

## Section 3.9

### Hydrology and Water Quality

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This section discusses the environmental setting, existing conditions, regulatory context, and potential impacts of the project in relation to hydrology and water quality. Information in this section is based primarily on the site-specific *Preliminary Hydrology Study & Flood Analysis* (2018a; see **Appendix I-1**) and the *Addendum to Preliminary Hydrology Study & Hydraulics Report* (2018b; see **Appendix I-2**) prepared by Joseph E. Bonadiman & Associates. Specific information regarding groundwater resources was obtained from the *Water Supply Assessment* prepared by Tetra Tech (2018; see **Appendix I-3**). All reports referenced above were peer reviewed by Michael Baker International.

Additionally, available public resources were reviewed to obtain site-specific hydrology and water quality regulatory information, including the *Water Quality Control Plan for the Lahontan Region* (Lahontan RWQCB 2016), the *County of San Bernardino General Plan* (2007a), and the *County of San Bernardino General Plan EIR* (2007b).

## ENVIRONMENTAL SETTING

### EXISTING HYDROLOGY AND DRAINAGE CONDITIONS

#### *Regional Hydrology and Drainage*

The Lahontan Region covers approximately 25 million acres (39,000 square miles) in the east to southeastern portion of California. It includes Modoc (East), Lassen (East side and Eagle Lake), Sierra, Nevada, Placer, El Dorado, Alpine, Mono, Inyo, Kern (East), San Bernardino, Los Angeles (N/E corner) counties. The Lahontan Region includes the highest (Mount Whitney) and lowest (Death Valley) points in the contiguous United States. The Region extends from the Sierra Nevada Mountains to the northern slopes of the San Bernardino and San Gabriel Mountains.

For planning and reporting purposes, the region has been historically divided into North and South Basins. The Region is split near the boundary of Mono Lake in Mono County. The project site is located in the South Basin planning area.

#### *Surface Water Hydrology*

Precipitation occurs mostly as rainfall, with some snowfall in the San Bernardino Mountains. Rainfall is sporadic and amounts vary widely with location. Mean annual precipitation ranges from 16 inches in the San Bernardino Mountains to less than 3 inches in the Bristol Lake (dry)

area. The average annual rainfall over the entire planning area is 5 inches. Little of the rainwater percolates into the groundwater table, and most is lost by evaporation and evapotranspiration.

### ***Groundwater Hydrology***

Groundwater is stored principally in unconsolidated alluvium. With exception of areas near some of the dry lakes, groundwater is generally unconfined. The project site lies within the Baja Subarea of the Mojave Basin; refer to **Exhibit 3.9-1, Baja Subarea**. Within the basin, the Mojave River is the largest stream, formed by the confluence of two smaller streams, West Fork Mojave River and Deep Creek, which originate in the San Bernardino Mountains. The Mojave River Groundwater Basin Area is essentially a closed basin; limited groundwater enters or exits the basin. However, within the basin, groundwater movement occurs between the different subareas, as well as groundwater-surface water and groundwater-atmosphere interchanges.

Groundwater is recharged into the basin predominantly through the infiltration of water from the Mojave River, which accounts for approximately 80 percent of the total basin natural recharge. Other sources of recharge include infiltration of storm runoff from the mountains, desert washes and recharge from human activities such as irrigation return flows, wastewater discharge, and enhanced recharge with imported water. Over 90 percent of the basin groundwater recharge originates in the San Gabriel and San Bernardino mountains. Groundwater is discharged from the basin primarily by well pumping, evaporation through soil, transpiration by plants, seepage into dry lakes where accumulated water evaporates, and seepage into the Mojave River.

### ***Existing Site Drainage***

Typically, on-site drainage on the project site is conveyed as natural overland flow along very gradual slopes and relatively unconcentrated, shallow channelization, with exception of drainage improvements associated with the existing railroad spur (located off-site), Coolwater Generating Station, decommissioned/removed solar facilities, and Barstow-Daggett Airport. Existing on-site paved and dirt roads do not have any associated storm drain facilities. See **Exhibit 3.9-2, Proposed Drainage Plan**, for the proposed drainage improvements; refer also to **Appendix I-2** for additional information.

## **WATER QUALITY**

### ***Surface Water Quality***

Section 303(d) of the federal Clean Water Act requires states to identify the waters of the state that do not meet the designated beneficial uses and to develop total maximum daily loads (TMDLs) for such waters, with oversight by the US Environmental Protection Agency (EPA). These

waters are commonly referred to as impaired. A TMDL is a quantifiable assessment of potential water quality issues, contributing sources, and load reductions or control actions needed to restore or protect bodies of water. According to the State Water Resources Control Board (SWRCB) (2017), a portion of the Mojave River is impaired; this portion is located downstream approximately 34 miles to the southwest near Victorville.

### ***Groundwater Quality***

The project site lies within the boundaries of the Mojave Water Agency (MWA). Numerous groundwater quality issues affect the MWA service area. Key groundwater constituents of concern include arsenic, nitrates, iron, manganese, hexavalent chromium, fluoride, and total dissolved solids. Some of these constituents are naturally occurring in desert environments, while others are associated with human activities. Measurements exceeding drinking water standards have been found for some of these constituents within the Mojave River Groundwater Basin. Groundwater in these areas may have to be treated prior to consumption.

## **REGULATORY FRAMEWORK**

### **FEDERAL**

#### ***National Flood Insurance Program***

The Federal Emergency Management Agency (FEMA) oversees floodplains and administers the National Flood Insurance Program (NFIP) adopted under the National Flood Insurance Act of 1968. The program makes federally subsidized flood insurance available to property owners in communities that participate in the program. Areas of special flood hazard (those subject to inundation by a 100-year flood) are identified by FEMA through regulatory flood maps called Flood Insurance Rate Maps. The NFIP mandates that development cannot occur within the regulatory floodplain (typically the 100-year floodplain) if that development results in an increase of more than 1-foot elevation. In addition, development is not allowed in delineated floodways within the regulatory floodplain.

#### ***Clean Water Act***

The Clean Water Act gives states the primary responsibility for protecting and restoring water quality. In California, the State Water Resources Control Board and the nine Regional Water Quality Control Boards are the agencies with the primary responsibility for implementing federal CWA requirements, including developing and implementing programs to achieve water quality standards. Water quality standards include designated beneficial uses of water bodies, criteria or objectives (numeric or narrative) which are protective of those beneficial uses, and policies to

limit the degradation of water bodies. The project site is located in an area of the state regulated by the Lahontan Regional Water Quality Control Board (RWQCB). Water quality standards for water bodies in the region are primarily contained in the Water Quality Control Plan, Lahontan - Region 6 (Lahontan RWQCB 2016).

### **Sections 401 and 404 of the Clean Water Act**

Sections 401 and 404 of the CWA are administered through the regulatory program of the US Army Corps of Engineers (USACE) and regulate the water quality of all discharges of fill or dredged material into waters of the United States, including wetlands and intermittent stream channels. Section 401 sets forth water quality certification requirements for any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities that may result in any discharge into the navigable waters.

Section 404, in part, authorizes the USACE to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits “for the discharge of dredged or fill material into the navigable waters at specified disposal sites:” subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if “the discharge of such materials into such area would have an unacceptable, adverse effect on municipal water supplies and fishery areas:” subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual state or interstate compact administration of general permit programs: subparagraphs (g), (h) and (j);
- Withdraw approval of such state or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain federal or state projects from regulation under this section: subparagraph (r); and
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).

### **National Pollutant Discharge Elimination System**

As authorized by CWA Section 402(p), the National Pollutant Discharge Elimination System Permit (NPDES) program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The State Water Resources Control Board issues NPDES permits to cities and counties through the Regional Water Quality Control Boards. It is the responsibility of the RWQCBs to preserve and enhance the quality of the state's waters through the development of water quality control plans and the issuance of waste discharge requirements. Waste discharge requirements for discharges to surface waters also serve as NPDES permits.

### **Clean Water Act Section 401 - Water Quality Certification**

In addition to the issuance of NPDES permits or waste discharge requirements, the Lahontan RWQCB acts to protect the quality of surface waters through water quality certification as specified in Clean Water Act Section 401 (33 USC 466 et seq.). Section 401 requires that any person applying for a federal permit or license which may result in a discharge of pollutants into waters of the United States obtain a state water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions. Subject to certain limitations, no license or permit may be issued by a federal agency until the certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. CWA Section 404 permits and authorizations are subject to Section 401 certification by the Regional Water Quality Control Boards.

## **STATE**

### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Water Quality Control Act, in cooperation with the CWA, established the State Water Resources Control Board. The SWRCB and the nine RWQCBs are responsible for protecting California's surface water and groundwater supplies. The act establishes Water Quality Control Plans (Basin Plan) that designate the beneficial uses of California's rivers and groundwater basins for each of the nine regions overseen by the Regional Water Quality Control Boards.

The Water Quality Control Plan for the Lahontan Region gives direction on the beneficial uses of state waters in Region 6, describes the water quality that must be maintained to support such uses, and includes programs, projects, and other actions necessary to achieve the standards established in the Basin Plan. The Lahontan RWQCB implements the Basin Plan by issuing and enforcing waste discharge requirements to individuals, communities, or businesses whose waste

discharges may affect water quality. These requirements are state Waste Discharge Requirements for discharge to land or federally delegated NPDES permits for discharges to surface water. Responsibility for implementing CWA Sections 401-402 and Section 303(d) is also outlined in the Porter-Cologne Water Quality Control Act.

### ***State Regional Water Quality Control Board, Stormwater General Construction Permit***

The five-member SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine Regional Water Quality Control Boards in the major watersheds of the state. The joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters (SWRCB 2017).

