DOCKETED	
Docket Number:	24-OPT-03
Project Title:	Soda Mountain Solar
TN #:	257909
Document Title:	Section 3-10 Hydrology and Water Quality
Description:	This Section evaluates the direct, indirect and cumulative impacts the Project may have on hydrology and water quality and identifies any required Applicant-Proposed Measures (APM) and any required Mitigation Measures.
Filer:	Hannah Gbeh
Organization:	Resolution Environmental
Submitter Role:	Applicant Consultant
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3.10 HYDROLOGY AND WATER QUALITY

This section evaluates impacts to hydrology and groundwater quality that may result directly or indirectly from the project. The analysis in this section describes the applicable regulations, presents an overview of existing conditions, identifies the criteria used for determining the significance of environmental impacts, lists applicant-proposed measures (APMs) that would be incorporated into the project to avoid or substantially lessen potentially significant impacts to the extent feasible, and describes the potential hydrologic impacts of the proposed project. The analysis is based on a review of existing resources, technical data, and applicable laws, regulations, plans, and policies, as well as the following technical reports prepared for the project:

- *Aquatic Resources Delineation Report*, prepared by SWCA Environmental Consultants (2024a) (Appendix E-1)
- *Water Supply Assessment,* prepared by SWCA Environmental Consultants (2024b) (Appendix J).
- *Stormwater Drainage Report,* prepared by SWCA Environmental Consultants (2024c) (Appendix K).

3.10.1 Regulatory Setting

3.10.1.1 Federal

CLEAN WATER ACT

Formerly the Federal Water Pollution Control Act of 1972, the Clean Water Act (CWA) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States (WOTUS). The CWA, enforced by the U.S. Environmental Protection Agency (EPA), requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water.

The definition of WOTUS (33 Code of Federal Regulations [CFR] 328) was revised by the 2023 WOTUS rule and its final rule amendment which took effect September 8, 2023 (‘Conforming Rule’) (*Federal Register* 88: 61964 No. 173). In general, WOTUS are waterbodies such as lakes, rivers, streams, wetlands, and ponds.

WOUS include navigable waters, certain non-wetland waters, and adjacent wetlands with a continuous surface connection to a WOUS. Non-wetland WOUS, such as streams, are delineated by the ordinary high-water mark (OHWM) and must have a continuous surface connection to a WOUS that has a continuous surface connection a traditional navigable water (TNW). Non-wetland WOUS streams may be relatively permanent waters or non-relatively permanent waters as determined by the U.S. Army Corps of Engineers (USACE). The OHWM is defined as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (33 CFR 329.11). In situations where an alluvial fan braided stream system has channels located close to one another with small upland areas in between, likened to capillaries of tissue, both the aquatic and upland areas may all be combined within the full outer bounds of the WOUS extent (see *Save Our Sonoran Inc. v. Flowers*, U.S. Court of Appeals, Ninth Circuit, 2004).

Section 402 of the CWA requires that direct and indirect discharges and stormwater discharges into WOTUS be pursuant to a National Pollutant Discharge Elimination System (NPDES) permit for industrial or construction activities. NPDES permits contain industry-specific, technology-based limits and may include additional water quality–based limits and pollutant-monitoring requirements. An NPDES permit may include discharge limits based on federal or state water quality criteria or standards. NPDES permitting authority is delegated to, and administered by, the California State Water Resources Control Board (SWRCB) and its nine regional water quality control boards (RWQCBs).

Section 404 of the CWA authorizes the USACE to regulate the discharge of dredged or fill material to WOTUS and adjacent wetlands. Discharges to WOTUS must be avoided where possible and minimized and mitigated where avoidance is not possible. Permits are issued by the USACE.

Section 401 of the CWA requires that any activity that may result in a discharge into WOTUS be certified by the RWQCB. This certification ensures that the proposed activity follows state and/or federal water quality standards.

EXECUTIVE ORDER 11988 AND THE FEDERAL EMERGENCY MANAGEMENT AGENCY

Under Executive Order 11988, the Federal Emergency Management Agency (FEMA) is responsible for management of floodplain areas. FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps that identify those land areas subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (i.e., the 100-year flood event).

CALIFORNIA DESERT CONSERVATION AREA PLAN

The California Desert Conservation Area (CDCA) Plan and multiple-use classes applicable to the project site are described in Section 3.11, Land Use and Planning. Specifically, with respect to water resources, the CDCA Plan (Bureau of Land Management [BLM] 1999) requires that areas designated Multiple-Use Class L be managed to provide for the protection and enhancement of surface and groundwater resources, except for instances of short-term degradation caused by water development projects. For areas designated Class M or I, the CDCA Plan requires management to minimize the degradation of water resources. For all areas, best management practices (BMPs) developed by the BLM shall be used to avoid degradation and to comply with Executive Order 12088, which requires all federal agencies to be in compliance with environmental laws and fully cooperate with the EPA and with state, interstate, and local agencies to prevent, control, and abate environmental pollution.

3.10.1.2 Regional

URBAN WATER MANAGEMENT PLAN

Public water systems are required by the California Water Code to prepare Urban Water Management Plans (UWMPs) to carry out "long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water" (California Water Code 10610.2). UWMPs are prepared using input from multiple water systems operating in a region. They 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 (Mojave Water Agency [MWA] 2020).

