Section 3.8
Hydrology and Water Quality

This section describes regulations related to hydrology and water quality in the project area, identifies criteria for impacts on hydrology and water quality, and evaluates potential impacts associated with the proposed project. Information in this section is based on hydrology and water quality information obtained from available project-specific reports including the *Preliminary Water Quality Management Plan* (2016) prepared by RRC Power & Energy, LLC (RRC), the *Hydrology and Hydraulics Report* (2018) prepared by RRC, the *Drainage Report for Calcite Substation, prepared by* CASC Engineering and Consulting, and the *Ord Mountain Solar Energy Project Groundwater Availability Report* (2016) prepared by Dudek. These reports were peer reviewed by Michael Baker International; see **Appendix H**).

Additionally, hydrology and water quality information was obtained from available public resources, including the *Water Quality Control Plan for the Colorado River Basin* (Colorado River RWQCB 2017), 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 Colorado River Basin Region covers approximately 13 million acres (20,000 square miles) in the southeastern portion of California. It includes all of Imperial County and portions of San Bernardino, Riverside, and San Diego counties. A significant geographical feature of the region is the Salton Trough, which contains the Salton Sea and the Coachella and Imperial valleys. The two valleys are separated by the Salton Sea, which covers the lowest area of the depression. The trough is a structural extension of the Gulf of California.

For planning and reporting purposes, the region has been divided into seven major planning areas on the basis of different economic and hydrologic characteristics: Lucerne Valley, Hayfield, Coachella Valley, Anza-Borrego, Imperial Valley, Salton Sea, and East Colorado River Basin. The project site is in the Lucerne Valley planning area.

The Lucerne Valley planning area comprises many small internal drainage basins that cover 6,500 square miles, approximately the northern third of the West Basin. In the upper desert, which contains Lucerne Valley, Yucca Valley, Joshua Tree, and Twentynine Palms, precipitation is higher, and frost often occurs. The San Bernardino Mountains to the south have the highest peaks in the planning area, with elevations exceeding 7,000 feet.

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 the unconsolidated alluvium. Except for areas near some of the dry lakes, groundwater is unconfined. In the Mojave River Groundwater 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 by 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 mountain, 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

According to the Hydrology and Hydraulics Report, the project site's topography slopes from northwest to southeast with an approximate grade of about 0.7 percent (RRC 2018).

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 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 Water Quality Management Plan (WQMP), there are no impaired bodies of water near the proposed project site (RRC 2016; **Appendix H**).

GROUNDWATER QUALITY

There are numerous groundwater quality issues in the Mojave Water Agency (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 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 titled 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 proposed project site is in an area of the state regulated by the Colorado River Regional Water Quality Control Board (Colorado River RWQCB). Water quality standards for water bodies in the region are primarily contained in the Water Quality Control Plan, Colorado River Basin – Region 7 (Colorado River RWQCB 2017).

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 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 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 RWQCBs. 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 Colorado River 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.). CWA 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 must 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 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 Plans) for each of the nine regions overseen by the Regional Water Quality Control Boards that designate the beneficial uses of California's rivers and groundwater basins.

The Water Quality Control Plan, Colorado River Basin gives direction on the beneficial uses of state waters in Region 7, 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 Colorado River 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 2018).

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 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.

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 Colorado River 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 Colorado River Basin.

LOCAL

SAN BERNARDINO COUNTY GENERAL PLAN

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

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.

No Conservation Element goals or policies regarding surface water or groundwater have been established specifically for the Desert Region.

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.

THRESHOLDS OF SIGNIFICANCE

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

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a 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 3.8-1 **The project would not violate any water quality standards or waste discharge requirements. Impacts would be less than significant.**

Stormwater runoff (both dry and wet weather) generally discharges into storm drains and/or flows directly to creeks, rivers, lakes, and the ocean. 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, types and amounts 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.

SHORT-TERM CONSTRUCTION

Construction grading, excavation, and other construction activities associated with the proposed project could impact water quality due to sheet erosion resulting from exposed soils and subsequent deposition of particles and pollutants in drainage areas. Construction has the potential to produce typical pollutants such as nutrients, heavy metals, pesticides/herbicides, toxic chemicals, oils and fuels, lubricants, and solvents. Additionally, waste materials such as wash water, paints, wood, paper, concrete, food containers, and sanitary wastes may be transported from the project site to nearby drainages, watersheds, and groundwater in stormwater runoff, wash water, and dust control water. The significance of these water quality

impacts would vary depending on the level of construction activity, weather conditions, soil conditions, and increased sedimentation of drainage systems in the area.