In 1999, the State adopted the NPDES General Permit for Storm Water Discharges Associated with Construction Activities (Construction Activities General Permit) (SWRCB Order No. 2012-0006-DWQ, NPDES No. CAS000002). The General Construction Permit (CGP) requires that construction sites with 1 acre or greater of soil disturbance, or less than 1 acre but part of a greater common plan of development, apply for coverage for discharges under the General Construction Permit by submitting a Notice of Intent for coverage, developing a stormwater pollution prevention plan (SWPPP), and implementing best management practices (BMPs) to address construction site pollutants.

The SWPPP should contain a site map(s) which shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list the best management practices the discharger will use to protect stormwater runoff and the placement of those 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. Section A of the Construction General Permit describes the elements that must be contained in a SWPPP. Enrollment under the CGP is through the Stormwater Multiple Application and Report Tracking System (SMARTS).

Additionally, the SWRCB is responsible for implementing the Clean Water Act and issues NPDES permits to cities and counties through the individual Regional Water Quality Control Boards.

### ***California Water Code 10912***

Section 10912 of the Water Code requires a city or county, for a project as defined relevant to the California Environmental Quality Act (CEQA), to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified

water supply assessment. The proposed project is subject to CEQA and may be considered a project requiring preparation of a water supply assessment because it is a proposed industrial facility occupying more than 40 acres of land.

### ***Porter-Cologne Water Quality Control Act***

Section 13000 of the Porter-Cologne Water Quality Control Act directs each RWQCB to develop a Basin Plan for all areas in its region. The Basin Plan is the basis for each RWQCB's regulatory program. The project must comply with applicable Lahontan RWQCB Basin Plan elements, as well as with the Porter-Cologne Water Quality Control Act and the federal Clean Water Act.

## **REGIONAL**

### ***Water Quality Control Plans***

Each of the nine RWQCBs adopts a Water Quality Control Plan, or Basin Plan, which recognizes and reflects regional differences in existing water quality, the beneficial uses of the region's groundwater and surface waters, and local water quality conditions and problems. Water quality problems in the regions are listed in the Basin Plans, along with the causes, where they are known. Each RWQCB is to set water quality objectives that will ensure the reasonable protection of beneficial uses and the prevention of nuisance, with the understanding that water quality can be changed somewhat without unreasonably affecting beneficial uses. The project site is in the Southern Mojave Watershed and is covered under the Water Quality Control Plan for the Lahontan Region.

### ***Urban Water Management Plans***

Public water systems are required by the California Water Code to prepare Urban Water Management Plans (UWMP) to carry out "long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water" (Water Code Section 10610.2). UWMPs are prepared using input from multiple water systems operating in a region and include assessment of the reliability of water supply over a 20-year period and account for known and projected water demands during that time, including during normal, single-dry, and multiple-dry water years.

An UWMP for 2015 has been created by the MWA and covers the entire MWA service area (Tetra Tech 2018). The project site lies within an adjudicated water basin, and therefore, groundwater within the basin is actively managed to achieve sustainability. As part of the UWMP, an analysis was performed to determine if MWA has adequate water supplies to meet demands during average, single-dry and multiple-dry years over the next 25 years. The report concluded that

there would be adequate water supplies for such conditions over the time period considered (Tetra Tech 2018).

***Stipulated Judgment (City of Barstow et al, v. City of Adelanto et al, Riverside County Superior Court Case No. 208568)***

The Mojave Basin is an adjudicated basin. Pumping of groundwater from the basin is governed by a 1996 Stipulated Judgment issued by the Riverside County Superior Court. For purposes of defining and implementing a physical solution, the Mojave Basin Area consists of five distinct but hydrologically interrelated "Subareas." Each Subarea was found to be in overdraft to some extent due to the use of water by all of the producers in that Subarea. In addition, some Subareas were found to historically have received at least a part of their natural water supply as water flowing to them from upstream Subareas either on the surface or as subsurface flow. To maintain that historical relationship, the average annual obligation of any Subarea to another is set equal to the estimated average annual natural flow (excluding storm flow) between the Subareas over the 60-year period 1930-31 through 1989-90. If the Subarea obligation is not met, producers of water in the upstream Subarea must provide makeup water to the downstream Subarea.

To maintain proper water balances within each Subarea, the Judgment establishes a decreasing Free Production Allowance (FPA) in each Subarea during the first five years and provides for the Court to review and adjust, as appropriate, the FPA for each Subarea annually thereafter. The FPA is allocated among the Producers in the Subarea based on each Producer's percentage share of the FPA. All water produced in excess of any Producer's share of the FPA must be replaced by the Producer, either by payment to the Watermaster of funds sufficient to purchase replacement water, or by transfer of unused FPA from another Producer.

Each Producer's percentage share of FPA in a Subarea was determined by first verifying the maximum annual water production (termed Base Annual Production or "BAP") for each Producer during the five-year (1986-90) Base Period and then calculating each Producer's percentage share of the total of all such BAP in the Subarea. All such percentage allocations are of equal priority.

Producers within each Subarea are allowed to produce as much water as they need annually to meet their requirements, subject to compliance with the Physical Solution set forth in the Judgment. An underlying assumption of the Judgment is that sufficient water will be made available to meet the needs of the Basin in the future from a combination of natural supply, imported water, water conservation, water reuse and transfers of FPA among Producers.

## LOCAL

### ***San Bernardino County General Plan***

Relevant goals and policies of the County's General Plan are identified below. The General Plan identifies three diverse planning regions in the county (Valley, Mountain, and Desert), which offer varied terrain and natural features, as well as in the specific issues of concern and in the development opportunities that they offer. The project site is in the Desert Planning Region, which is the largest of the three planning regions. This region includes a significant portion of the Mojave Desert and contains approximately 93 percent (18,735 square miles) of all land in San Bernardino County. This region is defined as including all of the unincorporated area of the county lying north and east of the Mountain Planning Region.

The following goals, policies and programs from the General Plan are applicable to the proposed project:

#### **Conservation Element**

**GOAL CO 5**            The County will protect and preserve water resources for the maintenance, enhancement, and restoration of environmental resources.

*Policy CO 5.4*            Drainage courses will be kept in their natural condition to the greatest extent feasible to retain habitat, allow some recharge of groundwater basins and resultant savings. The feasibility of retaining features of existing drainage courses will be determined by evaluating the engineering feasibility and overall costs of the improvements to the drainage courses balanced with the extent of the retention of existing habitat and recharge potential.

#### *Programs*

1. Seek to retain all-natural drainage courses in accordance with the Flood Control Design Policies and Standards where health and safety is not jeopardized.
2. Prohibit the conversion of natural watercourses to culverts, storm drains, or other underground structures except where required to protect public health and safety.
3. Encourage the use of natural drainage courses as natural boundaries between neighborhoods.

4. Allow no development, which would alter the alignment, direction, or course of any blue-line stream, in designated flood plains.
5. When development occurs, maintain the capacity of the existing natural drainage channels where feasible, and flood-proof structures to allow 100-year storm flows to be conveyed through the development without damage to structures.
6. Consistent with the County's efforts to protect the public from flood hazards, encourage the use of open space and drainage easements, as well as clustering of new development, as stream preservation tools.
7. Where technically feasible as part of its efforts to protect residents from flood hazards, require naturalistic drainage improvement where modifications to the natural drainage course are necessary. As an example, channel linings that will allow the re-establishment of vegetation within the channel may be considered over impervious linings (such as concrete). Where revegetation is anticipated, this must be addressed in the channel's hydraulic analysis and the design of downstream culverts.
8. Establish an economically viable flood control system by utilizing channel designs including combinations of earthen landscaped swales, rock rip-rap-lined channels, or rock-lined concrete channels. Where adjacent to development, said drainage will be covered by an adequate County drainage easement with appropriate building setbacks established therefrom.
9. Do not place streams in underground structures where technically feasible, except to serve another public purpose and where burial of the stream is clearly the only means available to safeguard public health and safety.

### **Renewable Energy and Conservation Element**

The County adopted a Renewable Energy and Conservation Element (RECE) for inclusion in the San Bernardino County General Plan in August 2017. The element includes land use guidance regarding new renewable energy projects within the County. Relevant goals and policies of the RECE for this section are identified below.

#### *RE Policy 4.2*

*Ensure that renewable energy facilities do not disrupt, degrade or alter the local hydrology or hydrogeology.*

***San Bernardino County Code***

The goal of Title 3, Division 5, Monitoring, Control and Elimination of Pollutants into the Storm Drainage System, is to protect the health and safety of, and promote the welfare of, the inhabitants of the county by controlling non-stormwater discharges to the stormwater conveyance system and by reducing pollutants in stormwater discharges, including those pollutants taken up by stormwater as it flows over urban areas, to the maximum extent practicable, in order to achieve applicable receiving water quality objectives. Another goal of Title 3, Division 5 is to protect and enhance the quality of receiving waters in a manner pursuant to and consistent with applicable federal, state, and local laws, regulations, and permits.

**IMPACT ANALYSIS AND MITIGATION MEASURES****METHODOLOGY**

An assessment of hydrology and water quality impacts was prepared by evaluating the existing hydrology and water quality settings and comparing them to hydrology and water quality conditions that would occur with implementation of the proposed project. An evaluation of the significance of potential impacts on hydrology and water quality must consider both direct effects to the resource and indirect effects in a local or regional context. When considering the significance of an individual impact, the EIR considers the existing federal, state, and local regulations, laws, and policies in effect, including applicable San Bernardino County General Plan policies. In addition, the impact analysis considers the project design features that have been incorporated into the project to avoid, reduce or offset potential impacts.