The MWA has created an UWMP for 2020 that covers the entire MWA service area. The project water supply source lies within the Baja Subarea, 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 whether MWA has adequate water supplies to meet demands during average, single dry, and multiple dry years over the next 25 years.

STIPULATED JUDGMENT (WATERMASTER CITY OF BARSTOW ET AL., V. CITY OF ADELANTO ET AL., RIVERSIDE COUNTY SUPERIOR COURT CASE NO. 208568)

Case No. 208568 in the Riverside County Superior Court, which has been adjudicated, pertains to the Mojave Basin. Groundwater extraction from the basin is regulated by a 1996 stipulated judgment issued by the same court. The Mojave Basin Area is delineated into five distinct yet hydrologically interconnected subareas. Each subarea was determined to be in overdraft to some extent. Some subareas historically received part of their natural water supply from upstream subareas, either on the surface or as subsurface flow. To maintain this historical relationship, the average annual obligation of any subarea to another is set equal to the estimated average annual natural flow between the subareas over the 60-year period from 1930–1931 through 1989–1990. If a subarea fails to meet its obligation, producers in the upstream subarea must provide makeup water to the downstream subarea.

To ensure water balance in each subarea, the judgment established a decreasing free production allowance (FPA) in each subarea for the initial 5 years. Subsequently, the court reviews and adjusts the FPA for each subarea annually. The FPA is distributed among producers based on their percentage share of the FPA, calculated from their base annual production (BAP) during the 5-year base period (1986–1990). Any water produced beyond a producer's FPA share must be replaced, either through payment to the Watermaster for replacement water or by transferring unused FPA from another producer. Producers are permitted to extract water as needed annually within each subarea, contingent on compliance with the Physical Solution outlined in the judgment.
The underlying assumption is that the basin's future water needs will be met through a combination of natural supply, imported water, water conservation, water reuse, and FPA transfers among producers.

3.10.1.3 State

SENATE BILLS 901, 610, AND 267, WATER SUPPLY ASSESSMENT

Senate Bill (SB) 901 was enacted in 1995 to ensure that cities and counties assess the adequacy of available water supplies to meet projected water demand prior to approving certain types of new land development projects. SB 901, also known as the water supply assessment (WSA) law, requires that before a project is granted approval, the city or county must request preparation of a WSA by the public water supplier that will serve the proposed project. The provisions of SB 901 were codified in California Water Code 10910 through 10915.

SB 610 was enacted in 2001 to improve the WSA process and expand the scope of development projects triggering the WSA procedure. The primary goal of SB 610 was to improve the linkage between water use and land use planning to ensure that land use decisions for specific large development projects have adequate information to assess whether sufficient water supplies are available to meet project demands. The 2001 bill also required additional information with respect to groundwater supplies. In 2011, SB 267 was enacted to revise the definition of a project to include new renewable energy projects. Section 10912(a)(7)(B) of the California Water Code specifies that a proposed photovoltaic generation facility is not a “project” subject to the provisions of SB 610 if the facility would demand no more than 75 acre-feet (af) of water annually.

PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (Division 7 of the California Water Code) provides the basis for water quality regulation within California and defines water quality objectives as the limits or levels of water constituents that are established for reasonable protection of beneficial uses. The California State Water Resources Control Board administers water rights, water pollution control, and water quality functions throughout the state, while each of the nine RWQCBs conducts planning, permitting, and enforcement activities. The Porter-Cologne Act requires the RWQCB to establish a regional basin plan with water quality objectives, while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Beneficial uses, together with the corresponding water quality objectives, are defined as standards, per federal regulations. Therefore, the regional basin plans form the regulatory references for meeting state and federal requirements for water quality control. Changes in water quality are allowed if the change is consistent with the maximum beneficial use of the state, does not unreasonably affect the present or anticipated beneficial uses, and does not result in water quality less than that prescribed in the water quality control plans. The basin plan for this location is discussed below.

STATE WATER RESOURCES CONTROL BOARD STORMWATER PROGRAM CONSTRUCTION GENERAL PERMIT

The Construction General Permit, mandated under the federal CWA, is a statewide standing permit governing stormwater runoff from construction sites spanning 1 acre or more. To obtain coverage, qualifying construction activities must submit a Notice of Intent to the RWQCB and develop and adhere to a Stormwater Pollution Prevention Plan (SWPPP). This plan outlines the BMPs that will be utilized to safeguard stormwater runoff. The SWPPP must include a visual monitoring program, a chemical monitoring program for "non-visible" pollutants in case BMPs fail, and a sediment monitoring plan if the site discharges directly into a water body listed on the Section 303(d) list for sediment pollution.

Under the Construction General Permit, only stormwater and non-stormwater discharges authorized by the permit or another NPDES permit are permissible. Discharges containing hazardous substances exceeding reportable quantities established in 40 CFR 117.3 and 302.4 are prohibited unless a separate NPDES permit is issued to regulate such discharges. Additionally, the permit integrates discharge prohibitions outlined in basin plans. Discharges to Areas of Special Biological Significance are prohibited unless covered by an approved exception by the SWRCB.

The CWA provides definitions for BMPs, which may include various measures such as runoff control, soil stabilization, sediment control, proper stream crossing techniques, waste management, and spill prevention and control, tailored to specific site conditions.

