5.15 Water Resources

This section provides a discussion of the existing water resources near the Rice Solar Energy Project (RSEP) site and assesses the potential effects of project construction and operations on water resources. Specifically, this chapter discusses the RSEP and its potential effects in the following areas:

- Water supply and quality
- Disposal of wastewater
- Compliance with state water policies
- Stormwater discharge
- Flooding

Section 5.15.1 discusses the existing hydrologic environment. Potential environmental effects of the RSEP construction and operation on water resources are discussed in Section 5.15.2. A discussion of cumulative project effects is presented in Section 5.15.3. Section 5.15.4 discusses proposed mitigation measures that will prevent significant impacts. Section 5.15.5 presents applicable laws, ordinances, regulations, and standards (LORS) related to water resources. Section 5.15.6 describes permits that relate to water resources, lists contacts with relevant regulatory agencies, and presents a schedule for obtaining permits. References cited are listed in Section 5.15.7.

5.15.1 Affected Environment

5.15.1.1 Water Features, Rainfall, and Drainage

Under the Water Quality Control Plan for the Colorado River Basin Regional Water Quality Control Board (RWQCB), the project site is in the Rice hydrologic unit in the Hayfield Planning Area which lies primarily in Riverside County and covers approximately 1,860 square miles. The Hayfield Planning Area is in the Sonoran Desert, with barren mountains and valleys with dry lake beds at the lower elevations (State Water Resources Control Board [SWRCB], 1994. Under the State Water Plan, the project site is located in the Rice Detailed Analysis Unit of the Chuckwalla Planning Area (California Department of Water Resources [DWR], 2004. The boundaries for the Hayfield and Chuckwalla Planning areas, and of the Rice hydrologic unit and the Rice Valley Detailed Analysis Unit are identical.

The RSEP site is located within the Rice Valley and has a very slight slope (less than 2 percent overall). This parcel of private land is bordered by State Route (SR) 62, the Arizona and California Railroad, and the Colorado River Aqueduct (all three run parallel to each other) on the north, private land to the west, and Bureau of Land Management (BLM) land to the east and south. The BLM manages most of the surrounding lands, with some private holdings interspersed. The site generally slopes from north to south with elevations of approximately 920 to 750 feet above mean sea level. The property is comprised of creosote bush scrub vegetation. Average annual precipitation ranges from about 3 inches at the lower elevations, to 8 inches in the higher elevations of the mountains west of the Rice Valley (SWRCB, 2006; DWR, 2004). Surface runoff from the mountains drains toward the center of the valley, except in the eastern part of the valley, where Big Wash drains to the Colorado River.

Average annual precipitation in the Chuckwalla Planning Area is reported as 430,000 acre-feet (af). Average annual runoff for the area is 5,000 af and occurs primarily during thunderstorms. There are no perennial streams in the planning area and most of the moisture from rain is lost through evapotranspiration. The Colorado River Aqueduct flows in an east-west direction within 1,000 feet north of the RSEP site. Because the aqueduct is a manmade feature, is concrete lined within the hydrologic unit, and is a controlled feature, it does not affect the natural hydrology of the landscape (Figure 5.15-1) (SWRCB, 2006). Beneficial uses for the Rice Hydrologic Unit include municipal and domestic supply; this indicates only that at least one of the aquifers in the unit currently supports a municipal and domestic beneficial use (SWRCB, 2006).

Table 5.15-1 provides average historical rainfall from the meteorological station at the Blythe CA weather station.

TABLE 5.15-1
Rainfall Near the Proposed Project Site (1961-1990)

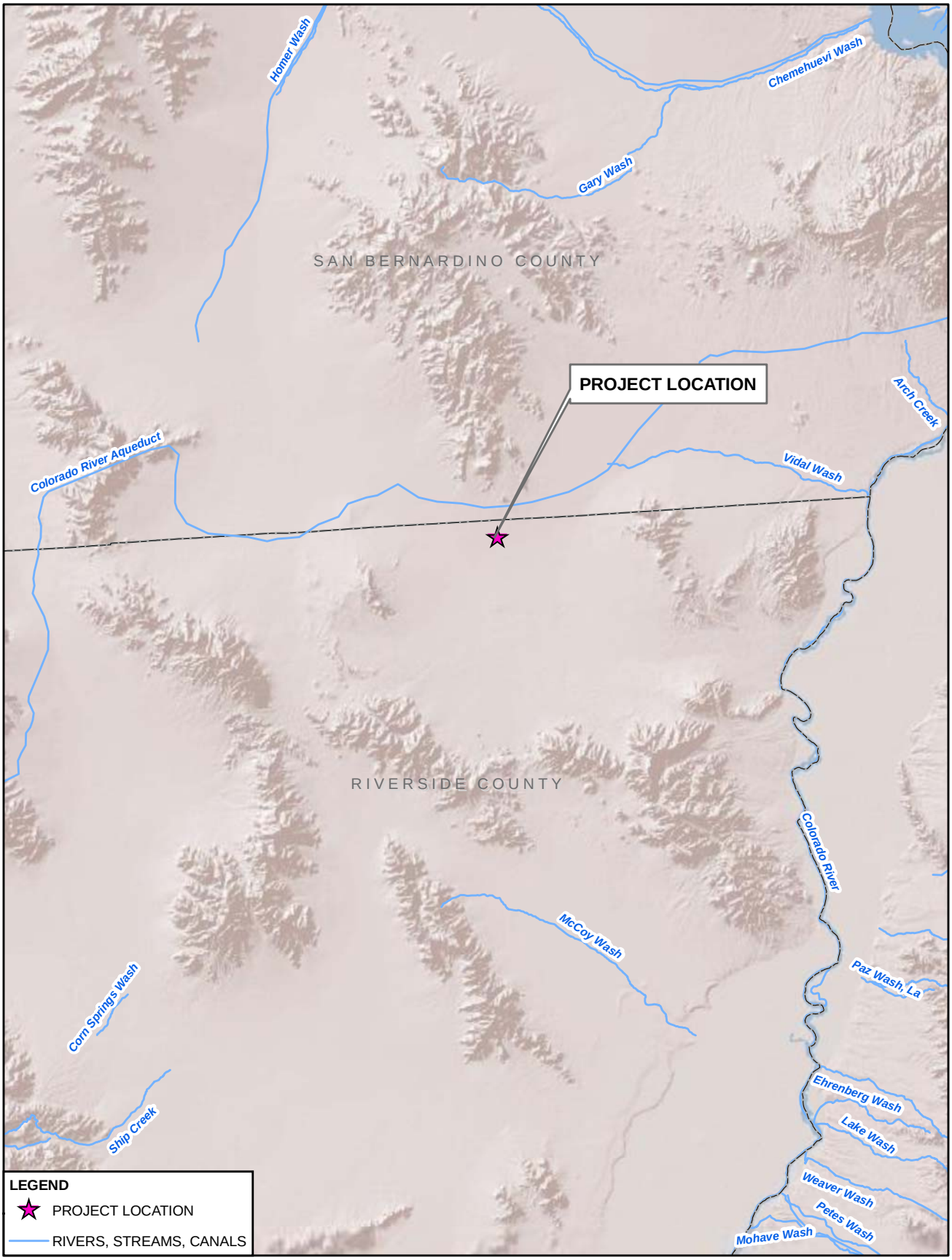
Precipitation (inches)	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average	3.6	0.5	0.4	0.4	0.2	0.0	0.0	0.2	0.6	0.4	0.3	0.2	0.4
Maximum	7.0	1.7	1.8	1.9	3.0	0.1	0.1	2.4	2.1	2.1	1.9	1.8	3.3
Minimum	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Western Regional Climate Center, 2008

The mean annual precipitation (1961 to 1990) is 3.6 inches per year. The minimum and maximum annual precipitation for the period of record is 1.1 inches and 7.0 inches, respectively. According to the National Oceanic and Atmospheric Administration Atlas 14 for the Southeastern California, between 3 and 3.5 inches of rain fall in the 100-year, 24-hour storm event, and extreme events in the nearby area have recorded more than 10 inches of rain in 24 hours.