The requirements and recommendations found in the San Bernardino County Hydrology Manual (August 1986) provided by the San Bernardino County Department of Public Works was used as the basis for the methodology and calculations found in the Addendum to the Preliminary Hydrology Study & Hydraulics Report (Joseph E. Bonadiman & Associates 2018b).

**THRESHOLDS OF SIGNIFICANCE**

The following thresholds of significance are based, in part, on CEQA Guidelines Appendix G. For the purposes of this EIR, a significant adverse impact on hydrology and water quality would occur if the project would:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a new deficit in aquifer volume or a lowering of the

local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- 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.
- Result in inundation by seiche, tsunami, or mudflow.

## PROJECT IMPACTS AND MITIGATION

### *VIOLATION OF WATER QUALITY STANDARDS*

**Impact 3.9-1            The project would not violate any water quality standards or waste discharge requirements. Impacts would be less than significant.**

Generally, stormwater runoff (both dry and wet weather) discharges into storm drains and/or flows directly to creeks, rivers, lakes, and the ocean. The project site is approximately 2,000 feet from Mojave River bed. Polluted runoff can have harmful effects on drinking water, recreational water, and wildlife. Stormwater characteristics depend on site conditions (e.g., land use, impervious cover, pollution prevention, type and number of best management practices), rain events (duration, amount of rainfall, intensity, and time between events), soil type and particle sizes, multiple chemical conditions, the amount of vehicular traffic, and atmospheric deposition. Major pollutants typically found in runoff include sediments, nutrients, oxygen-demanding substances, heavy metals, petroleum hydrocarbons, pathogens, and bacteria. The majority of

stormwater discharges are considered nonpoint sources and are regulated by a NPDES Municipal General Permit or Construction General Permit.

A net effect of development can be to increase pollutant export over naturally occurring conditions to adjacent streams and on downstream receiving waters. However, an important consideration in evaluating stormwater quality from a site is to assess whether it impairs the beneficial use of the receiving waters. Receiving waters can assimilate a limited quantity of various constituent elements, but there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact.

Consistent with regional and local requirements, project-specific studies were prepared for the Daggett Solar Power Facility (Joseph E. Bonadiman & Associates 2018a, 2018b; see **Appendices I-1** and **I-2**).

### **SHORT-TERM CONSTRUCTION**

Site disturbance and/or grading would be, for the most part, more appropriately referred to as light grading/smoothing of the site. Construction grading, excavation, and other construction activities associated with the proposed project are anticipated to have a negligible impact on water quality or wastewater. Site preparation would consist mostly of clearing, grubbing, scarifying, recompacting, and grading to level the site and remove any mounds or holes that remain from the previous land use. Though grading is expected to occur throughout the site, the site's cut and fill would balance, and no importing or exporting of materials would be necessary. Impacts to water quality due to sheet erosion resulting from exposed soils and the subsequent deposition of particles and pollutants in drainage areas are not anticipated.

It is anticipated that construction will occur over a 27-month period for Phases 1 and 2 (together a 400 megawatt [MW] facility) and a 19-month period for Phase 3 (250 MW facility). An average of 300 workers would be on-site during each phase of construction, depending on the activities. The peak number of workers on the project site at any one time is anticipated to be 600. The workforce would consist of laborers, craftspeople, supervisory personnel, and support personnel. Additionally, portable toilet facilities would be installed for use by construction workers. Waste disposal would occur in a permitted off-site facility. Domestic water for use by employees would be provided by the construction contractor through deliveries to the site or from on-site wells. A conservative estimate for project water use is that approximately 1,800 acre-feet (AF) of water would be needed for all phases of construction.

Construction controls to minimize water quality impacts are not necessarily the same measures used for long-term water quality management, as construction-related water quality control measures are temporary in nature and specific to the type of construction. Development would

be subject to compliance with NPDES permit requirements and with County Code Title 3, Division 5, Chapter 1, Pollutant Discharge Elimination System Regulations. The purpose of this chapter is to effectively control non-stormwater discharges to the stormwater conveyance system and to reduce pollutants in stormwater discharges, including those pollutants taken up by stormwater as it flows over urban areas, to the maximum extent practicable to achieve applicable receiving water quality objectives.

In compliance with the San Bernardino County Stormwater Program Technical Guidance Document, the project applicant is required to prepare and implement a Water Quality Management Plans (WQMP) that would manage stormwater runoff during construction activities. The WQMP includes site design and source control best management practices (BMPs) to help ensure stormwater runoff and impervious areas are minimized and natural areas are conserved. Applicant proposed source control BMPs include but are not limited to: covering and containing hazardous materials so that they are not in contact with precipitation or runoff; identifying the worst case and most likely spill scenarios; and providing spill response equipment adequate to respond to these scenarios.

With implementation of an approved WQMP, compliance with the NPDES, implementation of County required Low Impact Development (LID) preventive measures, and compliance with permit(s) from the Regional Water Quality Control Board (if required), short-term construction activities would not violate any water quality standards or waste discharge requirements including discharges into the Mojave River. Therefore, a less than significant impact to water quality would occur from the proposed project.

### **LONG-TERM OPERATIONS**

The project would generate electric power from the solar photovoltaic (PV) system during daylight hours and may discharge power from batteries at various times. The site would include an operations and maintenance (O&M) building and would be staffed with full- and part-time employees such as a plant manager, maintenance manager, solar technicians, and environmental specialists. In addition, the operations would be monitored remotely via the supervisory control and data acquisition (SCADA) system.

Operations and maintenance vehicles would include light-duty trucks (e.g., pickup, flatbed) and other light equipment for maintenance and solar PV module washing. Heavy equipment would not be used during normal operation. Large or heavy equipment may be brought to the facility infrequently for equipment repair or replacement or for vegetation control.

Sanitary facilities for operations would be provided at the O&M building located on approximately 1.5 acres within the project footprint. The O&M facility would be equipped with a

septic tank to adequately treat wastewater. Other waste from equipment replacement or other work would be removed from the site as necessary. Thus, long-term operation activities are not anticipated to violate any water quality standards or waste discharge requirements. A less than significant impact would occur.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

### **GROUNDWATER SUPPLIES**

**Impact 3.9-2                    The project could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a new deficit in aquifer volume or a lowering of the local groundwater table level. Impacts would be significant and unavoidable.**

The project site lies within the Baja Subarea of the Mojave Basin, within the boundary of the Mojave Water Agency Service Area. The project site is not connected to a public water system and there are no public water systems that can serve the project site. Rather, the site lies within an adjudicated water basin and the groundwater is actively managed to achieve sustainability. Existing groundwater wells are present on the project site. The wells are operational and available to serve future on-site land uses.

A Stipulated Judgment was issued by the Superior Court in January of 1996 (Superior Court, Judgment after Trial for City of Barstow, et al vs. City of Adelanto, et al Case No. 208568, January 10, 1996) to address water supply shortages in the Mojave Basin Area where the proposed project is located. The adjudication of the Mojave Basin Area was the legal process that allocated the right to produce water from the natural water supply. As mandated in the Judgment, the MWA was appointed as the Basin Watermaster and tasked with the responsibility of sustainably managing water supplies in the basin.

The Judgment determines water rights for each major producer [defined as a person or entity using 10 or more acre-feet per year (AFY)] based on their historical production. These rights are referred to as Base Annual Production (BAP). Specifically, BAP rights were assigned per court Judgment to each major producer; refer to Attachment A of **Appendix I-3**. The BAP represents the highest possible production for a given producer. The sum of the total BAP for all current project site landowners is 27,054 AFY (Tetra Tech 2018). The MWA, as the court-appointed Watermaster, establishes Free Production Allowances (FPA) annually to maintain proper water balances. The FPA is a percentage of the BAP and the Watermaster recommended the FPA for the Baja Subarea be set at 35 percent of the BAP (7,682 AF for the landowners of the project site) for 2018-2019 (Tetra Tech 2018).

The adjudication provides for a number of goals including: 1) to protect and allocate the rights of water producers; and 2) to protect the water supply and ensure its sustainability and availability in the future. It accomplishes these goals by first assigning rights to the producers and then by controlling the amount of water that can be produced by those rights to ultimately bring groundwater levels into balance (i.e., the inflow to the basin matches the outflow) and then maintain that balance. The adjudication considers changes to the needs of production and allows for flexibility to accommodate those changes. The adjudication created an ongoing process where reports are provided to the court on a regular basis to ensure long-term protection of basin water supplies.

Once a subarea has reached a balance between the water sources adding to the groundwater and the water extractions, that area has reached the Production Safe Yield (PSY). Areas that have not reached PSY are generally subject to ongoing reductions of FPA in the long-term. The FPA of the Baja Subarea is nearing the estimated PSY, which when accomplished would put the Baja Subarea in balance; refer to **Appendix I-3** for additional discussion.

All water for the proposed project would be sourced from on-site wells. Seven landowners have water allocations of up to 8,802 AF of water for 2017-2018. The project applicant has entered into agreements with the landowners to acquire the properties along with the acquisition of adequate water supply to meet construction and operational needs from the existing seven on-site wells.

The project would eliminate approximately 1,600 acres of on-site agricultural use which required water production of approximately 8,338 AF in 2017 (Tetra Tech 2018). The project is estimated to require approximately 450 AFY for approximately 3.5 years for a total of 1,800 acres (during construction) and would reduce water use to 25 AFY (during project operation). This would result in a reduction of need for production at the project site of more than 164,000 AF over 20 years. However, the remaining rights to the production would still exist and, assuming those rights are exercised, there would be little or no net reduction in production. Therefore, the project would not increase, nor likely decrease, the amount of pumping from the subbasin. The maximum amount of pumping is capped and controlled under the Stipulated Judgment and the amount of water to be used by the project is within the existing allocation and cannot, by law, exceed it without replacement.

