FEMA as areas with a one percent annual chance of flooding. The remainder of the proposed Gen-Tie Line alignment is located in Flood Zone X, an area of moderate flood hazard, between the limits of the 100-year and 500-year floods (**Figure 4.11-2**). The majority of the Gen-Tie Line ROW has been previously disturbed by roads within the Allegretti Farms property.

4.11.3 IMPACTS AND MITIGATION MEASURES

A. STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following CEQA Guidelines, as listed in Appendix G. The proposed Project would result in a significant impact to hydrology and water quality if it would result in any of the following:

- a) Violate any water quality standards or waste discharge requirements.
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table *level* (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.

4.11 HYDROLOGY AND WATER QUALITY

- d) Substantially alter the existing drainage patterns of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.
- e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- f) Otherwise substantially degrade water quality.
- g) Place housing within a 100-year flood hazard area as mapped on a Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- h) Place within a 100-year flood hazard area structures which would impede or redirect the flood flows.
- i) Expose people or structures to a significant risk of loss injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- j) Inundation by seiche, tsunami, or mudflow.

B. ISSUES SCOPED OUT AS PART OF THE INITIAL STUDY

Two criteria were scoped out as part of the Initial Study. Criterion “g” was scoped out because it deals with placement of housing within the 100-year floodplain. The proposed Project does not include a residential component. Therefore, no homes would be constructed within a 100-year flood zone. Thus, no impact is identified for this issue area and it is not discussed further in this section.

Criterion “j” was scoped out because no bays or lakes are located within a two-mile radius of the Project area. Furthermore, the Project area and Imperial Valley are over 75-miles inland from the Pacific Ocean. In addition, the Project area is relatively flat and level, eliminating the potential for exposure to mudflows. Thus, no impact is identified for these issues and they are not discussed further in this section.

C. METHODOLOGY

The analysis of impacts to hydrology and water quality were based on the results from several technical studies, the physical characteristics of the Salton Sea and its watershed, and the physical characteristics of the Ocotillo-Clark Valley Groundwater Basin. The following technical studies were consulted: the “Seville Solar 4 Project Jurisdictional Delineation,” prepared by ECORP Consulting, Inc. (ECORP 2017), the “Phase I ESA Report Seville 4 Solar Farm 1791 W. Hwy 78 Borrego Springs, California,” prepared by GS Lyon Consultants, Inc. (GS Lyon 2017), the “Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis” (AEI CASC, 2013); the “Infiltration Test Results, Seville Solar Site” (PETRA 2012b); and the “Memorandum RE: San Felipe Creek/Seville Solar Complex Response” (Sidor 2013).

Groundwater impacts were assessed based on the “Preliminary Geotechnical Investigation, Proposed Seville Solar Energy Facility” (PETRA 2012a) and the *Water Supply Assessment, Seville Solar Farm Complex* (Todd 2013).

D. PROJECT IMPACTS AND MITIGATION MEASURES

Violate Water Quality Standards or Waste Discharge Requirements

Impact 4.11.1 Implementation of the proposed Project would generate small amounts of runoff during construction and operation. This impact is considered **less than significant**.

Construction

Approximately 60 acres of the Project site is former active farmland that has been idle in recent years would be converted to a solar field with PV panels. Another seven acres would be disturbed as follows:

4.11 HYDROLOGY AND WATER QUALITY

approximately two acres would be disturbed during construction of the 34.5-kV Gen-Tie Line, two acres would be disturbed for the common access roads, and three acres would be disturbed by the construction of the Project Substation.

The Seville 4 Project site is relatively flat and involves minimal grading to accommodate construction of the solar fields and foundations for equipment and buildings. Dust generated during construction would be controlled by watering three times per day. Fugitive dust would be controlled during construction and operations as required by the Imperial County Air Pollution Control District (ICAPCD) Regulation VIII. A Dust Control Plan would be prepared in conformance with ICAPCD requirements to address construction and earthmoving activities, track-out, open areas and unpaved roads. It would include information on the dust suppressants to be applied and the specific surface treatment(s) and/or control measures to be utilized to control track-out where unpaved and/or access points join paved public access roads. During operations, dust would be controlled by the periodic application of chemical stabilization agents (soil binders) to exposed soil surfaces. The solar arrays would be mounted on racks supported by driven piles. The depth of the piles would be dependent on the recommendations of the Geotechnical Report for the proposed Project prepared by LandMark (2017). The arrays would be constructed on a shallow pier type foundation. In compliance with County of Imperial requirements, any discharges of water would be fully contained within the Project site boundaries either through infiltration at the soil surface or retained in the on-site retention basins.