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

On the regional level, the project falls under the jurisdiction of the Lahontan RWQCB (LRWQCB), which is responsible for the implementation of state and federal water quality protection statutes, regulations, and guidelines. The LRWQCB adopted, and the SWRCB approved, the *Water Quality*

Control Plan for the Lahontan Region (Basin Plan) (California Water Boards 2023) to define how the quality of surface water and groundwater in the region should be managed to provide the highest water quality as reasonably possible. The Basin Plan lists the various beneficial uses of water within the region; describes the water quality which must be maintained to allow those uses; describes the programs, projects, and other actions which are necessary to achieve the standards established in this plan; and summarizes plans and policies to protect water quality. Beneficial water uses are of two types: consumptive and non-consumptive. Consumptive uses are those normally associated with human activities, primarily municipal, industrial and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower generation, and other uses that do not significantly deplete water supplies. Beneficial uses associated with the Soda Lake Hydrologic Subarea in the vicinity of the project site are described for Soda Lake and for the Mojave River. These beneficial uses include municipal and domestic supply (MUN); agricultural supply (AGR); groundwater recharge (GWR); water contact recreation (REC-1); non-contact water recreation (REC-2); cold freshwater habitat (COLD); wildlife habitat (WILD); and water quality enhancement (WQE).

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS

The California Water Boards regulate discharges of waste to protect the quality of waters of the State, broadly defined as “the chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affects its use” (California Water Code 13050). All surface waters and groundwaters are considered waters of the State. All waters of the State are also managed for beneficial uses under California law. Examples of discharge of waste may include any deleterious material such as earthen materials (soil, silt, sand, clay, rock, or other organic or mineral material) and any other waste as defined.

To ensure that California’s isolated waters are protected, and to regulate construction activity, the SWRCB has issued general waste discharge requirements (WDRs) regulating discharges to “isolated” waters of the State that are not under federal CWA jurisdiction (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the USACE to be Outside of Federal Jurisdiction).

The SWRCB regulates “waters of the State” under both the CWA and the state Porter-Cologne Act (23 California Code of Regulations). Because federally regulated WOUS are not present at the project site under Section 404 of the CWA, fill activities to waters of the State are regulated under the Porter-Cologne Act, making the applicable permit the WDR.

Although federally regulated WOUS are not present, the SWRCB and LRWQCB apply methods in USACE delineation manuals to assess aquatic features. It is common practice for the Water Board to rely on the USACE’s review and verification of delineations including approved jurisdictional determinations (AJDs). An AJD request for the project may be submitted to the USACE for reverification that federal jurisdiction is absent, which if obtained would be shared with the SWRCB.

The project is in the South Lahontan Basin area of the Mojave River Hydrologic Area, in Bulletin 118 Groundwater Basin 6-033 (Soda Lake Valley) (see Appendix J). The LRWQCB implements the Basin Plan and is a responsible agency pursuant to the California Environmental Quality Act (CEQA).

STREAMBED ALTERATION AGREEMENT

Sections 1600 through 1616 of the California Fish and Game Code require that any entity that proposes an activity that will substantially divert or obstruct the natural flow of any river, stream or lake; or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit material into any river, stream, or lake, must notify the California Department of Fish and Wildlife (CDFW). If CDFW determines the proposed alteration will impact a jurisdictional river, stream, or lake, a Lake or Streambed Alteration Agreement will be prepared. The agreement applies to any stream, including ephemeral streams and desert washes.

CALIFORNIA FISH AND GAME CODE SECTION 1602

Fish and Game Code Section 1602 protects the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFW in which there is, at any time, any existing fish or wildlife resources, or benefit for the resources. Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state, and requires any person, state, or local governmental agency, or public utility to notify the CDFW before beginning any activity that will:

1. Substantially divert or obstruct the natural flow of any river, stream or lake;
2. Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or
3. Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Preliminary jurisdictional evaluations for waters of the State have been completed in support of the project. These evaluations will be made permanent during final engineering and design of the project. Acquisition of a Streambed Alteration Agreement, if required, would occur prior to construction of the project, thus maintaining compliance with Section 1602. A Streambed Alteration Agreement is required in the event that the CDFW determines the activity could substantially adversely affect an existing fish and wildlife resource.

CALIFORNIA WATER CODE SECTION 13751

California Water Code 13751 requires a Report of Well Completion to be filed with the California Department of Water Resources (DWR) within 60 days of well completion. New wells must comply with DWR well standards as described in Water Resources Bulletins 74-81 and 74-90.

CALIFORNIA WATER CODE SECTION 4999

Pursuant to Part 5 of Division 2 of the California Water Code, wells in the counties of San Bernardino, Riverside, Los Angeles, and Ventura that extract groundwater in excess of 25 af in any year must file with the RWQCB, within 6 months of the succeeding calendar year, a “Notice of Extraction and Diversion of Water” on a form provided by the board.

CALIFORNIA WATER CODE SECTION 1200

This law classifies surface water and groundwater into three categories: surface water, percolating groundwater, and “subterranean streams that flow through known and definite channels.” Only surface water and subterranean stream water are within the permitting jurisdiction of the SWRCB. Appropriation of those waters requires an SWRCB permit and is subject to various permit conditions.

In establishing whether there is a condition of subterranean streams, the SWRCB uses a finding that there must be evidence of bed and banks and water flowing along a line of a surface stream. Based on a review of the known and estimated subsurface conditions at the project site, there is no evidence to support that the groundwater is flowing in subterranean streams, and therefore, no permit for appropriation is required from the SWRCB.