Although the subbasin is not yet considered to be balanced, and FPA is expected to decline in the future, there would be sufficient water available for the project because it would use only a fraction of the water made available due to the elimination of agriculture. The large subbasin capacity as compared to the projected water budget deficit allows for the subbasin to provide sufficient water supply to the project, while the Watermaster would continue to manage the basin to bring it into balance.

Further, the rules created by the adjudication concerning transfers of water rights would not allow a net increase of outflow of the subbasin due to a transfer or change in purpose of use (agriculture to solar PV facility). If the water rights were transferred outside of the subarea or for a different use, the rights would be adjusted so that the consumptive use is not increased.

Additionally, based on the findings of the WSA prepared for the project, a sufficient water supply would be available for the project during normal, single-dry and multiple-dry water years during a 20-year projection (Tetra Tech 2018). There is a sufficient water supply to meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses. The project would replace a more water-intensive land use with a less water-intensive land use. While the WSA prepared for the project conservatively assumed that the reduction in water usage at the project site due to the conversion of agricultural land uses to a solar facility may be transferred to other areas within the subarea, resulting in decreased local water usage, the project would require a minimal amount of water as compared to the size of the subbasin (Tetra Tech 2018).

Furthermore, due to the nature of the solar PV facility, much of the ground surface would remain undeveloped, allowing precipitation falling during rain events to run off of the solar PV panels and infiltrate the underlying soil. Although the project would add some impervious surfaces on-site (i.e., foundations, O&M building, etc.), the majority of the site would remain pervious. As such, the project is not anticipated to substantially interfere with groundwater recharge.

Adequate water supplies for construction, operation, and decommissioning activities have been secured through agreements with landowners who currently have on-site water allocations.

During the EIR scoping period, the County received comments requesting analysis of what would happen if the current landowners shift or transfer their production rights to a different part of the Baja Subarea, specifically, on the east side of the Calico-Newberry Fault. The concern raised is that such a shift could accelerate the localized dropping of water levels east of the Calico-Newberry Fault and that this could cause adverse environmental impacts to riparian vegetation in the Cady Camp Wildlife Area which is owned and managed by the California Department of Fish and Wildlife (CDFW) and could also adversely impact domestic wells of rural homeowners in the Newberry Springs area by increasing ground to water depths.

Within the Baja Subarea, the Lower Mojave River Valley Subbasin is divided into west and east sides by the Calico-Newberry fault. The project site is located on the west side. The Calico-Newberry fault impedes flow between the west side and east side of the subbasin although the details of this impedance are not well understood. However, water levels on the west side are generally higher than levels on the east side and the difference between the water levels has increased over time.

The parties to the Stipulated Judgment currently have the right to produce water up to their FPA anywhere within the Subarea under the Stipulated Judgment, with or without the project. It is therefore arguable whether a shift in the location of water production is a reasonably foreseeable consequence of the project. Landowners could make this shift or transfer their rights under current conditions. Further, based on communications with the current landowners, it appears unlikely that such a shift would occur for a variety of economic and practical reasons, whether or not a project is approved. If such a shift were to occur, it is not possible to know when, where or how much water would be pumped.

CEQA does not require analysis of future scenarios that are speculative; that could occur with or without the project; and/or are unlikely. However, this EIR provides an analysis of environmental impacts resulting from potential water pumping scenarios. In some of the scenarios considered, additional groundwater depletion would occur in a basin that is already in overdraft. While the Riverside Superior Court (Court)-appointed Watermaster has tools to address ongoing overdraft conditions in the Baja Subarea, the County lacks the authority to ensure that these measures would be implemented.

Several potential scenarios for future use of the existing production exist, all of which require some degree of forecasting and speculation. Selection of the following four scenarios for evaluation was based upon communications with the current owners of those rights, the rules for transferring water rights under the Stipulated Judgment, the economics of farming in the area, perceptions of future water availability, existing infrastructure, existing patterns of land ownership and other considerations.

- **Scenario 1:** Retirement of the rights by the current owners of those rights;
- **Scenario 2:** Exercise or transfer of existing production rights outside of the Baja Subarea;
- **Scenario 3:** Exercise of existing production rights to the eastern Lower Mojave River Valley Subbasin within the Baja Subarea (i.e. east of the Calico-Newberry Fault); and
- **Scenario 4:** Continuation of existing production of water from the western Lower Mojave River Valley Subbasin to irrigate agricultural land located on the west side of Calico-Newberry Fault.

### **WATER PRODUCTION RIGHTS UNDER THE STIPULATED JUDGMENT**

The Mojave Basin is considered to consist of five distinct but hydrologically interrelated “Subareas.” Under the Stipulated Judgment, each Subarea was found to be in overdraft to some extent due to the use of water by all of the producers in that Subarea. To maintain proper water balances within each Subarea, the Stipulated Judgment establishes an FPA in each Subarea and

provides for the Court to review and adjust, as appropriate, the FPA for each Subarea annually. The FPA is allocated among the producers in the Subarea based on each producer's percentage share of the FPA. All water produced in excess of any producer's share of the FPA must be replaced by the producer, typically via payment to the Watermaster of funds sufficient to purchase replacement water. According to the most recent Annual Report of the Watermaster (May 1, 2018), an underlying assumption of the Stipulated Judgment is that sufficient water will be made available to meet the needs of the Basin in the future from a combination of natural supply, imported water, water conservation, water reuse and transfers of FPA among parties.

Each year, the Watermaster analyzes conditions in each Subarea and recommends to the Court any increase or further reduction in FPA. The Stipulated Judgment specifies factors that must be taken into consideration by the Watermaster in the development of an FPA adjustment recommendation. Water levels within each of the five Subareas are reviewed as part of the Watermaster's investigation into Subarea conditions and recommendations on FPA. Water levels are measured by the Mojave Water Agency and are also reported to the California Statewide Groundwater Elevation Monitoring Program.

According to the most recent Annual Report (May 1, 2018) Baja Subarea water levels continue to decline due to overpumping and limited recharge opportunities. Conditions in Baja have yet to stabilize since 1996. As such, optimal operating parameters have not been established. In the most recent annual report pursuant to the Stipulated Judgment, the Watermaster indicates that an additional FPA rampdown of 5 percent in the Baja Subarea is warranted. This analysis assumes that the Watermaster's recommended additional 5 percent rampdown has or will be approved by the Court.

### **TRANSFER OF WATER PRODUCTION RIGHTS UNDER THE STIPULATED JUDGMENT**

The adjudication rules set forth in the Stipulated Judgment address the transfer of the water production rights. The rights are generally transferable but include a number of restrictions. The Watermaster manages and administers the water rights and their transfer. The Watermaster must be notified of any intended transfer of water rights.

The rules are designed to assure that the total consumptive use within a Subarea does not increase as a result of any transfer. The transfer provision of the Stipulated Judgment also allows producers who chose to not pump to sell FPA to those parties who over-pump. This provision allows parties who stipulated to the Stipulated Judgment the option of compensation in lieu of pumping. The transfer market is a means of equitably allocating the limited supply within a Subarea.

Specifically, the Stipulated Judgment recognizes that water use is comprised of two parts: consumptive use and return flow. Consumptive use is that portion that is consumed and used. For agriculture, this is the water used by a crop or that is evaporated. The return flow is water that ends up back in the subbasin. For agriculture, this is the water that percolates beyond the crop roots and flows to the subbasin.

Generally, the rules are set up to prevent a transfer of rights from increasing consumptive use. This is accomplished by making an adjustment to the water rights transfer if a transfer of those rights would have otherwise resulted in an increase in consumptive use. No adjustment to the water rights transfer is made if the transfer causes the same or a decreased consumptive use.

Inter-subarea transfers are allowed but require the authorization from the Watermaster for the transfer. The transfer of rights from one subarea to another could be allowed when it is helpful to the aquifer levels. For example, if an aquifer is experiencing a decline in water level, it may be beneficial to transfer rights to another subarea with an aquifer that is not experiencing declines.

Intra-subarea transfers do not require Watermaster approval after notice has been given of the transfer. Therefore, it would be possible to transfer to different subbasins (within the same subarea) and impact the subbasins. The Watermaster would still enforce the consumptive use rule that does not allow an increase in consumptive use, but the Watermaster would not be able to block a transfer even if the impact would be detrimental for one of the subbasins. However, if water levels decline as a result of the transfer, the Watermaster could recommend and the Court could approve a further reduction in FPA to address that impact.

The Watermaster's management of the water supply considers both the entire area as a whole, and each of the subareas as separate entities. Some of the subareas have become balanced since the Stipulated Judgment, meaning that over a long period of time, the outflows of the supply match the inflows. The project site is located in the Baja Subarea and this area has not yet been balanced. The Baja Subarea was extremely out of balance at the time of the Stipulated Judgment and significant progress has been made. However, water levels within the Baja Subarea have continued to decline and it is uncertain when those declines will cease, but the Stipulated Judgment contains mechanisms to eventually bring the subarea into balance.

### **RIPARIAN VEGETATION TRENDS**

As water levels have declined in the Lower Mojave River Subbasin, and in particular the easterly portion of that subbasin, east of the Calico-Newberry Fault, the riparian vegetation has been impacted in this eastern area. The reduced availability of water increases the mortality rate of plants and increases the stress on some of the plants. Areas with increased mortality rates can

experience an increase in the amount of sand that can be more easily blown by the wind and develop into sand dunes.