As a result of the recommended site design and source control measures, and the construction of the required detention basin(s), water quality exceedances are not anticipated and pollutants within Project runoff that would adversely affect beneficial uses in downstream receiving waters are not expected. Although specific Imperial County regulations regarding storm water NPDES and new development do not exist, the proposed Project plans to institute controls designed to limit discharges to the appropriate standard. A Notice of Intent (NOI) to comply with the general permit for construction activities would be filed with the State Water Resources Control Board (SWRCB), and the required Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented consistent with the requirements of the State Water Resources Control Board (SWRCB). Therefore, **less than significant** impacts would occur relative to violating water quality standards and degrading water quality during construction of the Project.

Operation

The proposed Project would not use or store any appreciable quantities of hazardous chemicals within the Project area during normal operations. Maintenance activities that would be conducted within the Seville 4 Project site would include periodic panel washing and periodic testing of equipment, inspection and repair of project components, and maintenance of on-site roads and drainage systems. Dust generated by maintenance trucks would be controlled during operations by the periodic application of soil binders to exposed soil surfaces. Vegetation growing within the Project area would be periodically removed manually and/or treated with herbicides. Fuel that may be used within the Project area for emergency generators or during maintenance activities would be stored in secondary containment. In addition, minimal waste is expected to be generated during normal operations.

Water required for proposed Project maintenance activities, dust control, solar panel washing and fire protection would be provided by Ranch Oasis Mutual Water Company. Panel washing activities are not anticipated to generate runoff or contain pollutants (e.g. grease, heavy metals) other than dust. Any runoff from panel washing and other maintenance activities would evaporate or percolate through the ground, as a majority of the surfaces in the Seville 4 Project site would remain pervious.

The Project proposes application of advanced, environmentally safe, polymer emulsion dust control palliatives that produce highly effective dust control, erosion control, and soil stabilization. The effect

4.11 HYDROLOGY AND WATER QUALITY

these materials would have on Project site hydrology would depend on the amount and method of application. Dust control palliatives would likely be applied in a manner where the Project site would maintain permeability and infiltration to allow moisture from storm events to infiltrate the soil. The “Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis” (AEI-CASC 2013) analyzed the worst-case scenario of 100 percent runoff in the event that the application of dust and erosion control products caused soils to have zero permeability or not allow moisture from storm events to infiltrate the soil as required by Imperial County. Therefore, **less than significant** impacts would occur relative to violating water quality standards and degrading water quality during operations and maintenance of the proposed Project.

Although no significant impacts with regard to water quality are anticipated to occur, the Project owner and owners of the other Seville Solar projects would be responsible for operation and maintenance of site design, source control, and treatment control BMPs for the common interest lots (Lots A, B and C). These project owners would also be responsible for long-term funding for BMP maintenance. The IID would be responsible for the same activities on Lot D (the IID Switching Station). In addition, the County of Imperial would be granted access to the Project area for inspection to ensure that the owners are properly carrying out the BMPs over the life of the Project.

Reclamation

At the end of the Project’s useful life, the Seville 4 Project site would be decommissioned, and its surface disturbance reclaimed. Reclamation of the Seville 4 Project site may require use of small amounts of water from the Ranch Oasis Mutual Water Company for dust control, equipment maintenance and reclaiming surface soils to approximate the existing desert lands or idle farmland. Given that reclamation activities would occur 30 years in the future (40 years if a 10-year extension is requested and approved), it is anticipated that these activities would be subject to mandatory compliance with water quality standards similar to or more stringent than those currently required. Therefore, **less than significant** impacts would occur relative to violating water quality standards and degrading water quality during Project reclamation.

Mitigation Measures

None required.

Significance after Mitigation

None required.

Result in Depleted Groundwater Supplies or Interfere Substantially with Groundwater Recharge

Impact 4.11.2 The proposed Project would purchase groundwater from the Ranch Oasis Mutual Water Company. The Project would require less water than has historically been required in association with past agricultural operations. The Project includes retention basins that would allow for groundwater recharge. Therefore, impacts to groundwater supplies and recharge are considered **less than significant**.

Construction

The proposed Project intends to purchase water from Ranch Oasis Mutual Water Company during construction. An estimated 145 AF of water would be needed during construction of the proposed Project. Groundwater levels have been recovering since about 2002 corresponding to a reduction in farming and irrigation. (Note: Refer to Section 4.13, Public Services and Utilities for a full discussion of water supply). For the 2004 -2013 period electricity usage for area wells was compiled from energy bills. The reduction in annual electricity usage corresponds well with the increase in groundwater levels for the same time-period indicating that the reduction in on-site pumping has resulted in the recovery of groundwater levels

4.11 HYDROLOGY AND WATER QUALITY

(Todd 2013). This trend indicates that past long-term irrigation practices caused the drawn down of the groundwater levels. Because of the relatively short construction period, Project construction water demand is anticipated to have a **less than significant** impact on long term groundwater supply and groundwater recharge.