TITLE 27 CALIFORNIA CODE OF REGULATIONS SECTION 20200

Title 27 California Code of Regulations (CCR) 20200 et seq. provides a waste classification system that applies to wastes that cannot be discharged to waters of the State. Applicable facilities include brine ponds, as well as various other types of disposal. The proposed brine ponds would be designated as Class II surface impoundments. Therefore, the brine ponds must meet regulatory requirements (27 CCR 20200 et seq.), which would require permitted approval from the LRWQCB and/or the California Department of Public Health. The LRWQCB can prescribe individual or general WDRs as part of permit approval. Under Title 27, the discharger must obtain and maintain assurances of financial responsibility for initiating and completing corrective actions for all known or reasonably foreseeable releases from Class II surface impoundments, such as the proposed brine ponds, and must conduct a monitoring and response program (including for groundwater and surface waters), approved by the LRWQCB. The LRWQCB can specify in the WDRs the specific type or types of monitoring programs required and the specific elements of each monitoring and response program. When closing or decommissioning Class II surface impoundments (both mandatory closure or at the end of the active life of the unit), the discharger must adhere to a closure and post-closure plan that is approved by the LRWQCB to ensure no impairment of beneficial uses of waters as described in the Basin Plan.

SUSTAINABLE GROUNDWATER MANAGEMENT ACT

The Sustainable Groundwater Management Act of 2014 (SGMA) created a framework to promote the sustainable management of groundwater resources by local agencies. It creates requirements applicable to groundwater basins that have been designated as high- or medium-priority by DWR under California Water Code 10933. The SGMA addresses the depletion of groundwater resources by mandating the formation of groundwater sustainability agencies tasked with developing and implementing groundwater sustainability plans tailored to local basins. These plans outline strategies, such as recharge and demand management to achieve sustainability within 20 years, guided by set goals and criteria. The framework outlined by the SGMA does not apply to the project because the project is underlain by the Lower Mojave River Valley Groundwater Basin, a subbasin designated low priority by the DWR (DWR 2014).

3.10.1.4 Local

The project is located on federally owned land managed by the BLM. While it is not subject to County land use plans and ordinances, local plans were reviewed for informational purposes.

SAN BERNARDINO COUNTY GROUNDWATER ORDINANCE NO. 3872

San Bernardino County (County) adopted this ordinance to help protect water resources in unregulated portions of the desert while not precluding its use. The ordinance requires a permit to locate, construct, operate, or maintain a new groundwater well within the unincorporated, unadjudicated desert region of San Bernardino County. CEQA compliance must be completed prior to issuance of a permit, and groundwater management, mitigation, and monitoring may be required as a condition of the permit. The ordinance states that it does not apply to “groundwater wells located on federal lands unless otherwise specified by inter-agency agreement.” The BLM and County entered into a memorandum of understanding, which establishes that the BLM will require conformance with this ordinance for all projects proposing to use groundwater from beneath public lands within the county.

SAN BERNARDINO COUNTYWIDE PLAN

The San Bernardino Countywide Plan (San Bernardino County 2024a), adopted by the Board of Supervisors in 2020, updates and expands the County’s General Plan by addressing the physical, social, and economic issues facing the unincorporated portions of the county. The Countywide Plan consists of the Policy Plan, the Business Plan, and a communities plan. The Policy Plan, based on the former General Plan, consists of 11 elements: Land Use, Housing, Infrastructure and Utilities, Transportation and Mobility, Natural Resources, Renewable Energy and Conservation, Cultural Resources, Hazards, Personal and Property Protection, Economic Development, and Health and Wellness. The Business Plan consists of a policy-based governance element along with an implementation plan. The communities plan consists of 35 Community Action Guides that provide a framework for communities to create future character and independent identity through community actions.

The following policies identified in the Infrastructure and Utilities, Natural Resources, and Hazards elements of the San Bernardino Countywide Plan are relevant to this analysis (San Bernardino County 2024b).

Goal IU-1 Water Supply Water supply and infrastructure are sufficient for the needs of residents and businesses and resilient to drought.

- **Policy IU-1.3 Recycled water**. We promote the use of recycled water for landscaping, groundwater recharge, direct potable reuse, and other applicable uses in order to supplement groundwater supplies.
- **Policy IU-1.7 Areas vital for groundwater recharge**. We allow new development on areas vital for groundwater recharge when stormwater management facilities are installed on-site and maintained to infiltrate predevelopment levels of stormwater into the ground.
- **Policy IU-1.8 Groundwater management coordination**. We collaborate with water masters, groundwater sustainability agencies, water purveyors, and other government agencies to ensure groundwater basins are being sustainably managed. We discourage new development when it would create or aggravate groundwater overdraft conditions, land subsidence, or other "undesirable results" as defined in the California Water Code. We require safe yields for groundwater sources covered by the Desert Groundwater Management Ordinance.

Goal NR-2 Water Quality Clean and safe water for human consumption and the natural environment.