The Camp Cady Wildlife Area, in the easterly portion of the Lower Mojave River Subbasin, includes riparian vegetation comprised largely of willow and cottonwood trees. This riparian vegetation is supported by the Lower Mojave River and high groundwater levels. Although there is not a strong correlation between the riparian vegetation area and the water levels on a short-term basis (e.g. one to 3 or 4 years), there is good long-term correlation (over 10 years).

In 1969, the estimated water level was at elevation 1,767 feet and in 2018 it is estimated to be 1,697 feet for a drop of 70 feet, as shown in **Exhibit 3.9-3, Historic Water Levels**. In 1969, the riparian area was estimated to be 1,210 acres and in 2018 it is estimated to be 370 acres for a reduction of 840 acres. The historical average is approximately 12 acres of riparian habitat is lost for every 1 foot in aquifer water level drop. In addition to the water levels, other factors may contribute to the riparian vegetation, such as the amount of rainfall, and management practices. Projects are currently underway to set up irrigation in the Camp Cady Wildlife Area to replant the native vegetation and help to stop the increase in sand dunes and sand storms.

### **IMPACTS ON GROUNDWATER AND RIPARIAN VEGETATION**

The following discussion presents analysis of potential impacts on localized groundwater levels and riparian vegetation east of the Calico Fault for four possible scenarios for retirement, use, and/or transfer of the unused water rights at the project site if the project is approved.

#### ***Scenario 1: Retirement of Rights***

Comments on the EIR Notice of Preparation suggested that the landowners should be required to retire their water rights if the project is approved. If the landowners were to retire their water rights after project acquisition of their land, then the westerly portion of the Lower Mojave River Subbasin would experience a reduction in pumped water from approximately 23,691 AFY to approximately 16,479 AFY during construction and an even greater reduction during operations and no shift of such production to the east would occur because the rights would be retired. This short-term and long-term reduction would be expected to help stabilize the groundwater levels in the westerly Lower Mojave River Subbasin. The easterly Lower Mojave River Subbasin would remain unaffected (assuming there is a hydrologic barrier between the subbasins), and therefore, the riparian habitat in the Camp Cady Wildlife Area would be expected to remain unaffected. Well pumping on the east side would also remain unaffected.

However, this scenario is unlikely to occur. Production rights are governed by the Stipulated Judgment under the continuing jurisdiction of the Court. The County lacks authority to require a party to the Stipulated Judgment to retire its judicially allocated water production rights. Even if

the County had such authority under the Stipulated Judgment or otherwise, there would be an inadequate nexus between the impacts of the project (which has very little impact on groundwater use) and a requirement that the landowners retire their existing rights to pump groundwater under the Stipulated Judgment. The overdraft condition of the Baja Subarea is not caused by the development of solar energy projects and would not be exacerbated by project construction or operation except perhaps as an indirect impact as discussed under Scenario 3. This indirect connection between the project and the potential for the landowners to exercise their pumping rights east of the Fault is insufficiently certain or direct to warrant a mitigation measure or condition of approval requiring that the landowners retire their water rights or that the project applicant be required to purchase such rights and retire them.

***Scenario 2: Exercise or Transfer of Production Rights Outside of the Baja Subarea***

The transfer of rights from the project site outside of the Baja Subarea requires authorization from the Watermaster. Landowner relocation or transfer of their production rights from the project site to areas outside of the Baja Subarea would be allowed when it is helpful to the aquifer levels, and the rights would be adjusted so that the consumptive use is not increased.

A transfer outside of the Baja Subarea would not provide the same return flow that would have been provided if the landowners within the project site had retained their rights and continued operating similarly to their past use. Therefore, the Watermaster would make an adjustment (reduction) to the rights that could be transferred to account for the fact that there would not be a return flow. The Stipulated Judgment sets the consumptive use to return flow ratio to 50/50, meaning that outside-Basin transfers would be reduced by 50 percent. Adjustments to rights based on change in purpose of use (such as from agricultural to industrial) would also be made on a case by case basis depending on the change in consumptive use between the new use and the old use.

Because of the consumptive use adjustment, transfers outside of the Baja Subarea would not affect the Baja Subarea. Specifically, they would not affect the Lower Mojave River Subbasin, and therefore, would not affect the riparian vegetation at the Camp Cady Wildlife Area in the eastern Lower Mojave River Valley Subbasin. Transfers of production rights could have long-term adverse environmental consequences to areas outside of the Baja Subarea. However, there is no way to determine where such inter-subarea transfers might occur.

***Scenario 3: Exercise or Transfer of Production Rights within the Baja Subarea East of the Calico-Newberry Fault***

Under the Stipulated Judgment, landowner transfer of water production rights (or relocation of production) without a change in purpose of the use *within* a Subarea requires Watermaster

notification but does not require Watermaster approval. If the production that is currently occurring west of the Calico-Newberry Fault were to shift to east of the Calico-Newberry fault, the water levels of the easterly part of the Lower Mojave River Subbasin would likely be adversely affected, causing a localized lowering of groundwater levels east of the fault even if not a depletion of supplies in the Baja Subarea as a whole. If all 7,682 AF of the FPA west of the fault were to be produced east of the fault, the decline in groundwater levels east of the fault would continue and perhaps accelerate, and the amount of riparian vegetation would be expected to continue to decline and the distance from ground to groundwater for domestic wells in Newberry Springs would likely increase. If 100 percent of the production rights were exercised or transferred to the easterly basin, an additional 7,657 AFY could be pumped (7,682 minus 25 for the project), which may result in a further 0.9 feet per year decline in the easterly subbasin water level.

The rate of decline of the water level is expected to slow in the future as the FPA is brought closer to the Production Safe Yield. If it is assumed that the easterly subbasin was to be brought into equilibrium in 9 years, the decline in water level due to the transferred water rights would amount to about 4 feet. The 4 feet of lowered water level would amount to about 48 acres of riparian habitat transitioning to a more typical desert habitat.

The average well depth in the Newberry Springs area is 261 feet and the average static water level is 123 feet. An additional drop of 4 feet of water level assumed in this scenario would not have an impact on the capability of the average well to produce water.

Specific data was not available on the static water level of the shallowest wells. If the worst case were assumed, then the shallowest wells, at 150 feet deep, would have static water levels of 135 feet. This would leave 15 feet for pumping drawdown and future reductions in water level. If the subbasin were to stabilize in 9 years, the estimated drop in water level would be 5.9 feet. If the 4 feet additional drop were assumed in this scenario, the total drop would be 9.9 feet. This would leave about 5 feet for pumping drawdown.

Based on a review of factors expected to influence decisions about water production, as well as communications with the landowners in the project site, the likelihood that 100 percent of current water production on the west side of the Calico-Newberry fault would shift to the east side of the fault is very low. First, historically, of the total FPA in the Baja Subarea, only 45 percent has been produced east of the Calico-Newberry Fault. Second, it is known that the easterly subbasin is at a lower water level than the westerly subbasin and the easterly subbasin is declining at a faster rate than the westerly subbasin. Because of the known declining water levels on the east side of the fault and the on-going rampdowns of FPA under the Stipulated Judgment in the Baja Subarea as a whole, it is highly unlikely that the current landowners would shift water production from the west side of the fault to the east side of the fault.

This shift from west to east is unlikely because significant capital expenditures would be required to construct new wells, irrigation systems, and/or purchase land for farming on the east side. Confidence in an adequate long-term source of water on the east side of the fault would be a prerequisite to such investments. Based on communications with landowners within the project site, none of them are currently contemplating expanding farming activities on the east side of the fault because the investments that would be required to do so are not perceived to be prudent given declining water levels. Two of the largest landowners on the project site indicated that they plan to use their water rights on the west side of the fault for pistachio farming and that use of water rights for new investments on the east side would be risky given the continued FPA ramp downs. This scenario is further discussed as Scenario 4 in Section 4.4.

The negative economic perception of the declining water levels east of the Calico-Newberry Fault will also tend to depress expansion of farming by farmers outside the project site who are already located east of the fault and dampen the economic attractiveness of purchasing additional water production rights from the landowners on the west side of the fault. It is possible that transfers of FPA could occur to address pumping in excess of allocated FPA on the east side. Such transfers would have a net neutral impact on water levels in the two subbasins.

For these reasons, a shift of 100 percent of the actual historic production within the project site from the west to east is highly unlikely. Based on discussions with landowners that make up about half of the project area FPA, no additional production on the east side is anticipated for their water rights.

In the unlikely event that such transfer of pumping rights were to occur, there are legal measures under the Stipulated Judgment that could address the potential for dropping groundwater levels east of the Fault. First, on an annual basis, the Watermaster is tasked with monitoring the aquifer and recommending adjustments (“rampdowns”) to the FPA in order to achieve long term sustainability in the Baja Subarea. Since the Watermaster administers the FPA by Subareas and not by a portion of a subbasin, some portions of subbasins could be more affected than other portions. In other words, it is possible for a portion of a subbasin, such as the area east of the Calico-Newberry fault, to be in decline, and other portions to be rising, while the subarea as a whole is in equilibrium. If that becomes the case, Watermaster nonetheless has the ability to balance the subbasins by further reducing FPA for the entire subarea. The potential for even further rampdowns as a reaction to shifting production to the east side of the fault is another reason the current landowners would be unlikely to shift or transfer FPA to the east side of fault.

Second, the Watermaster has the authority to purchase supplemental water and could recharge the easterly subbasin through spreading (i.e., percolating) imported water. Monitoring/study may be necessary to ensure that the supplemental water would be delivered to the locations

where it is needed. The cost of such monitoring would logically be borne by those pumping the water.