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 Section 35, Pollutant Discharge Elimination System Regulations. The purpose of Section 35 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.

The project-specific Water Quality Management Plan is intended to comply with the requirements of the San Bernardino County Code standards and the NPDES Area-wide Stormwater Program requiring the preparation of a WQMP. The WQMP includes site design and source control best management practices during construction to ensure stormwater runoff and impervious areas are minimized and natural areas are conserved. Table 3.8-1, *Project Best Management Practices,* summarizes the types of BMPs that are required to be implemented and which specific portion of the project site.

Table 3.8-1:
Project Best Management Practices

Best Management Practice	Ord Mountain Solar and Energy Storage Location	Calcite Substation Location
Site Design BMPs		
Erosion Control BMP. Site BMPs primarily consist of erosion control fencing or an equally effective method or product, as determined upon approval by the County. The erosion control fence or similar and equally effective method, will be temporary and removed upon completion of the project.	X	X
Efficient solar panel layout. The solar panels will be laid out in a space efficient manner. The proposed roadway will be located as close to the panels as can be safely located and roadway length is minimized as much as possible.	X	N/A
Roadway and temporary parking material. The proposed site access roadway and temporary parking will be a compacted native soil or other permeable roadway surface.	X	X

Best Management Practice	Ord Mountain Solar and Energy Storage Location	Calcite Substation Location
Construct streets, sidewalks and parking lots to minimum width necessary. Minimum roadway width of 24 feet for perimeter roadways and 20 feet for interior roadways.	X	X
Source Control BMPs		
Employee training[1] and activity restrictions[2]	X	X

Source: RRC 2016

1. *Employee training requires that the employees be trained in the proper care and maintenance procedures to maintain best management practices.*
2. *Activity restrictions include limiting on-site activities to construction-related activities during the construction phase.*

LONG-TERM OPERATIONS

Consistent with regional and local requirements, a project-specific *Hydrology and Hydraulics Report* was prepared for the Ord Mountain Solar and Energy Project (RRC 2018; see **Appendix H**), and a *Drainage Report* was prepared for the Calcite Substation (CASC 2016; see **Appendix H**).

ORD MOUNTAIN SOLAR AND ENERGY PROJECT

Hydrologic modeling was conducted to determine the difference in runoff rates under preconstruction and post-construction conditions.[1] The first scenario looked at the potential runoff generated from off-site flow and existing site conditions; the second scenario determined the potential runoff increase using the approximate amount of impervious cover created by the proposed project. Under existing conditions, any runoff generated from precipitation falling over the project site does not leave the site due to high infiltration rate soils. The proposed project, consisting of solar panels with associated inverters and a substation, would add a very small amount of impervious cover. The solar panels would be supported by small driven piles with a few square inches of impervious cover. The inverter pads would create a negligible amount of impervious cover. The solar panels do not add any impervious cover because they are off the ground, and rainfall falling directly on the panels would shed directly to the ground below.

The second model scenario was run to evaluate the impact of site development using the percentage of impervious cover created by the inverter pad, solar panel pile foundations, battery storage building, and substation totaling 77,229 square feet, or 0.37 percent cover over the site. The model indicated that again the precipitation falling on the developed project would not result in having any off-site flow and would be absorbed quickly into the subsurface. The model was

[1] The Hydrologic Modeling System (HEC-HMS) is designed to simulate the complete hydrologic processes of dendritic watershed systems—as opposed to river systems which are usually modelled using HEC RAS.

run with 1 percent impervious cover to provide a more conservative estimate. The results indicated that there would be no off-site stormwater flow.

CALCITE SUBSTATION

Existing runoff is estimated at 86,023 cubic feet (cf) or 1.97 acre-feet (af) of runoff for the 100-year/24-hour storm event. The project would add approximately 1.7 acres of impervious surface and generate 86,149 cf (1.98 af) of runoff for the 100-year/24-hour storm event, resulting in an increase of 126 cf or 0.15 percent of the existing flow. Runoff from these impervious areas would be conveyed southerly by the proposed grading via overland sheet flow, and ultimately discharge into a proposed retention facility located along the south side of the site. Two proposed retention basins would help reduce impacts to downstream receiving water by metering off-site flows. In addition, two channels would be installed, one the north side of the project site and one on the west side of the project site, to accept run-on flows generated from off-site drainage areas. Both of these channels are designed to divert the 100-year peak flows around the project site.