- **Policy NR-2.1 Coordination on water quality**. We collaborate with the state, regional water quality control boards, water masters, water purveyors, and government agencies at all levels to ensure a safe supply of drinking water and a healthy environment.
- **Policy NR-2.2 Water management plans**. We support the development, update, and implementation of ground and surface water quality management plans emphasizing the protection of water quality from point and non-point source pollution.
- **Policy NR-2.3 Military coordination on water quality**. We collaborate with the military to avoid or minimize impacts on military training and operations from groundwater contamination and inadequate groundwater supply.
- **Policy NR-2.4 Wastewater discharge**. We apply federal and state water quality standards for wastewater discharge requirements in the review of development proposals that relate to type, location, and size of the proposed project in order to safeguard public health and shared water resources.
- **Policy NR-2.5 Stormwater discharge**. We ensure compliance with the County's Municipal Stormwater NPDES (National Pollutant Discharge Elimination System) Permit by requiring new development and significant redevelopment to protect the quality of water and drainage systems through site design, source controls, stormwater treatment, runoff reduction measures, best

management practices, low impact development strategies, and technological advances. For existing development, we monitor businesses and coordinate with municipalities.

- **Policy NR-2.6 Agricultural waste and biosolids**. We coordinate with regional water quality control boards and other responsible agencies to regulate and control animal waste and biosolids in order to protect groundwater and the natural environment.
- **Policy HZ-1.1 New subdivisions in environmental hazard areas**. We require all lots and parcels created through new subdivisions to have sufficient buildable area outside of the following environmental hazard areas:
    - Flood: 100-year flood zone, dam/basin inundation area
    - Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, existing and County-identified landslide area
- **Policy HZ-1.2 New development in environmental hazard areas**. We require all new development to be located outside of the environmental hazard areas listed below. For any lot or parcel that does not have sufficient buildable area outside of such hazard areas, we require adequate mitigation, including designs that allow occupants to shelter in place and to have sufficient time to evacuate during times of extreme weather and natural disasters.
    - Flood: 100-year flood zone, dam/basin inundation area
    - Geologic: Alquist Priolo earthquake fault zone; County-identified fault zone; rockfall/debris-flow hazard area, medium or high liquefaction area (low to high and localized), existing and County-identified landslide area, moderate to high landslide susceptibility area)
    - Fire: high or very high fire hazard severity zone
- **Policy HZ-1.3 Floodplain mapping**. We require any new lots or subdivisions partially in, and any new development partially or entirely in 100-year flood zones or 100-year flood awareness areas to provide detail floodplain mapping for 100- and 200-year storm events as part of the development approval process.
- **Policy HZ-1.4 500-year flood zone**. We may collaborate with property owners in the Valley region to establish funding and financing mechanisms to mitigate flood hazards in identified 500-year flood zones.

3.10.2 Environmental Setting

3.10.2.1 Regional Geography and Hydrology

The project site and its off-site water supply source are situated within the southern portion of the Lahontan Region, within the Central Mojave Desert. The south Lahontan Region encompasses 17 million acres across central and southern California and includes the highest point, Mount Whitney, and the lowest point, Death Valley. The Central Mojave Desert is characterized by high-elevation valleys and playas. The central region of the Mojave Desert generally receives less than 2 inches of annual precipitation; however, the subregion includes the terminus for the Mojave River, an ephemeral river that represents the primary source of groundwater recharge to underlying basins (Oregon State University 2023).

3.10.2.2 Climate and Precipitation

The site is within the Mojave Desert, which is characterized by hot summer temperatures and cool winters. High temperatures in the summer typically exceed 100 degrees Fahrenheit, and the winter lows typically drop to freezing temperatures (National Park Service 2023). Large temperature fluctuations are typical within a day. The Mojave Desert has two distinct rainy periods per year (winter and late summer) with low annual precipitation. Most of the annual precipitation falls between November and April, with May and June being the driest months.

Total annual precipitation data from U.S. Geological Survey (USGS) Parameter-elevation Regressions on Independent Slopes Model (PRISM) (USGS 2023a) between 1991 and 2020 was modeled between 4.2 and 4.4 inches at the project site.

Climate data from the closest National Oceanic and Atmospheric Administration local climatological data station database, Bicycle Lake Fort Irwin Army Airfield, California (Network ID: WBAN:03182), located approximately 26 miles northwest of the site at coordinates 35.28333°N, 116.63333°W, show annual precipitation from a low of 0.96 inch in 2021 to a high of 6.76 inches in 2019. Average monthly precipitation in the same 9-year period ranges from a low of 0.08 inch in June to a high of 0.66 inch in January. Closer to the study area, the site received an average of 2.96 inches of annual precipitation over the previous 9 years (January 2014–December 2022) (National Oceanic and Atmospheric Administration 2023).

3.10.2.3 Groundwater

Two separate groundwater basins underlie the project site: the Soda Lake Valley Groundwater Basin and the Cronise Valley Groundwater Basin (DWR 2019); neither basin has been adjudicated, and both are considered very low priority under the SGMA (DWR 2019). Water will be trucked to the project site from a private water supply source approximately 40 miles southwest of the project site. The water supply wells overlie the Lower Mojave River Valley Groundwater Basin, an adjudicated basin that is part of the Baja Subarea, an administrative unit managed by the MWA (Figures 3.10-1 and 3.10-2).

A WSA has been prepared for the project (see Appendix J). Groundwater trends and groundwater budget in this EIR pertain to the Lower Mojave River Valley Groundwater Basin and are derived from information in the WSA. Additional information on basin characteristics and groundwater quality for the Soda Lake Valley Groundwater Basin and the Cronise Valley Groundwater Basin are provided due to the potential for the project to impact groundwater quality.