A third strategy may be for the Watermaster to convey local westerly subbasin water to the easterly subbasin and spread it in the easterly subbasin. This strategy may have the advantage of requiring only a very short pipeline from the west side of the Calico-Newberry fault to the east side of the Calico-Newberry fault. This strategy could be used to even out the water levels on either side of the Calico-Newberry fault and could be considered regardless of whether or not the Project is constructed. There may be other tools the Watermaster has to address overdraft conditions under the Stipulated Judgment.

None of the measures would be required to be undertaken as a result of the construction or operation of the proposed project itself. These changes in pumping patterns, should they occur, would be independent of the project and could occur under current conditions, with or without the project and would not impact overall demand and supply but only localized demand and supply. Further, under the Stipulated Judgment, only the Watermaster has the authority to implement these water-balancing measures (with the approval of the Court). Whether the Watermaster would implement any of the strategies available to it to achieve equilibrium between the easterly and westerly portions of the subbasin is uncertain although it is noted that the Watermaster has been actively addressing the overdraft situation in the Baja Subarea and would be expected to continue to do so.

The County lacks authority to require a party to the Stipulated Judgment to reduce pumping its judicially allocated water production rights. Even if the County had such authority under the Stipulated Judgment or otherwise, there would be an inadequate nexus between the impacts of the project and a requirement that the landowners retire their existing rights to pump groundwater under the Stipulated Judgment. The declining groundwater levels in the Baja Subarea is not caused by the development of solar energy projects and would not be exacerbated by the construction and operation of the project except as an indirect impact as discussed under Scenario 3.

However, because the County lacks authority over the Watermaster and cannot unilaterally adjust production allowances, it is therefore conservatively assumed that environmental impacts of Scenario 3 could be significant and unavoidable if this scenario were to occur.

***Scenario 4: Continued Pumping and Irrigation on the West Side of the Calico-Newberry Fault***

Scenario 4 considers the condition where the landowners within the project site could continue to produce and use the water on the west side of Calico-Newberry fault. There are some known

areas in the west that would have increasing water demands. For example, there were about 290 acres of pistachio trees recently planted on the western portion. These trees take about seven years to start producing nuts and require more water as they mature (12 years to full maturity). These trees may take up to 6 AFY of water per acre planted. Based on these types of increased demands, it is reasonable to estimate that a majority of the unused water rights from the project site would likely be used in the west subbasin rather than be transferred to the east subbasin.

This scenario would have a net neutral impact on the Baja Subarea and would not affect the Lower Mojave River Valley Subbasin and therefore, would not affect the riparian vegetation at the Camp Cady Wildlife Area or residential wells in the Newberry Springs area in the eastern subbasin.

### **SUMMARY**

Scenarios 1 and 4 would have no adverse impact on the groundwater levels in the subbasin east of the fault. Scenarios 2 and 3 evaluate the potential water-related environmental impacts due to localized shifts in groundwater levels that could result if the current landowners either transfer or shift their existing FPA to other areas. These shifts would not change existing supply or demand on a Subarea wide basis but only on a localized basis with the Subarea. These scenarios are unlikely due to either controls on inter-basin transfers or to the economic disincentives to shifting FPA to the east side of the Calico-Newberry Fault.

As noted, these scenarios could occur with or without the approval of the project. It is therefore questionable whether these impacts to localized groundwater levels on the east side of Calico Fault can reasonably be considered to be foreseeable indirect impacts of the project. Impacts are conservatively assumed to be significant and unavoidable because the County could not compel any actions by the Watermaster to adjust FPA or take other actions to address declining groundwater levels east of the Calico-Newberry Fault.

**Mitigation Measures:** No feasible mitigation measures are available.

**Level of Significance:** Significant and unavoidable.

***EROSION ON- OR OFF-SITE***

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**Impact 3.9-3**            **The project would not 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 on- or off-site. Impacts would be less than significant.**

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No rivers or streams exist on the project site, and no alteration to those types of features would take place with project implementation.

Site preparation and grading activities would consist of clearing, grubbing, scarifying, recompacting, and grading to level the site and remove any mounds or holes that remain from the previous land use. Though grading is expected to occur throughout the site, the site's cut and fill would balance. No importing or exporting of materials would be necessary, and the negligible grading (smoothing) of the project site is not anticipated to change surface flow patterns in the project area since site drainage would be designed to follow natural drainage patterns. None of the on-site facilities, including fences and panel posts, are expected to prevent stormwater flow. The disturbance area will be compacted and stabilized to prevent erosion/sedimentation. Additionally, the Mojave River wash limits are not included within the project disturbance area (Joseph E. Bonadiman & Associates 2018a, 2018b).

The project would not 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 on- or off-site erosion. Impacts would be less than significant.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

***FLOODING ON- OR OFF-SITE***

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**Impact 3.9-4**            **The project would not substantially alter the existing drainage pattern in 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 that would result in flooding on- or off-site. Impacts would be less than significant.**

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Based on the hydrologic analysis and on preliminary design of the retention basins, the proposed Daggett Solar Power Facility would provide adequate retention facilities to mitigate the expected 100-year, 24-hour volume increase caused by the project. The proposed basins would be located below the existing grade and at locations that will require little to no grading to direct drainage to the basins. The long, shallow design of the basins would maintain the existing conditions sheet

flow drainage to the maximum extent possible without unnecessarily concentrating flows at any single location.

Finally, the basin depths (1 to 3 feet) would ensure complete drawdown within 72 hours after cessation of the 100-year, 24-hour event to prevent long-term standing water and associated vector issues. For a summary of existing and developed on-site peak flows, refer to Table 3, Existing vs. Developed Conditions Volume and Peak Flows Increase, in the Addendum to Preliminary Hydrology Study & Hydraulics Report in **Appendix I-2**.

The proposed project would result in an increase in peak flows ranging from 2.4 to 13.6 percent, with a total site-wide increase of 9.5 percent (570 cubic feet per second [cfs]) and an average per-acre increase of 0.20 cfs for the site. This increase in flow is conservative, as it has been assumed that the proposed conditions project cover will be 100 percent barren; following regrowth of natural vegetative cover, peak flow increases from the initial project developed will be reduced to near-existing conditions. As stated above, these increased flows would be discharged from the proposed basins via wide, shallow weirs to mimic sheet flow conditions and evenly spread the flow increases and to prevent concentrated discharge at a single location.

The published peak 100-year flow for the Mojave River (downstream conveyance for the project site) is 18,500 cfs. Therefore, the proposed site-wide increase of 570 cfs would result in a total wash flow of 18,500 cfs, a 1 percent increase. Based on the negligible increase in flows expected from project implementation, along with the anticipated regrowth of natural vegetative cover, which would reduce peak flows to near-existing conditions, a less than significant impact would occur.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

#### ***STORMWATER DRAINAGE SYSTEMS AND POLLUTED RUNOFF***

**Impact 3.9-5            The project would not 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. Impacts would be less than significant.**

No storm drains systems exist within the project site limits or downstream of the project site (see Impact 3.9-3 regarding the capacity of the Mojave River wash). See Impact 3.9-6 regarding water quality and pollutants.

Thus, project operations as designed would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems, nor would project

operations result in substantial additional sources of polluted runoff. Impacts would be less than significant.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

#### **WATER QUALITY**

**Impact 3.9-6                    The project would not otherwise substantially degrade water quality. Impacts would be less than significant.**

The proposed retention basins would provide retention and infiltration of 115 percent of the calculated 100-year, 24-hour volume increase. This retention volume is far greater than the 2-year, 1-hour (85th percentile) event required by San Bernardino County for water quality treatment provided via infiltration Low Impact Development (LID) best management practices. The proposed retention and infiltration volume will be adequate for any anticipated pollutants resulting from the small amount of paving (parking areas) and number of rooftops proposed. As such, it is not anticipated that the project will have an adverse impact on water quality.

#### **SHORT-TERM CONSTRUCTION**

Though grading is expected to occur throughout the site, the site's cut and fill would balance, no importing or exporting of materials would be necessary, and the leveling of the project site is not anticipated to change surface flow patterns in the project area (Joseph E. Bonadiman & Associates 2018a, 2018b). The disturbance area would be compacted and stabilized to prevent erosion/sedimentation. As discussed above in Impact 3.9-1, project compliance with existing regulatory requirements, such as implementation of a County approved WQMP with source control BMPs, would adequately protect water quality during project construction. Project construction would not degrade water quality. Thus, impacts would be less than significant in this regard.

#### **LONG-TERM OPERATIONS**

As discussed in Impact 3.9-1, project compliance with regulatory requirements would protect water quality from project operations. Compliance with existing federal, state, and local regulations as discussed above would protect water quality and ensure project compliance with applicable water quality standards. Project operations would occur in compliance with such requirements. Impacts would be less than significant.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

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***STRUCTURES WITHIN A 100-YEAR FLOODPLAIN***

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**Impact 3.9-7            The project would not be placed within a 100-year flood hazard area structures which would impede or redirect flows. Impacts would be less than significant.**

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No published flood information and/or flood hazard area information is available from FEMA for the project area. For this reason, the following modeling was conducted as part of the preliminary hydrology and hydraulics study:

- A two-dimensional flood modeling for the on-site study watershed north (downstream) of the A.T.S.F. railroad culverts was performed using FLO-2D, according to the recommendations found in the FLO-2D User's Manual (v. 2004.10, October 2004).
- Off-site flood impacts were modeled using hydrographs for the 12 culvert discharge locations, the east Daggett channel discharge location, and the Mojave River wash.
- On-site precipitation was modeled using the San Bernardino County Hydrology Manual rainfall distribution graph. On-site losses were modeled using the SCS method.