Operation

The proposed Project intends to purchase water from Ranch Oasis Mutual Water Company during operation. Water would be needed for domestic use, solar panel washing and fire protection.

A water supply assessment (WSA) was prepared to document the Property's existing and future water supplies and compare them to the area's future water demand including that of the proposed Project. This comparison, conducted for both normal and drought conditions during a 20-year projection, is the basis for an assessment of water supply sufficiency in accordance with the requirements of California Water Code Section 10910 (Todd 2013).

Past and Current Water Demand

There are no active or inactive wells on the Project site. Past water use on the Project site is effectively zero.

Projected Water Demand

It is estimated that up to 145 acre-feet of water would be needed for site grading and dust control over the expected Project construction period. This water would be obtained from the Ranch Oasis Mutual Water Company established in 1994 by Allegretti & Co. Potable drinking water will be supplied by a local provider. Periodic washing of the PV modules (possibly 4 workers every six months) may be needed to remove dust in order to maintain power generation efficiency. Water for washing the PV modules, if required, would be provided by the Ranch Oasis Mutual Water Company. The volume of water to be used for PV module washing and dust control, if needed, is estimated at up to 5-acre-feet per year. Each washing is expected to take less than one week to complete.

Drought Water Demand

During times of drought, future water use is anticipated to remain approximately the same at the Seville 4 Project (145 AF for construction; 5 AF/Y for operations).

Future Water Supply Estimates

A detailed water balance of the Ocotillo-Clark Valley Groundwater Basin was not conducted. However, recovering water levels indicate that the pumping between 2002 and 2011 was within sustainable rates. The lower end of pumping occurred in 2010 and 2011 and was estimated to be approximately of 200 AF/Y to 225 AF/Y. Water levels increased at a steeper angle during this time. Crop acreages and associated groundwater pumping between 2002 and 2009 were greater than during 2010 and 2011 (but not quantifiable with available data), indicating that the 5 AF/Y of water from the Ranch Oasis Mutual Water Company for this Project would be sustainable during normal and drought conditions (Todd 2013).

The on-going monitoring of groundwater levels in the USGS well and the staged implementation of the proposed Project would provide progress checks on the impacts of the Project's water use on groundwater levels. In addition, potential residential water use would be required to stay within the pumping volumes stated in the CUPs required for each well. The CUPs would expressly limit the amount of water which could be pumped from each well; require installation of a flow meter; and require the installation of flow meters and annual water use reports to the Imperial County Planning Department (Todd 2013, pp. 10 and 11). Therefore, Project operations are anticipated to have a **less than significant** impact on groundwater supply and groundwater recharge.

4.11 HYDROLOGY AND WATER QUALITY

Reclamation

Reclamation of the Project may require use of small amounts of groundwater for dust control and equipment maintenance as a part of deconstructing structures and infrastructure. Given that reclamation activities would occur 30 years in the future (40 years if a 10-year extension is requested and approved), it is anticipated that these activities would be subject to mandatory compliance with standards similar to or more stringent than those currently required. Further, Project-related use of groundwater would no longer be required. Reclaiming surface soils to approximate existing idle farmland would not deplete groundwater supplies and would enhance in groundwater recharge capability across the Project site. Therefore, upon reclamation, the Project is anticipated to have a **less than significant** impact on groundwater supply and groundwater recharge.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Result in Substantial Flooding On- or Off-Site/Create or Contribute Runoff Exceeding Capacity

Impact 4.11.3 Implementation of the proposed Project would generate on-site runoff. Existing drainage patterns would be maintained and the Project site would remain largely pervious. Therefore, impacts associated with flooding or exceedance of existing drainage capacity are considered **less than significant**.

Construction

The Project site is made up of low gradient desert lands and idle farmland reverting to open desert. Based on this topography, minimal grading would be necessary during construction of the proposed Project to support the solar field, internal roads, and foundations for inverters. Any remaining crop residues, weedy growth or miscellaneous vegetation would be removed if necessary. Excavation would be required to install underground wiring and cables, electric poles, equipment pads, etc). No excavation would be needed to accommodate PV structures as driven piles would be used. Depth for piles would be determined during final design consistent with the recommendations of the Geotechnical Report for the proposed Project prepared by LandMark (2017). The existing topography would generally be maintained and the Project site would remain largely pervious (e.g. no major paved surfaces or structures). Therefore, **less than significant** impacts to on- and off-site drainage and flooding would occur during construction of the proposed Project.