GROUNDWATER BASINS

Cronise Valley Groundwater Basin

The Cronise Valley Groundwater Basin is in central San Bernardino County, California. The basin is approximately 127,000 acres with an estimated storage capacity of 1,000,000 af. To the east, the basin is bounded by the Tiefort Mountains, which house non-water-bearing rocks. The basin is bounded by the Alvord and Cronise Mountains to the south and the Soda Mountains to the east and northeast. Within the basin, Quaternary alluvium represents the primary water-bearing material, including unconsolidated younger alluvial deposits and underlying unconsolidated to semiconsolidated older alluvial deposits (DWR 2004a).

Percolation of runoff through alluvial deposits from the Tiefort and Soda Mountains represents the primary source of groundwater recharge to the basin; additional recharge is derived from precipitation. The Cronise Valley Groundwater Basin exhibited some evidence of groundwater decline in some wells, averaging approximately 5 feet between the years 1954 and 1979; however, not all monitoring wells exhibited similar declines during these years (DWR 2004a).

Lower Mojave River Valley Groundwater Basin

The Lower Mojave River Valley Groundwater Basin underlies an extended east-west valley, with the Mojave River flowing intermittently through the valley. The river flows from the west across the Harper Lake (Waterman) fault and exits the valley to the east through Afton Canyon. The northern boundary of the basin is formed from contact between unconsolidated Quaternary sediments and consolidated Tertiary, as well as older geology from the Waterman and Calico Mountains. The southern boundary is formed by the contact between unconsolidated sediments and consolidated geology that comprises Dagget Ridge, the Newberry Mountains, and the Rodman Mountains. The western boundary of the basin is formed by the Camp Rock-Harper Lake fault zone, and the southeastern boundary is formed by the Pisgah fault. The northeastern boundary of the basin is created by an arbitrary divide between the adjacent Caves Canyon Valley Basin and the Coyote Lake Valley Basin (DWR 2004a).

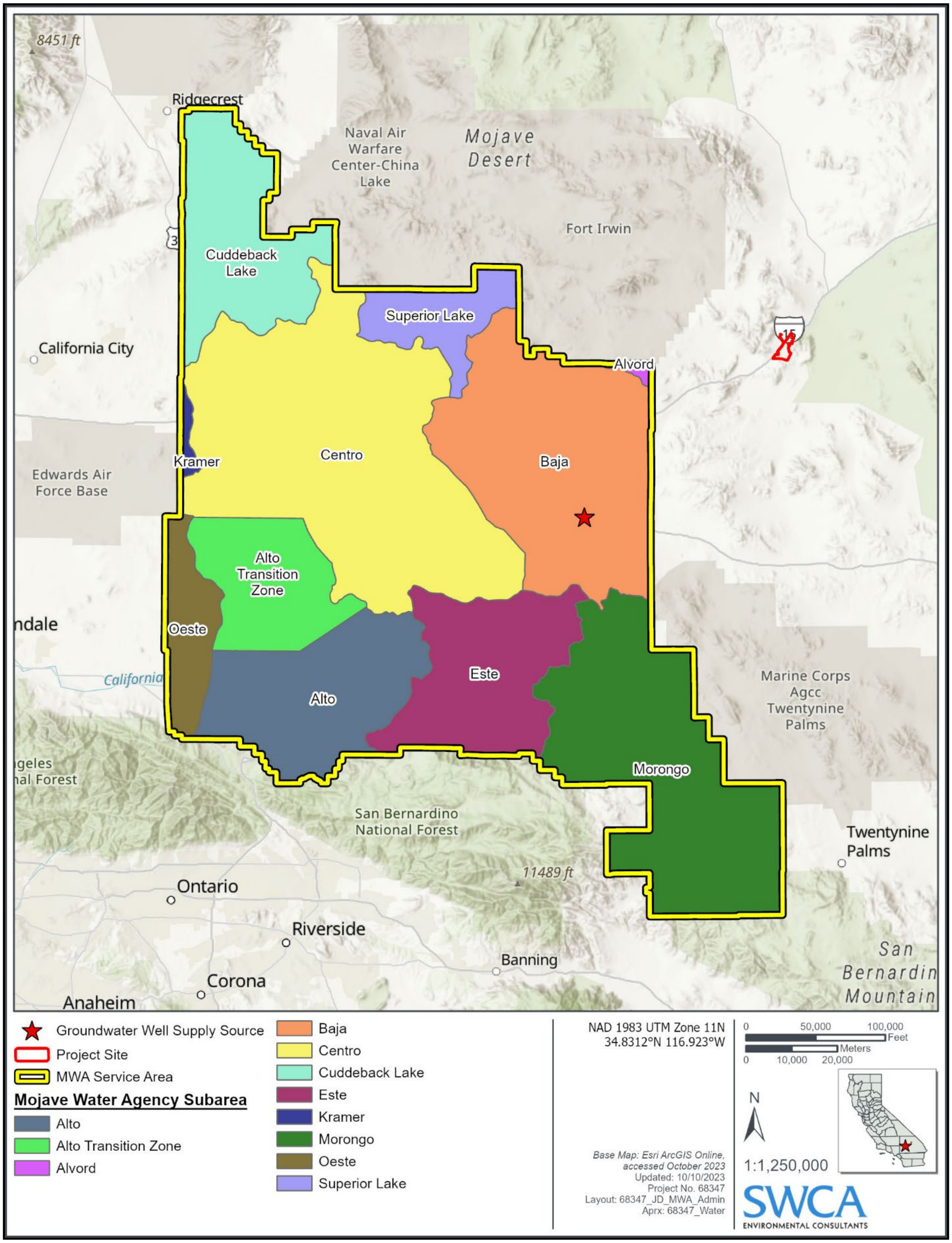

Figure 3.10-1. Mojave Water Agency service area, including subareas.