The FLO-2D floodplain model was independently developed as part of the preliminary hydrology and hydraulics study to assist in project design considerations. The project proposes photovoltaic panels on pilings. According to the FEMA National Flood Insurance Program, piers and pilings are acceptable within flood-prone watersheds (areas similar to the project site) and not considered an impediment to flood flows (Joseph E. Bonadiman & Associates 2018a). However, the elevation at which piers and pilings are placed is a critical component of the overall site design to avoid the impediment of water flow and/or redirection of flows.

For this reason, a focused point-by-point analysis will be performed in final design to provide detailed photovoltaic panel elevation requirements for all panel locations to ensure that all panels are elevated a minimum of 1 foot above the calculated flood depths from the FLO-2D modeling. For detailed analysis and modeling results, refer to Table 10, Existing Culverts Hydraulics Calculations Summary, in the Addendum to Preliminary Hydrology Study & Hydraulics Report in **Appendix I-2**.

In addition, existing on-site railroad culverts Numbers 1 and 2 were found to have adequate capacity to convey the calculated tributary 100-year flows without water overtopping the existing railroad berms. Therefore, the project would not place structures within a 100-year flood hazard

area as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. Thus, a less than significant impact would occur.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

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***FLOOD RISK AND FAILURE OF A LEVEE OR DAM***

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**Impact 3.9-8**                    **The project would not 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. Impacts would be less than significant.**

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The San Bernardino County (2007c) Hazard Overlay for the Desert Region identifies the Mojave River wash as an Area of Inundation. The Mojave River wash, however, is located north and well outside of the project site boundaries. No portion of the project site is indicated as a potential Area of Inundation. Also refer to Impact 3.9-7. The project would not place structures in an area that would impede or redirect flood flows, nor would it expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding because of levee or dam failure. A less than significant impact would occur.

**Mitigation Measures:** None required.

**Level of Significance:** Less than significant.

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***INUNDATION BY SEICHE, TSUNAMI, OR MUDFLOW***

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**Impact 3.9-9**                    **Implementation of the project would not result in inundation by seiche, tsunami, or mudflow. No impact would occur.**

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A seiche is a surface wave created when a body of water is shaken, usually by earthquake activity. Seiches are of concern relative to water storage facilities, because inundation from a seiche can occur if the wave overflows a containment wall, such as the wall of a reservoir, water storage tank, dam, or other artificial body of water. Tsunamis are a type of earthquake-induced flooding that is produced by large-scale sudden disturbances of the sea floor. Tsunamis interact with the shallow sea floor topography upon approaching a landmass, resulting in an increase in wave height and a destructive wave surge into low-lying coastal areas. The project site is approximately 110 miles inland from the Pacific Ocean, and no reservoirs or enclosed bodies of water exist near the project site. The project is not anticipated to be subject to the effects of seiche or tsunami.

Mudflows are landslide events in which a mass of saturated soil flows downhill as a very thick liquid. The soils in the project area are moderately well drained, the terrain is relatively flat, and mudflows have not historically been an issue in the area. The closest area to the project site with

documented landslide reports or maps is Victorville, approximately 34 miles to the southwest (CGS 2015). Additionally, there are no substantial slopes on or in the immediate vicinity of the site with the potential to result in mudflow impacts. No impact would occur.

**Mitigation Measures:** None required.

**Level of Significance:** No impact.

### **CUMULATIVE IMPACTS**

**Impact 3.9-10 Implementation of the project could result in cumulative impacts to hydrology and water quality. Impacts would be significant and unavoidable.**

Cumulative impacts to hydrology and water quality generally occur as a result of incremental changes that degrade water quality. Cumulative impacts can also include individual projects which, taken together, adversely contribute to drainage flows or increase potential for flooding in a project area or watershed. **Table 3.0-1** in Section 3.0 identifies the cumulative projects considered in this evaluation.

According to the County of San Bernardino General Plan EIR, General Plan buildout would contribute to increased hydrology and water quality impacts. However, impacts would be reduced to a less than significant level following compliance with General Plan goals, policies, and programs, and through compliance with San Bernardino County Flood Control District requirements. As stated in the Preliminary Hydrology Study and Flood Analysis (**Appendix I-1**), the proposed project would result in a 100-year, 24-hour volume increase of 373.27 AF. Project design features would capture and retain this volume in strip basins which would mimic existing hydrology patterns and mitigate hydrology impacts. Additionally, the proposed project would not substantially alter the existing topography of the project site that would impact hydrology drainage or water quality.

Additionally, groundwater supplies would be adequate to serve construction and operational demands of the proposed project. According to the WSA, the project, when considered with current and anticipated future development within the subbasin, would not adversely affect groundwater availability in the immediate future or over the long-term, due to existing and anticipated groundwater supplies and ongoing regulation and management of the subbasin by the MWA (Tetra Tech, 2018; see **Appendix I-3**).

Based on the findings of the WSA, there is sufficient groundwater supply available for the project during normal, single dry and multiple dry water years during a 20-year projection (Tetra Tech 2018). Additionally, the project would replace a more water-intensive land use with a less water-

intensive land use. While the WSA assumed conservatively that the reduction in groundwater usage at the project site due to the conversion of agricultural land uses may be transferred to other areas within the subarea, thereby decreasing local water usage, the project would require only a limited amount of water as compared to the overall size of the subbasin, thereby having a minimal contribution to anticipated future increase on groundwater demands (Tetra Tech 2018). Refer to Section 3.13, Utilities and Service Systems, for additional discussion.

However, as discussed above under Impact 3.9-2, the project would contribute to potential indirect impacts relative to groundwater supplies with the subarea. Although groundwater would be affected by planned and future land uses within the subarea, water supplies would continue to be subject to regulation to ensure that such supplies are not adversely affected by development.

Various scenarios have been considered relative to the proposed project and potential environmental impacts resulting from the transfer or shift of the FPA. If such a shift were to occur, it is not possible to know when, where or how much water would be pumped. As previously noted, the scenarios analyzed could occur with or without the approval of the project.

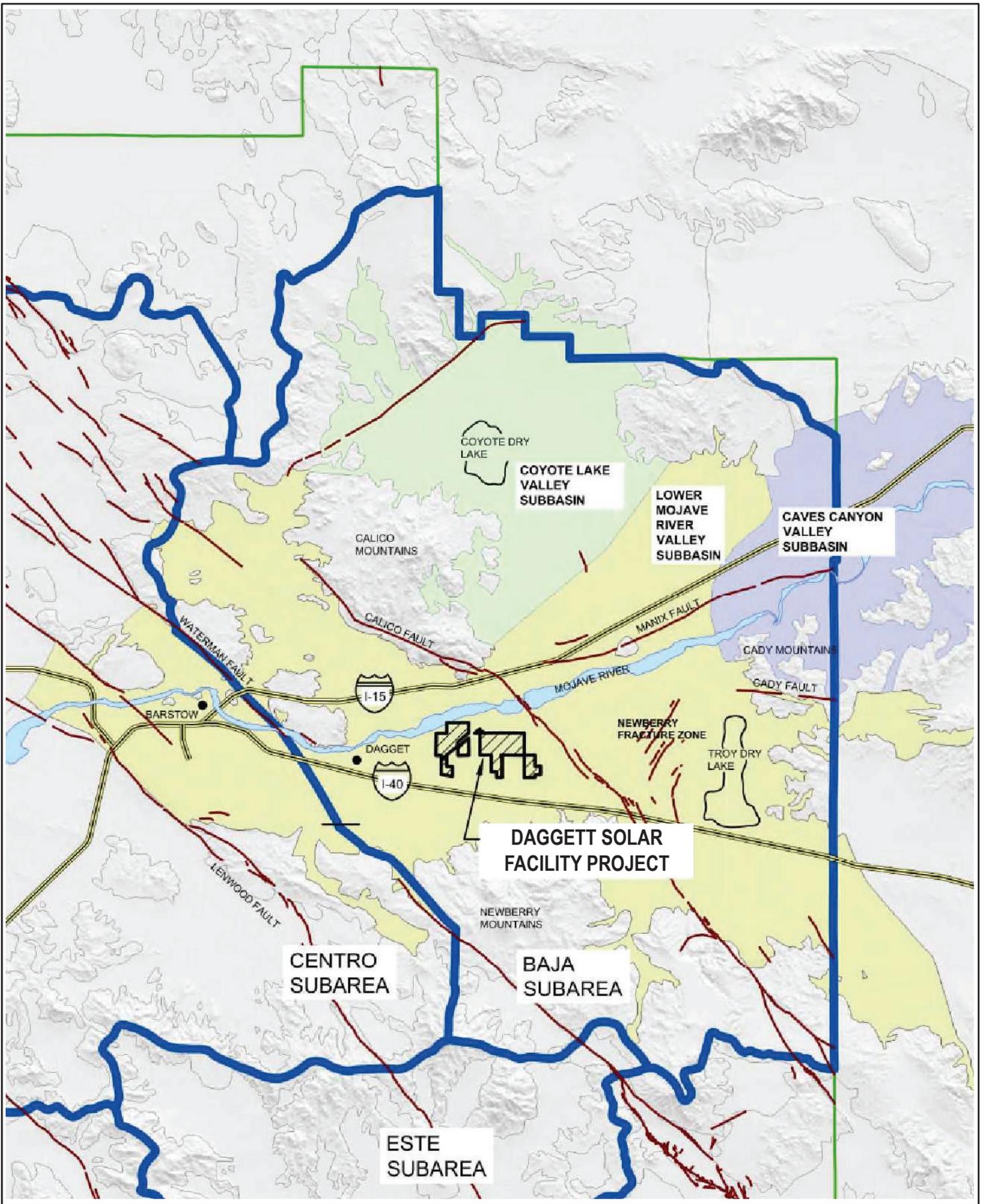
It is therefore questionable whether these impacts are reasonably foreseeable indirect impacts of the project. Accordingly, these impacts are conservatively assumed to be significant and unavoidable because the County could not compel any actions by the Watermaster to adjust FPA or take other actions to reach equilibrium in the Baja Subarea.