5.15.1.2 Groundwater

The RSEP site is located in the north central portion of the Rice Valley Groundwater Basin, a desert basin with relatively limited groundwater recharge and little existing groundwater use (Figure 5.15-2). The groundwater basin underlies Rice Valley in northeast Riverside and southeast San Bernardino counties. Elevation of the valley floor ranges from approximately 675 feet above sea level near the center of the valley to about 1,000 feet along the outer margins. The basin is bounded by non-water–bearing rocks of the Turtle Mountains on the north, the Little Maria and Big Maria Mountains on the south, the Arica Mountains on the west, and the West Riverside and Riverside Mountains on the east. Low-lying alluvial drainage divides delineate the basin boundaries on the northwest and northeast, and the Colorado River bounds a portion of the basin on the east. Maximum elevations of the surrounding mountains are about 2,000 feet in the Arica Mountains; about 3,000 feet in the Big Maria Mountains; and 5,866 feet at Horn Peak in the Turtle Mountains (DWR, 2004).



Notes:
1. U.S Geological Survey along with U.S Environmental Protection Agency, 2006.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

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FIGURE 5.15-1
SURFACE WATER RESOURCES
RICE SOLAR ENERGY PROJECT
RIVERSIDE COUNTY, CALIFORNIA

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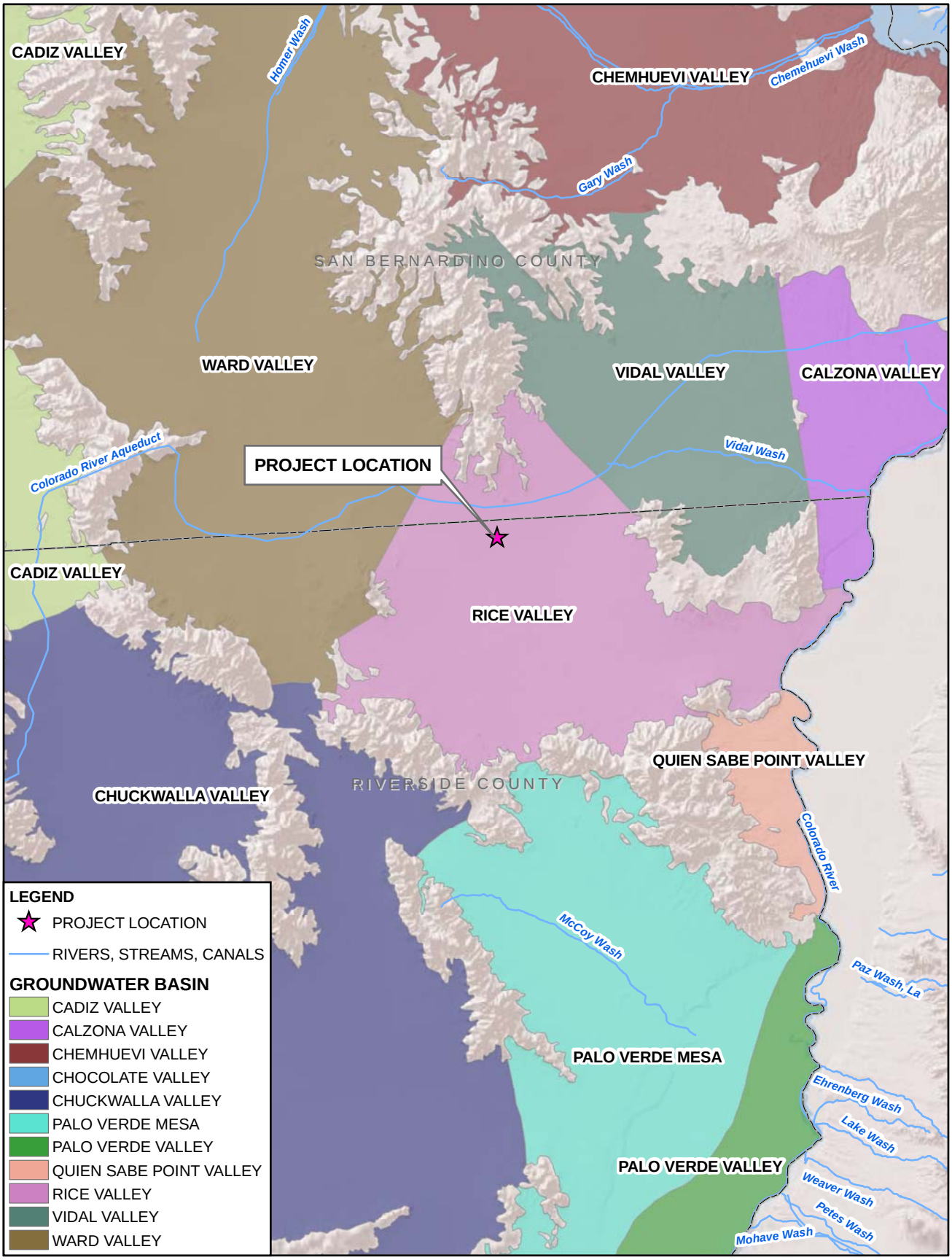

Notes:
1. The Department of Water Resources, Groundwater Basin Map, 2004

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

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FIGURE 5.15-2
GROUNDWATER RESOURCES
RICE SOLAR ENERGY PROJECT
RIVERSIDE COUNTY, CALIFORNIA

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Groundwater-bearing deposits of the Rice Valley Groundwater Basin are described below. These deposits are underlain by nonwater–bearing metamorphic and igneous intrusive rocks of pre-Tertiary age that form the basement complex. The non-water–bearing rocks may include undifferentiated volcanic rocks possibly of Tertiary or Quaternary age. These rocks are considered non-water bearing (DWR, 1963). The depth to bedrock beneath the site is estimated to be approximately 1,640 feet (WorleyParsons, 2009; Bedinger, et al., 1989).

5.15.1.2.1 Quaternary Alluvium

Alluvium is the water-bearing material that forms the basin and includes unconsolidated Holocene age deposits and overlying unconsolidated to semi-consolidated Pleistocene deposits (DWR, 1954; DWR, 1963). Holocene alluvium is composed of poorly sorted gravel, sand, silt, and clay that typically lie above the water table (DWR, 1963). Pleistocene alluvium is composed of well-sorted sand, interbedded with gravel, silt, and clay that, where saturated, yields water freely to wells (DWR, 1963).

Site-specific investigations suggest that the alluvium can be divided into two units, the upper alluvium and the lower alluvial aquifer (WorleyParsons, 2009; Appendix 5.15A). The saturated upper alluvium occurs from approximately 80 feet below ground surface (bgs) to 600 feet bgs, and the lower alluvial aquifer occurs from approximately 600 feet bgs to 810 feet bgs. The upper alluvium is comprised of clays and sands, with finer grained materials dominating. The lower alluvium is comprised of sands, gravels, and clays, with coarser grained materials dominating.

5.15.1.2.2 Pliocene Bouse Formation

The regionally extensive Pliocene Bouse Formation has been identified as underlying the Quaternary Alluvium in the area, including the Ward Valley Groundwater Basin to the northwest, the Chuckwalla Valley Groundwater Basin to the south, and the Palo Verde Mesa Groundwater Basin to the southeast (Wilson and Owen-Joyce, 1994). Erosional remnants of the Bouse Formation are present in a belt approximately 20 to 30 miles wide extending along the Lower Colorado River for approximately 190 miles from Lake Mohave to near Yuma, Arizona. Although the Bouse Formation is not specifically reported to underlie the Rice Valley, its presence has been inferred based on the above data and site-specific investigation (WorleyParsons, 2009).