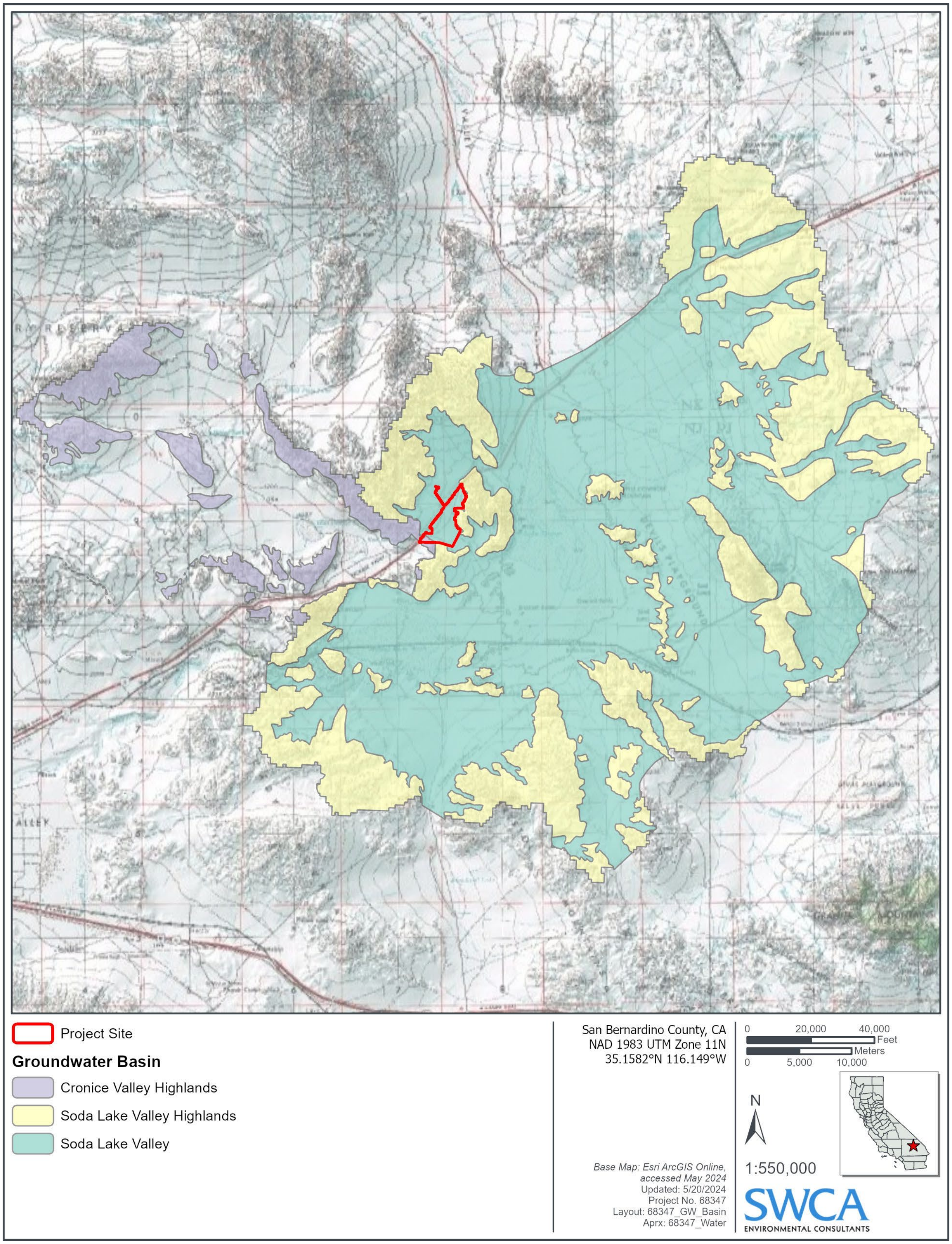

Figure 3.10-2. Groundwater basin map.

Estimates vary for total groundwater storage for the Lower Mojave River Valley Groundwater Basin and its associated administrative boundaries. The DWR utilizes estimates for the Baja Subarea, an administrative unit managed by the MWA, which includes the Mojave River Valley Groundwater Basin. According to DWR Bulletin 6-40, the MWA calculated a total effective storage capacity of the Baja Subarea by using an economic pumping depth of 100 feet, in order to limit the depth of the basin, to be about 1,544,000 af. The total storage capacity of the Lower Mojave River Valley Groundwater Basin was obtained by using an overlying area of approximately 286,000 acres, an average thickness of approximately 300 feet, and a specific yield of 10.5%; this equaled approximately 9,010,000 af of total storage capacity for the basin (DWR 2004b; MWA 1999a). Other estimates place the groundwater storage in the Baja Subarea at 6,816,000 af. This number includes estimates for the amount of stored groundwater that could potentially be pumped with wells and equates to 20,717 af of water per 1-foot depth of basin (Todd Engineers 2013).