As discussed, the project would not result in a significant impact on hydrology and water quality following compliance with existing regulations, except with respect to groundwater supplies. Each development project would be subject to compliance with existing regulations and would be required to address site-specific hydrology and water quality issues to County standards through implementation of recommendations outlined in site-specific hydrologic and water quality evaluations. Cumulative development would be required to construct on- and off-site facilities capable of offsetting any identified cumulative impacts to drainage and flooding conditions and would be required to mitigate potential water quality impacts. Because of the project's conservatively assumed impacts to groundwater supplies, the project is considered to contribute considerably to the significant and unavoidable cumulative impact on groundwater supplies.

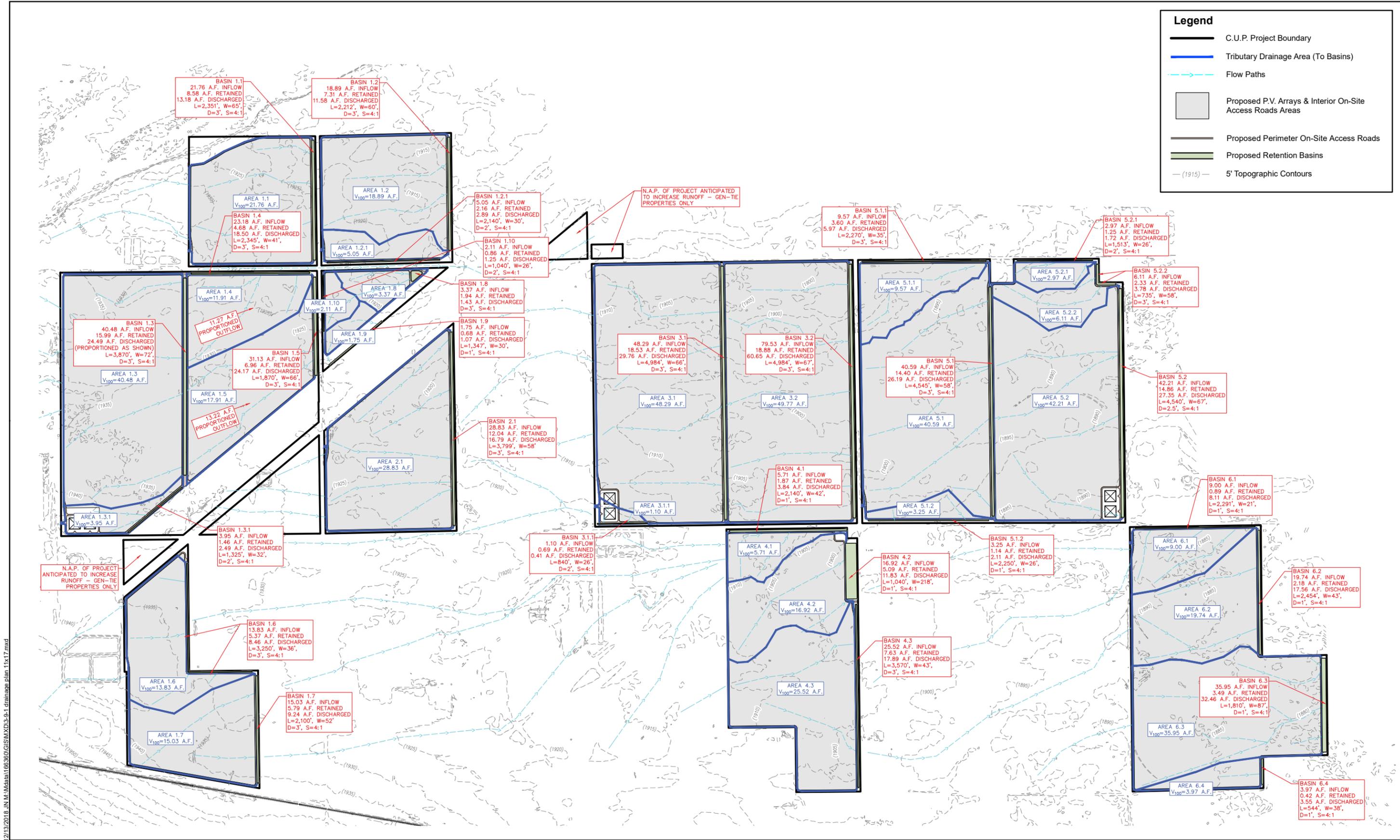
**Mitigation Measures:** No feasible mitigation measures are available (impacts on groundwater supplies).

**Level of Significance:** Significant and unavoidable.

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### Legend

- C.U.P. Project Boundary
- Tributary Drainage Area (To Basins)
- Flow Paths
- Proposed P.V. Arrays & Interior On-Site Access Roads Areas
- Proposed Perimeter On-Site Access Roads
- Proposed Retention Basins
- 5' Topographic Contours

12/13/2018, JN.M:\daba\166360\GIS\MXD\9-1.drainage plan 11x17.mxd

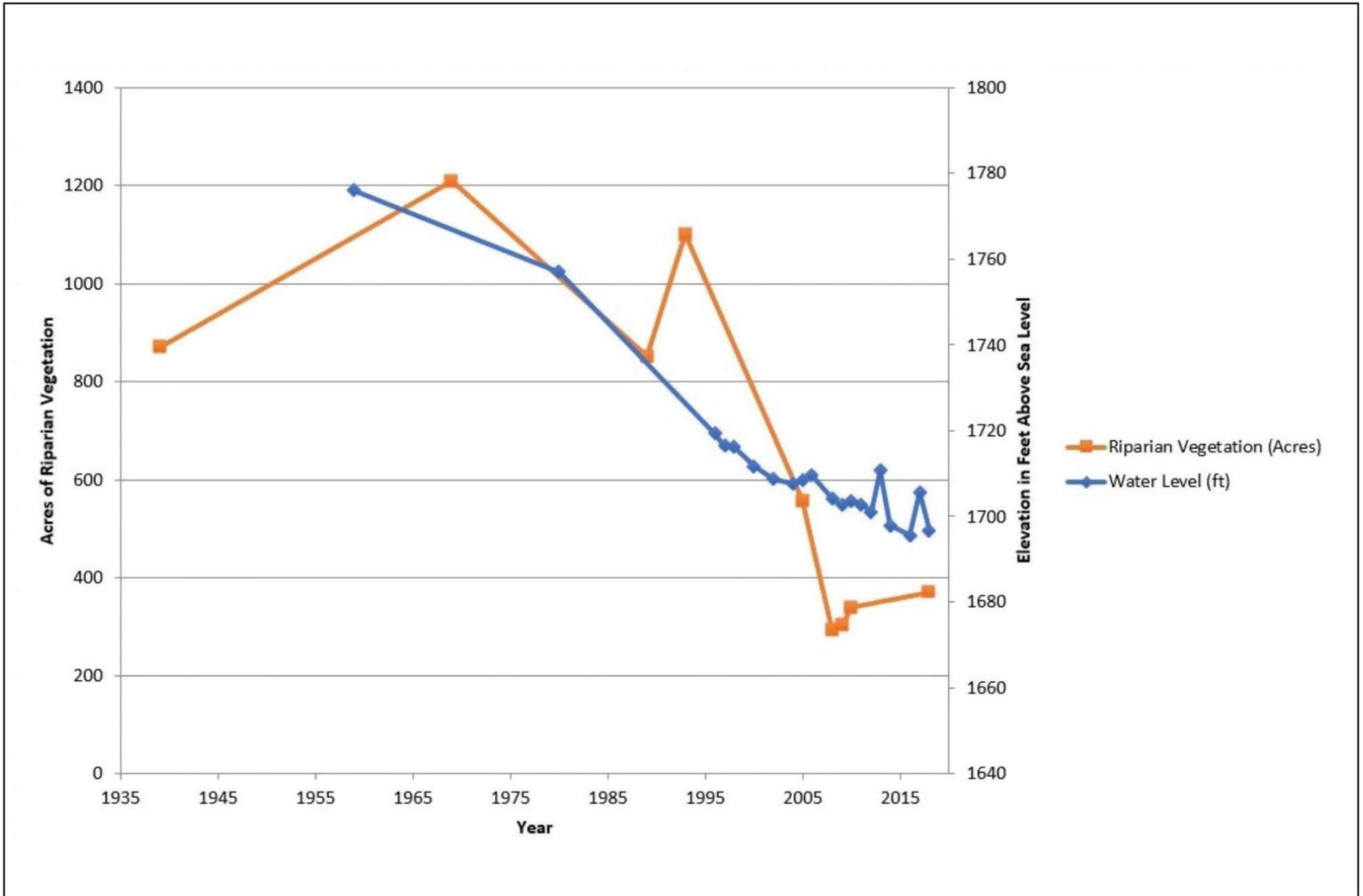
**Michael Baker INTERNATIONAL**

0 1,000 2,000 4,000 Feet

Source: Joseph E. Bonadiman and Associates, Inc., June 2018.

DAGGETT SOLAR POWER FACILITY  
 ENVIRONMENTAL IMPACT REPORT  
**Proposed Drainage Plan**

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