Operation

As discussed in subsection 4.11.2, Environmental Setting, Tarantula Wash crosses the northeastern corner of Lot 8 in a southeasterly direction. In its natural state, San Felipe Creek previously flowed through the Property in a southeasterly direction; however, the creek has been subsequently diverted to the south west of the Property boundary by a 7-foot high earthen berm. No changes to Tarantula Wash or the San Felipe Creek flows are proposed, and the majority of the Project area would remain pervious throughout Project operations. However, the proposed Project would alter drainage within the Project site through the introduction of solar panels, inverters, etc.

A Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis was prepared for the solar energy complex, including the proposed Project area, to determine the peak storm water flows for the Project site. The Project site currently drains generally to the southeast at a gentle gradient of approximately 0.45 percent. To fully retain the 100-year 24-hour peak flood volume resulting from precipitation falling on the Project area, storm water retention basins are proposed on the southeastern corner of the Project site.

4.11 HYDROLOGY AND WATER QUALITY

The Project site is situated between Tarantula Wash and San Felipe Creek. Two historic branches of the San Felipe Creek are shown to cross northwest to southeast over the central portion and southwestern corner of the Property. In its natural state, San Felipe Creek previously flowed through the southern third of the Property in a southeasterly direction. As described above, San Felipe Creek is currently diverted south of the Property by an existing 7-foot high earthen berm along the western boundary of the Property.

The Project area (Gen-Tie Line Alignment, existing access road extension, Lot D) is located on FEMA FIRM community-panel numbers 06025C0925C and 06025C0950C. The Project site itself is located within FEMA FIRM community-panel number 06025C0950C. Historic portions of San Felipe Creek that previously crossed the Property are within a FEMA area designated as Flood Zone A (100-year flood zone) (**Figure 4.11-2**). Flood Zone A is defined as those areas with a one percent annual chance of flooding. The remainder of the Property is within Flood Zone X, an area of moderate flood hazard, between the limits of the 100-year and 500-year floods. As noted above, an existing 7-foot high earthen flood control berm extending along the western boundary of the Property diverts flows from the historic creek flood zone to the south.

The proposed Project would be designed to comply with the *County of Imperial Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans within Imperial County* (Imperial County 2008d). Specifically, the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis (AEI-CASC 2013) analyzed the worst-case scenario of 100 percent runoff, and proposed retention basins would be sized to capture stormwater runoff as if none of it would penetrate in to the ground. The County requirement to provide 3 inches of detention per tributary acre would be met and detained runoff would infiltrate the underlying soil.

To minimize flood hazards and risk, the Applicant proposes to place all structures and inverters, transformers, and switch gear outside of the 100-year floodplain. No buildings would be constructed below grade.

Any improvements within the Flood Zone A would be designed to comply with the County of Imperial Flood Zone Ordinances and guidelines. Section 91603.01 of Division 16 of Title 9 of the Imperial County Land Use Code designates any lands so identified by the FEMA on the Imperial County Flood Insurance Rate Maps, and any area of land located around the Salton Sea and lying at or below the -220-foot elevation contour, to be areas of special flood hazard. No portion of the Project area lies at or below the -220-foot elevation contour. Section 91604.00 states that "A Development Permit shall be obtained before construction or development begins within any area of special flood hazards or areas of mudslide (i.e., mudflow) established in Section 91603.01. The Project site is not located in an area subject to mudflow.

Based on the proposed drainage described above, and the Project's mandatory compliance with regulations regarding hydrology and drainage at the Project site, implementation of the proposed Project would not have a substantial impact on the hydrology of the surrounding area. Peak flow runoff from the Project site would be directed to and infiltrated in designated retention basins and/or percolate into the ground, such that there would be no increase in on-site or off-site flooding potential. Therefore, on- and off-site drainage and flooding impacts would be **less than significant** during Project operations.

Reclamation

Reclamation of the Project would consist of deconstructing structures and infrastructure and backfilling and compacting the on-site retention basins. As the Project site is relatively flat, reclamation of the land to approximate existing low gradient desert or idle farmland would not involve major topographic changes that would substantially alter off-site drainage. In addition, removal of structures associated with the proposed Project would increase the amount of pervious surface area formerly covered with solar

4.11 HYDROLOGY AND WATER QUALITY

facilities. Therefore, a **less than significant** impact would occur related to on- and off-site drainage and flooding upon reclamation of the Project site to its end state of approximate low gradient desert or idle farmland.