The Bouse Formation includes a marine to brackish-water estuarine sequence deposited in an arm of the proto-Gulf of California (Metzger, 1968; Wilson and Owen-Joyce, 1994). It is reported to be composed of a basal limestone (marl) overlain by interbedded clay, silt, sand, and tufa. The top of the Bouse Formation is relatively flat, with a reported dip of approximately 2 degrees south of Cibola (Metzger et al., 1973).

Natural recharge has been estimated at approximately 500 acre-feet per year (afy). This is a "Type C" water budget, meaning that little information is known about the water budget components in the basin. Recharge to the basin is derived primarily from the infiltration of runoff through alluvial deposits at the base of the surrounding mountains. Additional recharge may be subsurface inflow from Ward Valley (DWR, 1963).

Groundwater moves toward the center of the basin and northeast into Vidal Valley Groundwater Basin (Thompson, 1929; DPR, 1954). Rice Valley does not contain a wet playa, and underflow out of the basin is the only known avenue of natural discharge. There is very

little groundwater development in the basin. In 1952, groundwater extractions were estimated at about 1 afy (DWR, 1975). Steinemann (1989) reported that there is virtually no groundwater development in the basin. Information summarized by DWR for the California Water Plan indicates that the Rice Valley had no agricultural development as of 2001 (DWR, 2005). Review of aerial photography revealed no current indication of irrigated agricultural land. Reconnaissance of reported well locations within 5 miles of the site indicates the wells are either collapsed, destroyed, and/or disused (WorleyParsons, 2009).

Groundwater levels near the center of the basin remained stable from 1962 through 1983 and depth to water ranged from about 150 to 153 feet bgs. In the southwestern part of the basin, water levels from 1962 through 1984 ranged between 285 to 286 feet bgs (DWR, 2004).

Groundwater character is sodium chloride-sulfate or sodium chloride-bicarbonate. Five wells in the basin tested for groundwater quality show total dissolved solids (TDS) content levels ranging from 662 to more than 2,600 milligrams per liter (mg/L) (Metropolitan Water District, 2001). The average TDS concentration is about 1,900 mg/L. At one well, fluoride content was 1.8 mg/L and boron content was 2.8 mg/L, which may indicate local impairment of the groundwater. Chloride, TDS, fluoride, and sulfate concentrations are high for domestic use and boron levels are high for irrigation use (DWR, 1975). Additional information from site-specific sampling of water quality is summarized later in this section.

The Rice Valley Groundwater Basin is not adjudicated or managed by a water master or special district. The project can exercise overlying water rights for its water supply by obtaining a well installation permit from the Riverside County Department of Health Services.

5.15.1.3 Flooding Potential

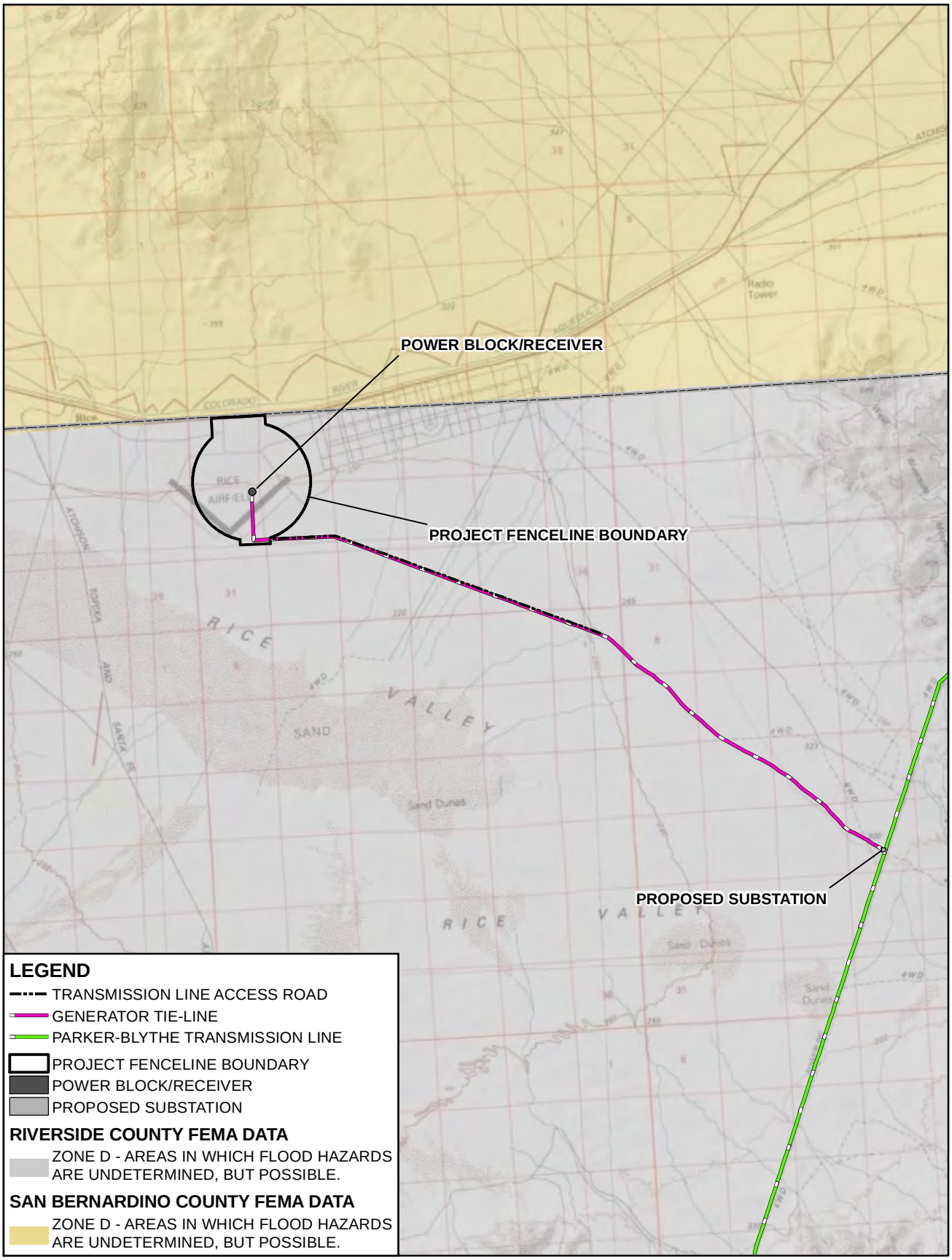
The RSEP footprint, including the utility lines, lies entirely in an area designated by the Federal Emergency Management Agency (FEMA) as Zone D. Zone D designation is used for areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted (FEMA, 2008) (Figure 5.15-3). Refer to Appendix 5.15C, Conceptual Drainage Study, for a discussion of flood management related to the project.

5.15.1.4 Water Supply and Use

This section describes the quantity of water required, the sources of the water supply, water treatment requirements, and water quality of the source and treated water. A water balance diagram for the plant is included as Figures 2.1-5B and 2.1.5B.

5.15.1.4.1 Process Water

Raw process water will be supplied from two onsite wells. It will be treated and used for steam-cycle makeup, heliostat washing, liquid salt system testing during commissioning, boiler makeup, and domestic needs. Each well will have sufficient capacity to supply water for the plant needs throughout the expected 30-year operational life of the plant. Of the two wells, one will be the primary source and one will be the secondary source. The amount of process water used would no more than 180 afy, assuming a 37 percent operating capacity factor (3,286 hours).