ORD MOUNTAIN SOLAR AND ENERGY PROJECT AND CALCITE SUBSTATION

In addition, development and implementation of a SWPPP, implementation of best management practices identified in the WQMP, and compliance with existing federal, state, and local regulations as discussed above, would protect water quality and ensure project compliance with applicable water quality standards. The project would not violate any water quality standards or waste discharge requirements. Impacts would be less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

GROUNDWATER SUPPLIES

Impact 3.8-2	**The project would not 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 less than significant.**

The Mojave Water Agency is the water purveyor for the project site. The MWA has four existing sources of water supply:

- State Water Project (SWP) imports, natural local surface water flows;
- Return flow from pumped groundwater not consumptively used; and

- Wastewater imports from outside the MWA service area (MWA 2015).

According to the 2015 Urban Water Management Plan (UWMP) for the MWA, the current and planned water supplies primarily come from imported supplies through the SWP, net natural supply,[2] and return flow.[3] See Table 3.8-2, *Current and Planned Water Supplies,* for a tabulation of current and projected water supplies through 2040.

Table 3.8-2:
Current and Planned Water Supplies (acre-feet per year)

Water Supply Source	2015	2020	2025	2030	2035	2040
Existing Supplies						
Imported Supplies						
SWP	53,196	55,676	55,676	55,676	55,676	55,676
Yuba Accord Water	0	600	600	600	600	600
Local Supplies						
Net Natural Supply	57,349	57,349	57,349	57,349	57,349	57,349
Return Flow	47,825	52,356	54,471	57,057	59,727	62,157
Wastewater Import [a]	2,773	2,800	2,800	2,800	2,800	2,800
Total Supplies	**161,143**	**168,781**	**170,896**	**173,482**	**176,152**	**178,582**
Projected Demand	***138,009***	***148,366***	***153,186***	***159,079***	***165,164***	***170,700***

Source: MWA 2015

a. Treated wastewater effluent is imported to the MWA service area from three wastewater entities serving communities in the San Bernardino Mountains outside MWA's service area. Treated wastewater effluent from the Lake Arrowhead Community Services District is imported to the Alto Subarea, and effluent from the Big Bear Area Regional Wastewater Agency is imported to the Este Subarea. MWA also receives treated wastewater flow from the Crestline Sanitation District, which is captured at the USGS gauging station, West Fork Mojave River. Since this flow is already accounted for with net natural supply, it is not accounted for as a separate wastewater import flow source.

The MWA maintains a comprehensive groundwater monitoring program consisting of approximately 850 wells from which approximately 150 water quality samples are collected annually.

All water for the proposed project, apart from drinking water, would be sourced from an on-site well, or wells and would be procured and produced through a transfer of a portion of the Gabrych Base Annual Production (BAP) rights pursuant to the Mojave Basin Area Judgment (Judgment).[4] The Judgment established a decreasing Free Production Allowance (FPA) in each Subarea of the

[2] MWA has a net natural supply of 57,349 acre-feet per year, including surface water and groundwater in the five subareas of the Mojave Basin Area and in the Morongo Basin/Johnson Valley Area (MWA 2015).

[3] A portion of the water pumped from the ground is returned to the groundwater aquifer and becomes part of the available water supply (MWA 2015).

[4] *City of Barstow v. City of Adelanto*, Riverside County Superior Court Case No. 208568, January 10, 1996.

Lucerne Valley Groundwater Basin. 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, or by transfer of unused FPA from another producer (Judgment 1996; Judgment 2008). Each producer's percentage share of FPA in a subarea was determined by first verifying the maximum annual water production (termed BAP) for each producer during the 5-year, 1986–1990 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 (Judgment 1996) (Dudek 2016).

Project construction would require 75 acre-feet for the Ord Mountain Solar and Energy Project, and 38 af for the Calcite Substation. Project operation would require 6.6 af per year for maintenance. Water for the project would be acquired pursuant to a temporary transfer from Gabrych. Testing of the existing groundwater wells indicate that the project site has sufficient groundwater production to meet construction and operational needs for both the Ord Mountain Solar and Energy Project and Calcite Substation. Therefore, impacts are considered less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

EROSION OR SILTATION AND ON- OR OFF-SITE FLOODING

Impact 3.8-3	**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 or siltation on- or off-site. 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, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. Impacts would be less than significant.**

ORD MOUNTAIN SOLAR AND ENERGY PROJECT

Minor grading would occur to allow the installation of photovoltaic panels, transmission line poles, and aggregate base access roads. A road will be installed generally around the perimeter of the site. Additionally, several interior roads will be constructed to enhance access within the PV field. An unimproved maintenance road will be constructed within the right-of-way of the transmission line. At locations where foundations are installed, it is expected that minor cuts would be required to place the foundations on a level pad. It is also anticipated that the cut

material will be placed around the pre-cast foundation to divert small localized flows away from the foundation and prevent undermining.