Mitigation Measures

None required.

Significance after Mitigation

Not applicable.

Result in Substantial Erosion or Siltation On- or Off-site

Impact 4.11.4 Implementation of the proposed Project could generate erosion during construction. Compliance with the provisions of the Construction General Stormwater Permit and Stormwater Pollution Prevention Plan would address erosion or siltation on- or off-site. Therefore, this impact is considered **less than significant**.

Construction

Because the Project area would require minimal earthwork associated with site preparation and installation of PV structures, the potential for erosion and sediment is limited. Soil erosion, sedimentation and pollutants in runoff (e.g. grease, oils, sediment, and heavy metals) would be controlled during construction in accordance with the Construction General Stormwater Permit, which regulates storm water discharges from construction sites that disturb one or more acres of land. A SWPPP would also be required and must be prepared by a Qualified SWPPP Developer (QSD) and implemented by a Qualified SWPPP Practitioner (QSP). Soil erosion and sedimentation during construction would be controlled through compliance with the SWPPP. The SWPPP must be designed to ensure that the following requirements are met:

- All pollutants and their sources (including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity) are controlled;
- Where not otherwise required to be under a RWQCB permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;
- Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges from construction activity;
- Calculations and design details as well as BMP controls for site run-on are complete and correct, and;
- Stabilization BMPs installed to reduce or eliminate pollutants after construction is completed

Typical soil erosion and sedimentation BMPs expected to be employed in the SWPPP include, but are not limited to, straw wattles, check dams, fabric blankets, and silt fencing. Based on implementation of the requirements summarized above, construction of the proposed Project would result in a **less than significant impact** with regard to soil erosion, sedimentation or runoff pollutants during Project construction.

Additionally, Project construction would incorporate a dust control plan in conformance with ICAPCD requirements to address construction and earthmoving activities. It would include information on the dust suppressants to be applied and the specific surface treatment(s) and/or control measures to be utilized to control track-out where unpaved and/or access points join paved public access roads. These measures would reduce airborne dust and the mobilization of soil particles by water. The effect these

4.11 HYDROLOGY AND WATER QUALITY

materials would have on Project area hydrology would depend on the amount and method of application. It is expected that they would be applied in a manner where the Project site would maintain its permeability and infiltration so moisture from storm events could infiltrate the soil. Therefore, a **less than significant** impact would occur in regard to erosion and siltation during construction of the proposed Project.

Operation

The Project is not anticipated to degrade water quality based on the required stormwater permits as well as BMPs. The proposed Project would not generate substantial amounts of runoff. Water used for panel washing would continue to percolate through the ground as a majority of the surfaces on the Project site would remain pervious. Thus, the proposed Project would not substantially alter the existing drainage pattern of the site, substantially increase the rate of runoff, or contribute runoff water which would exceed the capacity of proposed retention basins. Measures are proposed that include the application of chemical stabilization agents (soil binders) to exposed soil surfaces. To ensure that even if the application of dust and erosion control products did result in zero permeability or infiltration into the soil, the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis (AEI-CASC 2013) analyzed the worst-case scenario of 100 percent runoff. Imperial County requires 100 percent retention of the runoff associated with the site assuming zero percolation into the ground. The on-site retention basins are sized to capture the stormwater as if none of it would penetrate into the ground. Consequently, any erosion associated with stormwater runoff would be captured in the on-site retention basins. Therefore, a **less than significant** impact would occur in regard to erosion and siltation during Project operations.

Reclamation

Reclamation of the Project site may require use of small amounts of water for dust control and equipment maintenance as a part of deconstructing structures and infrastructure and reclaiming surface soils to approximate existing low gradient desert or idle farmland. Given that reclamation activities would occur approximately 30 years in the future (40 years if a 10-year extension is requested and approved), it is anticipated that these activities would be subject to mandatory compliance with standards similar to or more stringent than those currently required. Therefore, upon reclamation, the Project is anticipated to have a **less than significant** impact related to erosion and siltation.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Result in Placement of People or Structures within an Area Subject to Flood Hazards

Impact 4.11.5 Implementation of the proposed Project would result in development within areas identified by FEMA as Flood Zone A. Project construction and operations would not result in the placement of habitable structures or people within the flood zone. Construction and operations would require the presence of construction workers and employees within Flood Zone A. Therefore, this impact is considered **potentially significant**.