SOURCE: Federal Emergency Management Agency Flood Insurance Rate Map for Riverside and San Bernardino County, 2008.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

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FIGURE 5.15-3
FEMA FLOOD ZONES
RICE SOLAR ENERGY PROJECT
RIVERSIDE COUNTY, CALIFORNIA

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Two wells exist at the site. Rice 1 is completed in the upper alluvium and is not suitable as a source of water for the project because of low yield and high TDS (Section 6.6). Rice 2 is completed in the lower alluvial aquifer and underlying Bouse Formation and, with modifications, can be developed as an adequate water supply for the project (Appendix 5.15A). A single well is not sufficient to meet construction water demand; therefore, one new well will be drilled early in the construction phase to supplement Rice 2. Groundwater will be put through a pretreatment system and further purified for use as boiler makeup water and for pressure-washing of the heliostat field. Table 5.15-2 lists groundwater quality for the two existing wells at the RSEP site. The groundwater quality for Rice 2 is considered representative of the project water supply.

Heliostat wash water will be drawn from the RSEP groundwater wells. There will be approximately 260 days of washing per year (weekdays only), for a total of 37 washings per year, per heliostat. The maximum number of washings per year would be 52. The annual average volume of water required for heliostat washing is expected to be 39 afy, and the maximum amount would be approximately the same (see Figures 2.1-5A and 2.1-5B).

Hydrotesting the liquid salt system requires flushing of the salt tanks prior to the start of operation. Other hydrotesting would require significantly less water. The amount of water used in this process will be 7,000,000 gallons, which is the capacity of one tank (5,600,000 gallons) plus an additional 25 percent.

The boiler blowdown stream consists of water purged continuously from the boiler during normal operations to control the concentration of dissolved solids, silica, and pH in the boiler following accepted practices and guidelines for corrosion control. Boiler blowdown flow is purged directly from the boiler steam drum and discharged to a flash tank. Demineralized water is injected into the blowdown flow to limit the temperature of (quench) the blowdown water to prevent rapid flashing and over-pressurization when the blowdown water reaches the flash tank, which is vented to atmospheric pressure. The flash tank collects and retains a minimum volume of water and drains excess volumes in equilibrium, discharging to the evaporation ponds in a relatively continuous flow. When the power plant is operating normally under steady-state conditions, cycle feedwater makeup rate and boiler blowdown rate are equal. Boiler blowdown flows are estimated at 31 afy. The rate of consumption on this basis is approximately 52 gallons per minute for an operational year of 3,286 hours. Flows may vary during transient conditions such as startup, load changes, and shut down.

5.15.1.4.2 Domestic and Sanitary Water Use

Sanitary waste streams will be generated at the administrative building near the entrance to the plant in the north and at the operations building and maintenance areas within the power block. Each area will have a kitchen and the required quantity of toilets and or showers to support the crew size. At these locations, a septic tank and leach field will be used to capture and treat the flows. Two permanent leach fields will be constructed, one near the power block and one near the administration building area at the north end of the field. When required, the septic tank (solids holding tank) will be cleaned out by a vacuum truck, and the wastes will be disposed of at a licensed facility.

TABLE 5.15-2
Groundwater Water Quality from Rice 1 and 2

		Units	Well 1		Well 2				
		Sample Date	**7/2/2008**	**2/13/2009**	**8/21/2008**	**2/11/2009**	**2/13/2009**	**2/13/2009**	**2/12/2009**
Analyte	**Analytical Method**	**Sample Depth (feet bgs)**	**Whole Well**	**310**	**Whole Well**	**650**	**750**	**850**	**950**
General Minerals									
Alkalinity (hydroxide)	USEPA 310.1	mg/L	—	<0.400	—	<0.400	<0.400	<0.400	<0.400
Alkalinity, carbonate	USEPA 310.1	mg/L	—	<0.400	—	16.0	<0.400	<0.400	<0.400
Alkalinity, bicarbonate	USEPA 310.1	mg/L	—	101	—	54.0	72.4	75.6	52.0
Alkalinity, total	USEPA 310.1	mg/L	—	101	—	70.0	72.4	75.6	52.0
Chloride	SM 4500-Cl- B	mg/L	—	938	—	684	508	618	610
Fluoride	USEPA 340.1	mg/L	—	2.70	—	—	3.05	7.00	1.15
Nitrate (as nitrogen)	USEPA 300.0	mg/L	—	—	—	2.40	—	—	—
	USEPA 353.3	mg/L	—	3.30	—	2.40	2.70	2.30	1.7
	Calculation	mg/L	4.67	—	1.90	—	—	—	—
Nitrate-nitrite (as Nitrogen)	USEPA 353.3	mg/L	—	3.31	—	2.50	2.74	2.50	1.71
	SM 4400 NO3	mg/L	4.67	—	1.90	—	—	—	—
Nitrite (as nitrogen)	SM 4500-NO2B	mg/L	<0.10	<0.0200	<0.10	0.0680	0.0280	0.155	<0.0200
pH	USEPA 150.1	pH units	—	7.44	8.3	8.32	7.99	7.61	7.62
Specific conductance	USEPA 120.1	µmhos/cm	—	3560	—	2,950	2,010	2,690	2,500
Sulfate (as SO_4)	USEPA 375.4	mg/L	—	370	—	470	240	420	340
Temperature	USEPA 170.1	ºC	—	18.1	—	17.0	17.9	18.2	18.4
	pH Temperature	ºC	—	—	21.6	—	—	—	—
Total dissolved solids	USEPA 160.1	mg/L	—	2370	—	1,960	1,330	1,800	1,700
	SM 2540 C	mg/L	3,540	—	880	—	—	—	—

TABLE 5.15-2
Groundwater Water Quality from Rice 1 and 2

		Units	Well 1		Well 2				
		Sample Date	**7/2/2008**	**2/13/2009**	**8/21/2008**	**2/11/2009**	**2/13/2009**	**2/13/2009**	**2/12/2009**
Analyte	**Analytical Method**	**Sample Depth (feet bgs)**	**Whole Well**	**310**	**Whole Well**	**650**	**750**	**850**	**950**
Total suspended solids	USEPA 160.2	mg/L	—	3.00	—	7.00	2.00	3.00	2.00
Total hardness	SM 2340 C	mg/L	—	320	—	249	142	209	202
Title 22 Metals (dissolved)									
Antimony	USEPA 200.7	mg/L	—	<0.031	—	<0.023	<0.031	<0.031	<0.031
Aluminum	USEPA 200.7	mg/L	—	NA	—	<0.063	—	—	—
Arsenic	USEPA 200.7	mg/L	—	<0.015	—	<0.025	<0.015	<0.015	<0.015
	USEPA 200.8	µg/L	—	—	—	<4.0	—	—	—
	USEPA 200.9	mg/L	<0.002	—	0.009	—	—	—	—
Boron	USEPA 200.7	mg/L	—	—	—	1.9	—	—	—
Barium	USEPA 200.7	mg/L	—	0.029	—	0.032	0.035	0.062	0.043
Beryllium	USEPA 200.7	mg/L	—	<0.0010	—	<0.0090	<0.0010	<0.0010	<0.0010
Calcium	USEPA 200.7	mg/L	—	84	—	70	42	59	56
Cadmium	USEPA 200.7	mg/L	—	<0.0040	—	<0.0040	<0.0040	<0.0040	<0.0040
	USEPA 200.9	mg/L	<0.0002	—	—	—	—	—	—
Cobalt	USEPA 200.7	mg/L	—	<0.0070	—	<0.0060	<0.0070	<0.0070	<0.0070
Chromium	USEPA 200.7	mg/L	—	<0.0060	—	<0.0060	<0.0060	<0.0060	<0.0060
Copper	USEPA 200.7	mg/L	—	<0.011	<1.010	<0.012	<0.011	<0.011	<0.011
	USEPA 200.7	mg/L	—	<0.011	—	—	<0.011	<0.011	<0.011
Iron	USEPA 200.7	mg/L	—	23	—	<0.064	6.1	9.9	28
Mercury	USEPA 245.1	mg/L	—	0.00030	—	<0.00030	<0.00030	<0.00030	<0.00030
Potassium	USEPA 200.7	mg/L	—	11	—	7.4	5.9	7.4	8.5