As such, there would be a slight increase in the imperviousness of the soil on the site due to grading and construction activities. The root mass of the existing vegetation on-site is proposed to be left as is to assist in erosion control and to maintain the existing soil characteristics (i.e., infiltration rates). Minor vegetation removal would take place at the areas where the concrete pads on which the trackers are placed and for gravel road installation, roads, foundations, and setting piles.

The addition of the foundations and inverter pads would create a very slight increase in the area that can be considered impervious. However, these foundations are small and located throughout the site. Additionally, the gravel roads are expected to increase the imperviousness of the area where roads are constructed, but again, the total area of the gravel roads is small in comparison with the entire site, and the gravel roads do allow some level of infiltration.

Pre- and post-construction conditions during a 100-year, 24-hour storm event were determined using FLO-2d modelling. The two-dimensional model predicted that off-site runoff would enter the site from the north during a 100-year, 24-hour storm. A maximum of 0.8 feet of water would travel at up to 1.65 feet per second and enter the site from the north–northeast during a 100-year, 24-hour storm.

Upstream flow velocity is a maximum of 12.3 feet per second; therefore, flow velocities through the site are very low (maximum 1.65 feet per second). Solar panels and inverter pads are typically 18 inches above the ground or designed to be at least 1 foot above flood elevations. Other electrical equipment will also be designed to be at least 1 foot above flood elevations. Consequently, the flows predicted in the FLO-2D Model would pose no hazard to these components.

In addition, stormwater flows do not enter the southwestern area of the site near the substation and battery storage building, which would therefore not be in the path of off-site flows. Only a small portion of the entire project site would become impervious following construction. Post-construction flows will be very similar, which is essentially negligible (RRC 2018). The project would add such a small amount of impervious ground cover that it would not appreciably increase downstream flows.

CALCITE SUBSTATION PROJECT SITE

The Calcite Substation would include concrete foundations and improved roads increasing impervious surface area on a relatively small portion (approximately 2 acres) of the approximately 11 acres of permanent disturbance.

As discussed under Impact 3.8-1, the project site has 86,023 cf or 1.97 af of runoff based on a 100-year/24-hour storm event. Post-development, the project site would generate 86,149 cf (1.98 af) of runoff for the 100-year/24-hour storm event, which is approximately 126 cf more than existing conditions. Runoff from these impervious areas would be conveyed southerly by the proposed grading via overland sheet flow, and ultimately discharge into a proposed retention facility along the south side of the substation. As such, it would have two retention basins to reduce impacts to downstream receiving waters due to an increase in on-site runoff generated by the proposed project. In addition, two channels would intercept upstream water from off-site on the north side of the project site and on the west side of the project site. Further, the Calcite Substation is located in a floodplain of a relatively larger drainage corridor that conveys runoff flows from the upstream watershed emanating from the northeast. As such, it would be designed so that it is raised a minimum of 2 feet above the existing ground elevations in order to mitigate flood hazards.

ORD MOUNTAIN SOLAR AND ENERGY PROJECT AND CALCITE SUBSTATION

Further, implementation of best management practices pursuant to the NPDES General Construction Permit would be required. The project would involve minimal alterations to existing drainage and would comply with NPDES requirements. Therefore, 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 that would result in substantial erosion or siltation on- or off-site. As such, impacts would be less than less than significant.

Mitigation Measures: None required.

Level of Significance: Less than significant.

STORMWATER DRAINAGE SYSTEMS AND POLLUTED RUNOFF

Impact 3.8-4	**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.**

SHORT-TERM CONSTRUCTION

Refer to Impacts 3.8-1 and 3.8-3, above. Potential construction-related impacts to stormwater drainage systems would be regulated by federal, state, and local requirements intended to reduce or avoid adverse impacts. Construction activities would be subject to San Bernardino County Code Title 3, Division 5, Chapter 1, Pollutant Discharge Elimination System Regulations, to ensure protection of water quality and downstream drainage facilities. All construction

activities would be required to demonstrate conformance with the best management practices identified in the project's WQMP. Conformance with applicable regulations and implementation of BMPs would protect existing or planned stormwater drainage systems from polluted runoff. Impacts would be less than significant.