Construction

Portions of Gen-Tie Line would be constructed within areas designated as Flood Zone A (100-year flood zone). These activities would be temporary in nature, would not involve the placement of habitable structures within the Flood Zone A, and would be designed and implemented in compliance with County

4.11 HYDROLOGY AND WATER QUALITY

of Imperial requirements. The Project site completely avoids Zone A and is within Zone X (an area of moderate flood hazard, between the limits of the 100-year and 500-year floods). Areas of the Property that are designated as Flood Zone A are blocked from runoff by an existing 7-foot high berm that would remain in place and be maintained during Project construction and operation. However, portions of the Gen-Tie Line and extension of the existing access road would temporarily require the presence of construction equipment and workers within Flood Zone A. Therefore, impacts associated with placing people in a 100-year floodplain during Project construction are considered **potentially significant**.

Operation

Historic portions of San Felipe Creek that crossed the Project area, specifically the Gen-tie Line alignment, are within FEMA Flood Zone A (100-year flood zone). Flood Zone A is defined as those areas with a one percent annual chance of flooding (and a 26% chance of flooding over the life of a 30-year project [40 years if a 10-year extension is requested and approved]). The remainder of the Property is within Flood Zone X (an area of moderate flood hazard, between the limits of the 100-year and 500-year floods). As discussed above, an existing 7-foot earthen berm to the west of the Property diverts flows from San Felipe Creek to the south away from the Project site.

The proposed Project does not include a residential component, so no homes would be within a 100-year flood zone. To minimize flood hazards and risk, all habitable structures would be located outside of the FEMA 100-year flood zone. In addition, all habitable structures, transformers, and switch gear would be placed on foundations raised above the projected maximum flood levels. The only project features to be constructed within Flood Zone A would be the extension of the existing access road and portions of the Gen-Tie Line. The existing berm which currently diverts off-site flow around the Property would be maintained, but any flows which breach the berm(s) would be allowed to flow unimpeded across the Project site and under the solar panels. However, on-going maintenance of Project area access roads, berms and other non-habitable Project components would require the presence of equipment and employees within Flood Zone A. Therefore, impacts associated with placing people in a 100-year floodplain during Project operations are considered **potentially significant**.

No dams or levees are in the vicinity of the Project area, so no impact would occur with regard to exposing people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam (PETRA 2012a, p.8).

Therefore, based on proposed Project design and mandatory compliance with regulations, impacts associated with placing structures in a 100-year floodplain during project operations are considered **less than significant**.

Reclamation

Reclamation of the Project site would include dismantling and demolition of above-ground structures; concrete removal; removal and dismantling of underground utilities; excavation and removal of soil; and final site contour. As part of decommissioning, all solar equipment and other on-site facilities (chain-link fence, gates, posts and concrete footings, solar field, electrical switchyard and Seville 4 Substation, Gen-Tie-Line, water tanks, foundations) would be removed. Reclamation of the site to approximate existing low gradient desert or idle farmland would likewise not place any habitable structures or people within the 100-year floodplain. Therefore, upon reclamation, no structures or people would be located in the 100-year floodplain, and a **less than significant impact** related to flood zones would occur.

Mitigation Measures

MM 4.11.5 Construction and operation activities within Flood Zone A shall be halted during flash flood warnings and events or any other flooding events as predicted by local weather

4.11 HYDROLOGY AND WATER QUALITY

forecasts or the National Weather Service to which the Project site is subject. Upon notification of potential flood events in the Project vicinity, any non-stationary equipment and personnel located within Flood Zone A shall be relocated outside of the flood zone until such time as the threat of flooding has passed.

Timing/Implementation: During potential flood events throughout Project construction and operation/Based on local weather forecasts and the National Weather Service.

Enforcement/Monitoring: Imperial County Department of Planning and Development Services.

Significance After Mitigation

Implementation of mitigation measure MM 4.11.5 requires that construction and operation activities be halted during flood events, and all personnel be relocated out of the flood zone for safety purposes. Implementation of mitigation measure MM 4.11.5 would reduce potential impacts related to the presence of people within the flood zone to a level of **less than significant**.

4.11.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

A. CUMULATIVE SETTING

The cumulative setting for groundwater resources is in the Ocotillo Valley Groundwater Basin (Groundwater Basin Number 7-25), which covers 223,000 acres (348 square miles) underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. Water storage in the groundwater basin is approximately 6,250,000 AF. The basin is bounded by the Santa Rosa Mountains on the north and northeast, the Coyote Creek and Superstition Mountain faults on the west and south, and the Salton Sea and surface drainage divides on the east. Clark Valley drains internally toward Clark (dry) Lake and the remainder of the valley drains to the Salton Sea (DWR 2004). Cumulative projects within the groundwater basin include any existing, recently approved, proposed, and reasonably foreseeable development envisioned by the Imperial County General Plan. A list of large scale proposed, approved and reasonably foreseeable renewable energy projects is provided in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used, of this Draft EIR.

B. CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Hydrology and Water Quality

Impact 4.11.6 The proposed Project, in combination with other large scale proposed, approved and reasonably foreseeable renewable energy projects in the Salton Sea watershed would contribute to the cumulative effects of changes in runoff patterns ultimately discharging to the Salton Sea, degradation of water quality, and reduction of groundwater supply. This impact is considered **less than cumulatively considerable**.

Construction

Reduction in Quantity of Runoff to the Salton Sea

As described above, surface waters in the Imperial Valley ultimately drain into the Salton Sea via the New and Alamo Rivers as well as via irrigation drains and canals. Until recently, the amount of water entering the Salton Sea was roughly balanced by the amount of water evaporating from its surface. Due to increased demand for water supplies in the region and recent IID water transfer agreements, increasing amounts of water are being consumed in Imperial Valley. In addition, water is also being transferred out of the Valley to population centers such as San Diego County, thus reducing inflows to the Salton Sea.

4.11 HYDROLOGY AND WATER QUALITY

Construction of the proposed Project would not utilize surface water, and the Project area is not served by IID irrigation drains or canals. The Project does not propose changes to San Felipe Creek or Tarantula Wash, and runoff flow through these areas would not be impeded by Project construction. Therefore, the reduction of runoff to the Salton Sea during Project construction is not expected to combine with similar impacts of large scale proposed, approved and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Likewise, cumulative impacts associated with construction-phase runoff reduction would be **less than cumulatively considerable**.

Reduction in Water Quality

Implementation of the proposed Project, along with other projects listed in Table 3.0-1 could contribute to a cumulative reduction in surface water or groundwater quality. However, nearly all agricultural cultivation on the Project site ceased in the last decade, thereby reducing the use of agriculture-related pesticides. Agricultural pesticide residue remains in on-site soils (in general, the pesticide residue levels typically found within agricultural soils are less than 50 percent of USEPA preliminary remediation goal) and Project construction would require minimal use of materials that could adversely affect water quality. It is anticipated that since the level of remaining pesticides is relatively low, and use of agricultural pesticides would no longer be required, remaining residue would be filtered through percolation into the ground. As all Project-generated runoff would be contained on site, the Project's construction phase contribution to decreases in water quality would be **less than cumulatively considerable**.

Reduction in Groundwater Quantity

Water for Project construction would be obtained from the Ranch Oasis Mutual Water Company. The Project area is within the Ocotillo Valley Groundwater Basin (Groundwater Basin Number 7-25), underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. Water storage in the groundwater basin is approximately 6,250,000 AF (DWR 2004).

As discussed above, the WSA prepared for the Property indicated that the proposed Project use of 10 AF/Y would be within sustainable levels during both normal and drought conditions. The closest project identified in Table 3.0-1 is the Ocotillo Wells Solar Project located just west of the Imperial County/San Diego County line within San Diego County. However, this Project is not located within the Ocotillo Valley Groundwater Basin. No other projects were identified within the Project vicinity (Todd 2013). Further, both stormwater and excess water for proposed Project construction are required to be 100 percent retained on the Project site by the County of Imperial. Stormwater or any excess water for Project construction would percolate back into the groundwater basin. The County's 100 percent on-site retention requirement applies to all projects located or proposed within the groundwater basin. Therefore, the proposed Project's construction-phase contribution to decreases in groundwater supply would be **less than cumulatively considerable**.

Operation and Maintenance

Reduction in Quantity of Runoff to the Salton Sea

As described above, surface waters in the Imperial Valley ultimately drain into the Salton Sea via the New and Alamo Rivers as well as via irrigation drains and canals. Until recently, the amount of water entering the Salton Sea was roughly balanced by the amount of water evaporating from its surface. Due to increased demand for water supplies in the region and recent IID water transfer agreements increasing amounts of water are being consumed in the Imperial Valley as well as transferred out of the Valley to population centers such as San Diego County, thus reducing inflows to the Salton Sea. Operation and maintenance of the proposed Project would not utilize surface water, and the Project area is not served

4.11 HYDROLOGY AND WATER QUALITY

by IID irrigation drains or canals. The Project does not propose changes to San Felipe Creek or Tarantula Wash, and runoff flow through these areas would not be impeded by Project operation. Therefore, reduction of runoff to the Salton Sea during Project operation is not expected to combine with similar impacts of large scale proposed, approved and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Therefore, cumulative impacts associated with runoff reduction during Project operation would be **less than cumulatively considerable**.