TABLE 5.15-2
Groundwater Water Quality from Rice 1 and 2

		Units	Well 1		Well 2				
		Sample Date	**7/2/2008**	**2/13/2009**	**8/21/2008**	**2/11/2009**	**2/13/2009**	**2/13/2009**	**2/12/2009**
Analyte	**Analytical Method**	**Sample Depth (feet bgs)**	**Whole Well**	**310**	**Whole Well**	**650**	**750**	**850**	**950**
Magnesium	USEPA 200.7	mg/L	—	27	—	18	9.1	15	15
Manganese	USEPA 200.7	mg/L	—	0.11	—	0.025	0.064	0.14	0.16
Molybdenum	USEPA 200.7	mg/L	—	0.034	—	0.028	0.025	0.024	0.02
Nickel	USEPA 200.7	mg/L	—	<0.0090	—	<0.010	<0.0090	<0.0090	<0.0090
Lead	USEPA 200.7	mg/L	—	<0.015	—	<0.019	<0.015	<0.015	<0.015
	USEPA.200.9	mg/L	<0.002	—	<0.002	—	—	—	—
Selenium	USEPA 200.7	mg/L	—	<0.018	—	<0.026	<0.018	<0.018	<0.018
	USEPA 200.8	µg/L	—	—	—	14	—	—	—
Silver	USEPA 200.7	mg/L	—	<0.0040	—	<0.0030	<0.0040	<0.0040	<0.0040
Silicon	USEPA 200.7	mg/L	—	—	—	20	—	—	—
Sodium	USEPA 200.7	mg/L	1100	670	333	550	390	520	470
Strontium	USEPA 200.7	mg/L	—	—	—	2.1	—	—	—
Thallium	USEPA 200.7	mg/L	—	<0.0070	—	<0.011	<0.0070	<0.0070	<0.0070
Vanadium	USEPA 200.7	mg/L	—	<0.0070	—	<0.012	<0.0070	<0.0070	<0.0070
Zinc	USEPA 200.7	mg/L	—	0.15	—	<0.024	0.013	0.98	0.13
	USEPA 200.7	mg/L	—	0.29	—	—	1.1	2.0	0.52
Other									
Ammonia as nitrogen	SM 4500-NH3	mg/L	—	0.750	—	0.470	0.500	0.510	0.530
Cyanide (total)	USEPA 335.2	mg/L	—	<0.0200	—	<0.0200	—	—	—
Methylene blue active substances	USEPA 425.1	mg/L	—	<0.100	—	<0.100	<0.100	<0.100	<0.100

TABLE 5.15-2
Groundwater Water Quality from Rice 1 and 2

		Units	Well 1		Well 2				
		Sample Date	**7/2/2008**	**2/13/2009**	**8/21/2008**	**2/11/2009**	**2/13/2009**	**2/13/2009**	**2/12/2009**
Analyte	**Analytical Method**	**Sample Depth (feet bgs)**	**Whole Well**	**310**	**Whole Well**	**650**	**750**	**850**	**950**
Phosphate, ortho (as P)	USEPA 365.2	mg/L	—	0.210	—	<0.0500	0.180	0.0900	0.0900
Phosphorus	USEPA 365.2	mg/L	—	0.240	—	<0.0500	0.200	0.100	0.110
Reactive silica	SM 4500-Si E	mg/L	—	2.83	—	7.55	1.65	4.88	1.8
Sulfide	USEPA 376.1	mg/L	—	<0.05	—	<0.0500	<0.05	<0.05	<0.05
Total organic carbon	SM 5310 B	mg/L	—	6.7	—	13	3.8	4.1	2.8
Volatile Organic Compounds									
Toluene	USEPA 8260B	µg/L	—	20	—	<1.0	—	—	—

Source: Worley Parsons, 2009b
— (not analyzed or not sampled)
µmhos/cm = micromhos per centimeter
feet bgs = (feet below ground surface)
SM = Standard Method
USEPA = U.S. Environmental Protection Agency

The plant will include a potable water treatment system to treat raw water to potable quality water for personnel health (drinking), if necessary, and other necessary uses around the facility. The system will be sized to accommodate a maximum of 47 operations and maintenance personnel. Consumption is estimated at a maximum of 60 gallons per person per day. The rate of consumption on this basis is approximately 5 gallons per minute per hour of operation. The potable water system will discharge to the wastewater evaporation ponds.

Diesel fire water pumps will be onsite and supplied by onsite water tanks located adjacent to the aboveground diesel storage tanks. The water source will supply water in the event of an emergency.

5.15.1.4.3 Construction Water

During construction of the facilities, water will be required for soil moisture conditioning during the earthmoving operations and for dust control. During the grading and heavier site disturbance portion of the project (expected to be 12 months), water use is expected to be approximately 35 af per month (on average). During the remainder of construction (expected to be 15 months), water use is expected to be approximately 24 af per month (on average). The average water use over the 30-month construction period would be approximately 29 af per month, or about 780 afy.

5.15.1.4.4 Wastewater Collection, Treatment, Discharge, and Disposal

General plant drains will collect containment area washdown, sample drains, and drainage from facility equipment drains. Water from these areas will be collected in a system of floor drains, hub drains, sumps, and piping, and then routed to the wastewater collection system. Drains that potentially could contain oil or grease will first be routed through an oil/water separator. The aggregate discharge from this waste stream will be sent to double-lined evaporation ponds, where the water will be retained onsite to evaporate, leaving solid waste constituents behind. The evaporation ponds will consist of three ponds, 5 acres each, located at the southern end of the heliostat field. Solids will be trucked offsite to a designated licensed disposal facility. A draft Report of Waste Discharge with additional information regarding collection, treatment, discharge, and disposal is included as Appendix 5.15B.

5.15.1.4.5 Stormwater

Offsite stormwater flows originate from an area north of SR 62, the Arizona and California Railroad, and the Colorado River Aqueduct. Because the railroad and aqueduct parallel the highway (east-west), small dikes have been constructed to control the flow of water across these features (north to south). The dikes direct the offsite flows from the north to specific channels/culverts over the aqueduct and under the railroad. Two of these channels are located near the project site.

The stormwater runoff from these local watersheds flows over an inverted siphon of the aqueduct, under the railroad, and then over SR-62 at small "dips" in the roadway. For site development, small ditches will be constructed on the outside of the site, along the perimeter of the north portion of the heliostat field, to direct these offsite flows around the outside of the site. The ditches, along with an elevated perimeter road, will be the features that redirect the offsite flows around the heliostat fields, much as the Army constructed two dikes in the early 1940s to direct offsite flows around Rice Army Airfield. The ditches have been sized to accommodate 100 percent of the offsite flows expected to drain to them,

although a portion of the offsite flows appear to continue to be diverted by the small dikes constructed as part of the airfield.

Onsite stormwater runoff in the heliostat field will be allowed to sheet flow along its current drainage pattern to the south end of the heliostat field. At this location, an expansive and shallow detention basin (approximately 30 af) will be constructed to detain any increase in storm flows and to provide a location for sediment control. The detention area will attenuate the post-development 100-year, 24-hour storm event runoff and discharge at the pre-development 100-year, 24-hour storm event flow rate. Appendix 5.15C shows the conceptual project drainage plan and stormwater calculations used to size the stormwater detention basin.