LONG-TERM OPERATIONS

Potential operational impacts to stormwater drainage systems would be regulated by federal, state, and local requirements intended to reduce or avoid adverse impacts.

Additionally, the Calcite Substation would add such a small amount of impervious ground cover that it would not increase downstream flows. The Calcite Substation site would be designed to reduce impacts to downstream receiving waters and to intercept upstream water from off-site. Similarly, the solar energy and storage project would add a small amount of impervious ground cover, about 0.37 percent site coverage during operations. Accordingly, there would be no off-site stormwater flow (CASC 2016).

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 operation provide 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 3.8-5	**The project would not otherwise substantially degrade water quality. Impacts would be less than significant.**

SHORT-TERM CONSTRUCTION

Refer to Impact 3.8-1, above. Project compliance with existing regulatory requirements would adequately protect water quality during project construction. As discussed above, project construction would have the potential to result in ground surface exposure, thereby increasing the potential for sedimentation or degradation of water quality from construction-related pollutants (i.e., oil, fuels, etc.).

Because construction would impact more than 1 acre of soil, construction activities would be subject to the water quality protection measures identified in the NPDES General Construction Permit; refer to the discussion under Impact 3.8-1. In compliance with NPDES General Permit requirements, a stormwater pollution prevention plan would be prepared. The SWPPP would

include an erosion control plan and would identify appropriate best management practices to minimize the potential for pollutants or sediments to impact downstream water bodies. Following compliance with applicable regulatory requirements, including preparation and implementation of a SWPPP, project construction would not degrade water quality. Impacts would be less than significant.

LONG-TERM OPERATIONS

As discussed in Impact 3.8-1 above, project compliance with regulatory requirements would protect water quality from project operations. The preparation of and compliance with a SWPPP, implementation of best management practices identified in the WQMP, and 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.

HOUSING WITHIN A 100-YEAR FLOODPLAIN

Impact 3.8-6	**The project would not place housing within a 100-year flood hazard area as mapped on the applicable FEMA flood map. No impact would occur.**

The project would not involve the development or placement of any housing. Therefore, the project would not 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. No impact would occur.

Mitigation Measures: None required.

Level of Significance: No impact.

FLOOD RISK AND FAILURE OF A LEVEE OR DAM

Impact 3.8-7	**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. No impact would occur.**

The proposed project does not involve the development of any housing and would not create or result in housing within a 100-year flood hazard area. Furthermore, FEMA (2016) Flood Insurance Rate Map 0607IC5900H indicates that the proposed project area is in Zone D, an Undetermined

Risk Area. In addition, a review of the San Bernardino County dam inundation mapping for the Desert Region indicates that the site is not located in an area susceptible to inundation from flooding caused by dam failure, lake flooding, or river flooding. The nearest area of potential flooding is approximately 1 mile south of the site associated with the Lucerne Dry Lake.

No indicators of hydrologic activity (topographical or geological), hydric soils, or hydrophytic vegetation were observed at either the Ord Mountain Solar and Energy and Calcite Substation sites. Therefore, neither the proposed solar and energy storage project nor the Calcite Substation project would involve placing housing within a 100-year flood hazard area. No impacts would result from the proposed project.

Mitigation Measures: None required.

Level of Significance: No impact.

INUNDATION BY SEICHE, TSUNAMI, OR MUDFLOW

Impact 3.8-8	**Implementation of the project would not result in inundation by seiche, tsunami, or mudflow. No impact would occur.**

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 not located near a substantial water body that would 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. Additionally, there are no substantial slopes on or in the immediate vicinity of the site with the potential to result in mudflow impacts. No impacts would occur.

Mitigation Measures: None required.

Level of Significance: No impact.

CUMULATIVE IMPACTS

Impact 3.8-9 **Implementation of the project would not result in cumulative impacts to hydrology and water quality. Impacts would be less than significant.**

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.

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 cooperation with San Bernardino County Flood Control District requirements.

As discussed throughout this section, the project would not result in a significant impact on hydrology and water quality following compliance with existing regulations. In addition, each development project is 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. Therefore, the proposed project, in combination with cumulative projects, would have a less than significant cumulative impact on hydrology and water quality.

Mitigation Measures: None required.

Level of Significance: Less than significant.

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