Reduction in Water Quality

Implementation of the proposed Project, along with other projects listed in Table 3.0-1 would contribute to a cumulative reduction in surface water or groundwater quality. However, nearly all agricultural cultivation at the Property had ceased during or prior to 2011, thereby reducing the use of agriculture related pesticides. Agricultural pesticide residue remains in on-site soils (in general, the pesticide residue levels typically found within agricultural soils are less than 50 percent of USEPA preliminary remediation goal) and Project operation and maintenance would require minimal use of materials that could adversely affect water quality. It is anticipated that since the level of remaining pesticides is relatively low, and use of agricultural pesticides would no longer be required, remaining residue would be filtered through percolation into the ground. As all Project-generated runoff would be contained on-site, the Project's contribution to decreases in water quality would be **less than cumulatively considerable** during operation.

Reduction in Groundwater Quantity

Project water would be sourced from Ranch Oasis Mutual Water Company. The Project area is within the Ocotillo Valley Groundwater Basin (Groundwater Basin Number 7-25), underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. Water storage in the groundwater basin is approximately 6,250,000 AF (DWR 2004).

As discussed above, the WSA prepared for the Property indicated that the proposed purchase of 10 AF/Y would be within sustainable levels during both normal and drought conditions. The closest project identified in Table 3.0-1 is the Ocotillo Wells Solar Project located just west of the Imperial County/San Diego County line within San Diego County. However, this Project is not located within the Ocotillo Valley Groundwater Basin. No other projects were identified within the Property vicinity (Todd 2013). Further, both stormwater and excess water for proposed Project operation and maintenance are required to be 100 percent retained on the Project site by the County of Imperial. Stormwater or any excess water for Project activities would percolate back into the groundwater basin. The County's 100 percent on-site retention requirement applies to all projects located or proposed within the groundwater basin. Therefore, the proposed Project's contribution to decreases in groundwater supply would be **less than cumulatively considerable** during operation.

Reclamation

Reduction in Quantity of Runoff to the Salton Sea

Reclamation of the proposed Project would not utilize surface water, and the Project area is not served by IID irrigation drains or canals. The Project does not propose changes to San Felipe Creek or Tarantula Wash, and runoff flow through these areas would not be impeded by Project operation and maintenance. Therefore, the Project's reclamation-phase reduction of runoff to the Salton Sea is not expected to combine with similar impacts of large scale proposed, approved and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Therefore, cumulative impacts associated with runoff reduction during Project

4.11 HYDROLOGY AND WATER QUALITY

reclamation would be **less than cumulatively considerable**. Likewise, the Project site's reclaimed end state of low gradient desert or idle farmland would not generate runoff to the Salton Sea. If the site were reestablished as active irrigated farmland, runoff flows to the Salton Sea would increase.

Reduction in Water Quality

Implementation of the proposed Project, along with other projects listed in Table 3.0-1 would contribute to a cumulative reduction in surface water or groundwater quality. However, by the time reclamation activities would occur (i.e. 30 years in the future [40 years if a 10-year extension is requested and approved]) it is anticipated any remaining agriculture related pesticides would be minimal. Further, all reclamation activities would implement appropriate BMPs and other measures consistent with applicable County and RWQCB requirements in effect at the time of reclamation. Thus, reclamation activities would result in a **less than cumulatively considerable** contribution to water quality reduction impacts. Likewise, the site's reclamation to existing conditions of low gradient desert or idle farmland would not result in a reduction in water quality. However, if the reclaimed site were reestablished as active farmland, pesticide use and soil disturbance may be generated similar to levels historically occurring. Water quality would be mitigated through adherence to County and RWQCB requirements.

Reduction in Groundwater Quantity

It is anticipated that water for Project reclamation activities would be sourced from Ranch Oasis Mutual Water Company. The only nearby project identified in Table 3.0-1 is the proposed Ocotillo Wells Solar Project located just west of the Imperial County/San Diego County line within San Diego County. However, this Project is not located within the Ocotillo Valley Groundwater Basin (Todd 2013). Stormwater or any excess water for reclamation activities would percolate back into the groundwater basin. Further, both stormwater and excess groundwater pumped for proposed Project reclamation activities would be required to comply with the County's 100 percent on-site retention requirement and other regulatory requirements applicable at the time of reclamation. Therefore, the proposed Project's reclamation-phase contribution to decreases in groundwater supply would be **less than cumulatively considerable**. However, if the reclaimed site were reestablished as active farmland, groundwater use may be generated similar to levels historically occurring. Groundwater supply would be mitigated through adherence to applicable IID, County and RWQCB requirements.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.