5.15.1.4.5 Construction

Construction of the generating facility, from site preparation and grading to commercial operation is expected to take place over 30 months, starting in the first quarter of 2011. During construction, approximately 1,504 acres of land associated with the plant will be disturbed. Nominal grading will occur for the construction of the power block, which will be graded to create a generally uniform elevation for construction of the plant power island facilities, the roads, and the detention and evaporation pond areas. Additionally, grading will occur for the offsite parking, the offsite workforce trailer and RV park site, the construction office and lay down area, approximately 1 acre of disturbance for the electrical interconnection substation (to connect the 12-kV generator tie-line to the site), a band of disturbance 40 feet beyond the security fence for slope grading and perimeter ditch construction.

During construction, installation of the transmission structures and conductors will require disturbance of less than 1 acre in aggregate. This area includes several pull sites and a few splicing sites. However, the generator tie-line construction will require creation of a 12-foot-wide dirt access road for 4.6 miles of the line between the project fenceline and Rice Valley Road, for approximately 7 acres of disturbance.

Any grading in the heliostat field will be completed with cuts and fills of less than 6 inches. Vegetation in the heliostat area will be cut or removed only as needed to allow installation of the heliostats. The root structure of vegetation will be allowed to remain to enhance soil stability and to facilitate re-growth.

Surface water impacts are anticipated to be related primarily to short-term construction activities and would consist of increased turbidity from erosion of newly excavated or placed soils. Activities such as grading can potentially destroy habitat and increase rates of erosion during construction. Additionally, construction materials could contaminate runoff or groundwater if not properly stored and used. Compliance with engineering and construction specifications, following approved grading and drainage plans, and adhering to proper material handling procedures will ensure effective mitigation of these short-term impacts. Best management practices (BMPs) for erosion control will be implemented. Additionally, erosion and sediment controls, surface water pollution prevention measures, and other BMPs will be developed and implemented for both construction and operational phases. These plans will be prepared in accordance with local agency requirements and the National Pollutant Discharge Elimination System (NPDES) construction permit issued by the SWRCB, as described in Section 5.15.4.

To qualify for the NPDES statewide General Permit for Stormwater Discharges Associated with Construction Activity (General Construction Permit), RSE will be required to develop a Stormwater Pollution Prevention Plan (SWPPP) prior to construction to prevent the offsite migration of sediment and other pollutants, and to reduce the effects of runoff from the construction site to offsite areas. A draft SWPPP is provided in Appendix 5.15D.

5.15.2 Environmental Analysis

Project effects on water resources can be evaluated relative to significance criteria derived from the California Environmental Quality Act (CEQA) Appendix G checklist. Under CEQA, the project is considered to have a potentially significant effect on water resources if it would:

- Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, in a manner that will result in substantial erosion or siltation onsite or offsite, or in flooding onsite or offsite.
- Create or contribute runoff water that will exceed the capacity of existing or planned stormwater drainage systems, or provide substantial additional sources of polluted runoff.
- Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade water quality.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there will be a net deficit in aquifer volume or a lowering of the local groundwater table level (for example, the production rate of pre-existing nearby wells will drop to a level that will not support existing land uses or planned uses for which permits have been granted).
- Place within a 100-year flood hazard area structures that will impede or redirect flood flows.
- Cause inundation by seiche, tsunami, or mudflow.

5.15.2.1 Wastewater Collection, Treatment, Discharge, and Disposal

The waste stream discharge from the containment washdown area, sample drains, and facility equipment drains will be routed to the wastewater collection system. It then will be sent to double-lined evaporation ponds, where the water will be retained onsite to evaporate, leaving solid constituents behind. There will be three evaporation ponds, approximately 5 acres each, located at the southern end of the heliostat field. These ponds will be constructed and operated in accordance with Waste Discharge Requirements (WDRs) issued by the Colorado River Basin RWQCB. A draft Report of Waste Discharge is included as Appendix 5.15B. Solids will be trucked offsite to a designated licensed disposal facility. The domestic waste stream will be routed into septic tanks constructed and permitted in accordance with Riverside County requirements. Tanks will be emptied periodically and contents will be trucked offsite to a designated licensed disposal facility. Therefore, impacts related to wastewater collection, treatment, discharge, and disposal will be less than significant.

5.15.2.2 Stormwater Runoff and Drainage

There are no existing structures on the proposed site, or a stormwater system other than percolation into the existing soils and sheet runoff. Appendix 5.15C contains the Conceptual Drainage Study for the project, which includes stormwater calculations, pre- and post-development drainage plans, road and ditch design, and the detention basin design. Stormwater from the equipment drains will go to the oil/water separator for treatment and will be discharged into an aggregate waste stream that combines all other waste streams and is routed to the onsite evaporation ponds. Any other stormwater flowing directly onsite will be allowed to sheet flow across the site to the onsite detention facility. The site will be graded to accommodate this process. Offsite stormwater will be routed around each side of the site and will percolate into the surrounding soils. There are no nearby waterways that have the potential to be inundated by onsite or offsite stormwater flow; therefore, there will be no discharge of stormwater to any nearby waterways, and no impacts on waterways from stormwater runoff and drainage will occur.

5.15.2.2.1 Construction Effects on Water Quality

Potential water supply impacts from construction will be limited to surface water runoff during excavation and construction. Such construction impacts are small and will be controlled through implementing an SWPPP and associated BMPs, and practicing proper housekeeping at the construction site. The site grading and drainage will be designed to comply with all applicable LORS. The general site grading will establish a working surface for construction and plant operating areas, will provide positive drainage from buildings and structures, and will provide adequate ground coverage for subsurface utilities.

Successful implementation of the SWPPP will ensure that construction impacts on water resources are mitigated to a less-than-significant level. SWPPP procedures include submitting a Notice of Intent to the Colorado River Basin RWQCB and developing the SWPPP prior to the start of construction activities.

Water used for dust control and soil compaction during construction will not result in discharge. During the construction period, sanitary waste will be collected in portable toilets (no discharge) supplied by a licensed contractor for collection and disposal at an appropriate receiving facility. Equipment wash water will be collected and disposed of offsite. With the implementation of the SWPPP and BMPs, described in Section 5.15.4, construction effects on water quality will be less than significant.

5.15.2.2.2 Water Supply during Construction

During project construction, water drawn from onsite wells will be required primarily for dust suppression and soil moisture conditioning during grading activities. During the grading and heavier site disturbance portion of the project (expected to be 12 months), water use is expected to be 35 af per month on average. During the remainder of construction (expected to be 18 months), water use is expected to be 20 af per month on average. Because of the short duration of construction activities, no significant adverse impacts on water supply are expected to result. The average water use for construction would be 29 af per month, or about 350 afy. A computer-modeling evaluation of impacts on groundwater resources from construction and operating water use is discussed in the next section and presented in Appendix 5.15A. Based on this evaluation, the effects on groundwater resources will be less than significant.

5.15.2.3 Groundwater

In accordance with Appendix B, (g) (14) (E) (ii), of the California Energy Commission (CEC) Water Data Adequacy Regulations, impact groundwater modeling is required to assess estimated drawdown on neighboring wells within 0.5 mile of the project, any other effects on the migration of groundwater contaminants, and the likelihood of any changes to existing physical or chemical conditions of the groundwater resources. There are no neighboring wells reported within 0.5 mile of the project wells, and reconnaissance of reported wells within 5 miles of the site revealed that the reported offsite wells in the site vicinity appear to be disused, collapsed, or destroyed. Nevertheless, an analytical groundwater model has been constructed to evaluate the potential impacts of the proposed project pumping on groundwater resources (Appendix 5.15D). The results of this analysis are summarized below.

To evaluate the potential environmental impacts of using groundwater as a water supply for the project, an analytical groundwater modeling study was undertaken using the USGS modeling code THWELLS (Van der Heijde, P.K.M, 1996). Predictive simulations were run to assess the potential impacts of pumping on water levels in the basin. Potential impacts on the basin water budget and solute transport were evaluated based on the general characteristics of the basin and the modeling results. Potential impacts on surface water resources and recharge were evaluated based on the general characteristics of the basin and the proposed project description.

Contour maps of estimated drawdown were produced for the end of the 30-month construction period, as well as after 5 years and 30 years of operational pumping (Figures 4, 5 and 6 in Appendix 5.15D). These contour maps show the estimated drawdown at each of the known onsite and offsite wells in the Rice Valley. Projected offsite drawdown at the end of project construction is estimated to range from approximately 2 to 3 feet near the site boundary, and to decrease to less than 1 foot at a distance of 1 to 3 miles from the site. Projected drawdown after 5 and 30 years of pumping is approximately the same, and is estimated to be approximately 1 foot near the site boundary and decreasing farther away from the site. The similarity of drawdown after 5 and 30 years indicates that drawdown will stabilize relatively quickly after pumping begins.

Of the 12 reported offsite wells in the site vicinity, seven are known to be screened only in the upper alluvium. This includes wells 4, 5, 6, 7, 8, 13 and 14. The drawdown impact on these shallow wells from project pumping is expected to be negligible based on the aquifer test results, water quality and vertical head difference data which showed no drawdown in Rice 1 during pumping of Rice 2, suggesting hydraulic isolation of the upper alluvium from the lower alluvial aquifer. Based on a surface reconnaissance, wells 4, 5, 6 and 7 are either abandoned, collapsed or disused. The remaining five reported offsite wells are of unknown depth and could potentially be screened in the lower alluvial aquifer. This includes wells 9 through 12 and well 15. These wells are located between 5 and 12 miles from the pumping center at the site. The potential drawdown impact on these wells, assuming they were screened in the lower alluvium, would be approximately 1 foot or less during construction and less than 0.5 foot during operation. The amount of drawdown projected in the offsite area during construction and operational pumping would not result in wells becoming unusable or significantly diminishing in capacity, and would not cause significant increases in well electrical usage or maintenance requirements.

Changes to the water budget of the Rice Valley Groundwater Basin would consist of reallocation of natural discharge from the Vidal Valley Groundwater Basin to the project pumping well(s). The underflow out of the Rice Valley Groundwater Basin is projected to decrease by an amount equal to the pumping for the project. Under natural conditions, this underflow is estimated to be about 394 afy, and would decrease to about 47 afy during construction and 244 afy during operation. No significant changes to mountain front recharge are anticipated as a result of the project. The project could result in increased underflow from the Ward Valley Groundwater Basin into the Rice Valley Groundwater Basin; however, this component of the water budget has not been quantified. Increased underflow from Ward Valley, to the extent it occurs, would amount to a fraction of the project groundwater pumping.

Water quality impacts due to pumping from the lower alluvial aquifer are anticipated to be less than significant for the following reasons.

- Based on the available data, the aquitard between the upper alluvium and lower alluvial aquifer is an effective barrier to downward vertical migration of high-TDS water.
- Drawdown predictions for project pumping indicate that about 4 feet of drawdown will be induced near the pumping center after 30 years of pumping, and drawdown in the offsite area will be less than 1 foot. This is a small increase to the existing water level difference between the upper alluvium and lower alluvial aquifer, which is approximately 90 feet. As such, project pumping will not significantly increase downward vertical gradients that could drive vertical migration of high-TDS groundwater.
- The cone of depression that results from pumping for the project will develop in the lower alluvial aquifer, which is recharged by low-TDS water at the mountain fronts that encircle Rice Valley. The water quality is therefore expected to be relatively good laterally throughout the lower alluvial aquifer. The cone of depression also will be relatively shallow, resulting in only negligible changes to the existing lateral groundwater gradients and flow field. As such, lateral migration of high-TDS groundwater is not anticipated.

Pumping for the project will intercept natural discharge from the Rice Valley Groundwater Basin, but is not expected to result in changes in recharge at the surrounding mountain fronts. Areal recharge from precipitation on the valley floor is expected to be negligible and runoff from the developed area of the project will be routed to detention basins where it can evaporate or infiltrate. As such, the project is not expected to result in significant changes to recharge.

No perennial surface water resources are present in Rice Valley. In addition, no springs are reported in the mountains surrounding the valley. As such, no impacts on surface water resources are anticipated.

5.15.2.4 Flooding Potential

The RSEP footprint, including the utility lines, lies entirely in an area designated by FEMA as Zone D. Zone D designation is used for areas where there are possible but undetermined flood hazards. In areas designated as Zone D, no analysis of flood hazards has been conducted. Project implementation will not result in any structures that will impede or

redirect flood flows, nor cause inundation by seiche, tsunami, or mudflow; therefore, it will have no flooding potential impacts to water resources.

5.15.3 Cumulative Effects

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code § 21083; California Code of Regulations, title 14, § 15064(h), 15065I, 15130, and 15355).

The RSEP would have little or no adverse impact on water quality, availability, or stormwater runoff and erosion. The use of BMPs to control stormwater drainage during all phases of the project will ensure that the RSEP will have no significant adverse impact on water quality during construction or operation. Additionally, there are no active projects planned for the area within 15 miles of the RSEP; therefore, the RSEP will not cause adverse cumulative impacts.

5.15.4 Mitigation Measures

This section presents mitigation measures proposed to reduce impacts on water resources in areas affected by the project. The mitigation measures proposed are prescribed by stormwater and erosion control management programs mandated under the NPDES permitting system. Under the NPDES General Construction Permit, for example, various specific measures are prescribed, and a program of monitoring is required. The programs are at least 90 percent effective, have been in place for several years, are mandated by the Clean Water Act (CWA), and have proven effective.

To qualify for the NPDES General Construction Permit, the RSEP will be required to develop a SWPPP prior to construction to prevent the offsite migration of sediment and other pollutants, and to reduce the effects of runoff from the construction site to offsite areas. Successful implementation of the SWPPP will ensure that construction impacts on water resources are mitigated to a less-than-significant level. SWPPP procedures include submitting a Notice of Intent to the Colorado River Basin RWQCB and developing the SWPPP prior to the start of construction activities.

As part of the SWPPP, the following mitigation measures will be included:

- Implement BMPs designed to minimize soil erosion and sediment transport during construction of the plant site. Design appropriate erosion and sediment controls for slopes, catch basins, culverts, stream channels, and other areas prone to erosion.
- Conduct operations at the plant site in accordance with the USEPA's Storm Water Phase I Final Rule (for construction activities disturbing 1 acre or more). Design and implement the BMPs to prevent or control pollutants potentially associated with the operation of the plant from entering stormwater systems.
- Perform refueling and maintenance of mobile construction equipment only in designated lined and/or bermed areas located away from stream channels. Prepare and implement spill contingency plans in areas where they are appropriate.
- Prepare and submit a SWPPP to ensure quality of discharged stormwater. Obtain concurrence with the Colorado River Basin RWQCB for the SWPPP.

5.15.5 Laws, Ordinances, Regulations, and Standards

Federal, state, and local LORS applicable to water resources and anticipated compliance are discussed in this section and summarized in Table 5.15-3.

TABLE 5.15-3
Laws, Ordinances, Regulations, and Standards for Water Resources

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
CWA/Water Pollution Control Act. P.L. 92-500, 1972; amended by Water Quality Act of 1987, P.L. 100-4 (33 USC 466 et seq.); NPDES (CWA, Section 402)	Regulates stormwater discharge from construction and industrial activities	SWRCB and Colorado River Basin RWQCB. USEPA has oversight authority	Compliance with existing statewide NPDES permit for construction and industrial stormwater. Compliance with existing WDRs implemented by the owner (Section 5.15.5.1).
State			
Federal CWA (implemented by State of California)	Implements and enforces the federal NPDES permit program	Colorado River Basin RWQCB	NPDES permits for construction (including demolition) and industrial stormwater prior to construction and plant operation (Section 5.15.5.2.2)
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to surface water and groundwater of California	Colorado River Basin RWQCB	The RSEP will discharge industrial wastewater to the onsite evaporation ponds and sanitary wastewater to a septic disposal system (Section 5.15.5.2.2).
California Code of Regulations, Title 27, Division 2, Chapter 3 and 4	Provides guidance for surface impoundments and Land Treatment Units	Colorado River Basin RWQCB	The RSEP will discharge industrial wastewater to the onsite evaporation ponds (Section 5.15.5.2.2)
California State Constitution, Article X, Section 2	Prohibits waste or unreasonable use of water	Colorado River Basin RWQCB	The RSEP will use only the required amount of treated groundwater water for power plant processes and will utilize dry cooling (Section 2.1.6).
California Water Code, Section 13550	States that use of potable water for non-potable purposes is an unreasonable use of water	Colorado River Basin RWQCB	The RSEP will use treated groundwater for power plant processes and will utilize dry cooling (Section 2.1.6).
Local			
Riverside County ordinances related to building, grading, and stormwater and erosion control	Requirements for grading; erosion control; and stormwater compliance for construction activities	Riverside County	The RSEP grading and drainage plan has been prepared to the specifications of Riverside County (Section 5.15.5.3.1)
Riverside County ordinances related to well installation	Requirements for well installation	Riverside County	The RSEP wells will be installed in accordance with County policy (Section 5.15.5.3.2)

5.15.5.1 Federal LORS

In California, discharges of wastewater and stormwater into surface waters or onto land are regulated by the SWRCB and RWQCBs under the CWA and the Porter-Cologne Water Quality Control Act. Relevant NPDES permits for stormwater quality management are discussed below under state and local LORS.

5.15.5.2 State LORS

5.15.5.2.1 Industrial Stormwater NPDES Permit

The Porter-Cologne Water Quality Control Act (California Water Code, Division 7) is the state law governing water quality in California, and it designates responsibilities to the SWRCB and nine RWQCBs for adopting and implementing water quality standards. In 1999, the SWRCB adopted a general NPDES permit, in compliance with the CWA, to regulate stormwater discharges from construction sites greater than 1 acre in size that discharge to waters of the U.S. If an NPDES General Construction Permit is found to not apply to the proposed project, then the RWQCB may require WDRs pursuant to the Porter-Cologne Water Quality Control Act for stormwater discharges to waters of the State associated with industrial activities (SWRCB Order 97-03-DWQ-General Industrial Permit), excluding construction activities (SWRCB, 1997). The proposed RSEP site is in the jurisdiction of the Colorado River Basin RWQCB; this RWQCB would ensure that the project complies with applicable permit requirements for protection of water quality.

5.15.5.2.2 Construction Stormwater NPDES Permit

The CWA effectively prohibits discharges of stormwater from construction sites unless the discharge is in compliance with an NPDES permit. The SWRCB is the permitting authority in California and has adopted a statewide General Permit for Stormwater Discharges Associated with Construction Activity (SWRCB Water Quality Order No. 99-08-DWQ; SWRCB, 1999) that applies to projects resulting in 1 acre or more of soil disturbance. The proposed project would result in disturbance of more than 1 acre of soil. Therefore, the project will require the preparation of a construction SWPPP that would specify site management activities to be implemented during development. These management activities will include construction stormwater BMPs and construction equipment decontamination. The Colorado River Basin RWQCB requires a Notice of Intent to be filed prior to any stormwater discharge from construction activities and requires that an SWPPP be implemented and maintained onsite. A Construction Drainage Erosion and Sediment Control Plan/SWPPP will be completed prior to the beginning of construction activities (see Appendix 5.15B for a draft of this document).

5.15.5.3 Local LORS

5.15.5.3.1 Riverside County Building, Grading, and Erosion Control Ordinances

Construction requirements relevant to building, grading and erosion and sediment control are found in Riverside County Ordinance 457, which applies to all unincorporated areas of Riverside County, unless specifically exempted.

Section J.10 requires stockpiles to be placed temporarily on a site for a period not to exceed 12 months. Stockpiles may not obstruct or divert natural drainage or watercourses. Erosion and dust control measures must be implemented, and the stockpile cannot cause any adverse effect on adjacent properties.

Section J.14 requires construction sites to minimize runoff of sediment off the site and into waters of the U.S. If practical, phased grading is to be conducted. This section requires construction activities greater than 1 acre in size to file a Notice of Intent to seek coverage under the state's NPDES General Construction Permit for discharges of stormwater from construction sites, and requires development and implementation of a site-specific SWPPP and monitoring program, pursuant to requirements of that permit.

Construction requirements relevant to stormwater and urban runoff management and discharge controls are found in Riverside County Ordinance 754.2. The intent of this ordinance is to "protect and enhance the water quality of County watercourses, water bodies, ground water, and wetlands in a manner pursuant to and consistent with applicable requirements contained in the Federal Clean Water Act, Porter-Cologne Water Quality Act, and any applicable state or federal regulations, related administrative orders or permits."

Section 1.C requires new development or redevelopment sites to control stormwater runoff to prevent deterioration of water quality. To prevent such deterioration, the Director of County Transportation and Land Management Agency may establish BMPS and may identify the manner of implementation.

Section 1.E requires commercial and industrial facilities to comply with this and other ordinances (including 457), and establishes that these types of facilities may be subject to a regular program of inspection.

5.15.5.3.2 Riverside County Well Installation

Riverside County Department of Environmental Health requires a well permit to be obtained prior to construction, reconstruction, or deconstruction of wells.

5.15.6 Agency Contacts, Permits, and Permit Schedule

Agency contacts and required permits are listed in Table 5.15-4.

TABLE 5.15-4
Permits and Permit Schedule for Water Resources

Permit	Agency	Schedule
Grading permit	Ann Iaali Associate Engineer, Air & Water Quality Regulatory Division, NPDES Section Riverside County Flood Control and Water Conservation District 1995 Market Street Riverside CA 92501 (951) 955-1248	Completed applications must be submitted approximately 6 months prior to construction.
Report of Waste Discharge for Evaporation Ponds	Cliff Raley Colorado River Basin RWQCB (760) 776-8962	WDRs from the RWQCB are required for discharge of wastewater to the evaporation ponds. The draft WDR application is included in Appendix 5.15B, and the permitting process is expected to take 6 to 9 months. WDRs will either be provided directly by the RWQCB or through the CEC Conditions for Certification.

TABLE 5.15-4
Permits and Permit Schedule for Water Resources

Permit	Agency	Schedule
Industrial Wastewater Discharge Permit	John Carmona Colorado River Basin RWQCB (760) 340-4521	Applications and fees shall be filed with the city at least 90 days prior to connecting to or contributing to the treatment works. All permit applications and related correspondence shall be signed by a duly authorized representative of the user.
NPDES General Permit for Construction and Operation	Greg Gearheart, Sr. Water Resource Engineer SWRCB	Submit Notice of Intent to use the permit at least 30 days in advance of use, prepare SWPPP for construction and SWPPP for operation.
Well Installation Permit	Greg Dellenbach Riverside County Department of Health Services, Office of Water Engineering 4065 County Circle Dr Riverside, CA 92503-3410 (951) 955-8980	Submit application 30 days prior to drilling.

5.15.7 References

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