Groundwater recharge for the MWA service area is generally supplied by natural stormwater flows, infiltration from the Mojave River and its tributaries, State Water Project (SWP) imports to purposefully recharge basins, wastewater imports, and irrigation and wastewater return flow (MWA 2021a). The Lower Mojave River Valley Groundwater Basin is located downstream of the Centro Subarea and receives subsurface flows from the Centro Subarea via the Harper Lake (Waterman) fault (Tetra Tech 2018). As noted above, the Baja Subarea is an administrative unit used by the MWA. The Lower Mojave River Valley Groundwater Basin underlies the Baja Subarea; however, the subarea also includes portions of other adjacent basins. The MWA reports annual production amounts in addition to contracting for hydrogeologic studies of this subarea. Data from the Baja Subarea were used for the analysis in this report because they represent the best available data for the project water supply source.

Soda Lake Valley Groundwater Basin

The Soda Lake Valley Groundwater Basin is in northeastern San Bernardino County, California. The basin is approximately 381,000 acres with an estimated storage capacity of 9,300,000 af. To the east, the basin is bounded by the Marl and Kelso Mountains, which house non-water-bearing rocks. The basin is bounded by the Bristol and Cady Mountains to the south and the Soda and Cave Mountains to the west. Within the basin, Quaternary alluvium represents the primary water-bearing material, including unconsolidated younger alluvial deposits and underlying unconsolidated to poorly consolidated older alluvial deposits (DWR 2004c).

Percolation of flow from the Mojave River represents the primary source of groundwater recharge to the basin. Additional recharge is derived from subsurface inflow to Cave Canyon, Kelso, and Broadwell Valley Groundwater Basins. In general, groundwater levels in the Soda Lake Valley Groundwater Basin have remained stable over time, with some evidence of groundwater decline in some wells. Notably, the most fluctuation in groundwater levels can be observed in the southwestern portion of the basin (DWR 2004c).

GROUNDWATER TRENDS

This section pertains to the Lower Mojave River Valley Groundwater Basin and the associated administrative unit, the Baja Subarea, where water will be trucked on-site from private supply wells. The two basins that underlie the project site (the Cronise Valley Groundwater Basin and the Soda Lake Valley Groundwater Basin) are not included because the proposed project will not source water from these basins.

Within the central portion of the Baja Subarea, groundwater declines of up to 80 feet were observed between the years 1959 and 2010, which is consistent with observed regional groundwater declines.

Within the adjudicated portion of the Baja Subarea, between 1931 and 1999, the ground water levels declined by over 15,000 af/yr, principally due to overpumping (1,060,000 af total) (Todd Engineers 2013). Moreover, between 1993 and 2010, this annual decline in groundwater storage increased to an estimated 18,116 af/yr as a result of below-average river recharge and, by extension, production that exceeds natural river recharge.

Despite consistent declines in groundwater in the Baja Subarea over the past century, the adjudication of the basin requires that water supply is managed until groundwater trends are no longer declining. The MWA administrative unit groundwater budgets have seen significant improvement due to regulatory ramp-downs. Producers are given an FPA, and in the event that a producer exceeds its share of the FPA, the producer must pay the Watermaster a Replacement Water Assessment, thereby replenishing production that exceeds the basin safe yield (MWA 2023). Over the last 5 years, the Baja Subarea has observed a 56% reduction in pumping. Despite this, the basin's water levels continue to decline, necessitating increased regulatory ramp-downs until groundwater levels exhibit stability (MWA 2023).

Decreased pumping will ultimately have a drastic effect on groundwater levels; however, uncertainty remains regarding the timeline. Moreover, groundwater recharge from the Mojave River represents the largest source of recharge to the basin; however, multiple years often pass between major recharge events that result in a surplus. As a result, recharge deficits may occur for many years in between surplus recharge events, regardless of regulatory ramp-downs.

BASELINE GROUNDWATER BUDGET

This section pertains to the Lower Mojave River Valley Groundwater Basin and the associated administrative unit, the Baja Subarea, where water will be trucked on-site from private supply wells. Information here was obtained from the WSA (Appendix J).

For this analysis, a historical groundwater budget is provided and is the difference between historical inflow and outflow for the Baja Subarea, independent of future regulatory ramp-downs on pumping. The historical groundwater budget is based on the years 2010 through 2022. In addition to the historical groundwater budget, a future water budget is provided that considers uncertainty in regulatory ramp-downs, the long-term recharge of the Mojave River, and project water demands. The future water budget provides an estimate and is based on the years 2023 through 2045. The historical average and the future average are based on inflow and outflow values provided by the MWA Watermaster annual reports (MWA 1999b, 2011–2020, 2021b–2023), *Conceptual Hydrogeologic Model and Assessment of Water Supply and Demand for the Centro and Baja Management Subareas Mojave River Groundwater Basin* (Todd Engineers 2013), and the USGS (2023b).

Although additional ramp-downs to annual pumping limits are expected, uncertainty remains regarding the timeline of these regulatory efforts; therefore, the future water budget uses extrapolated values for future pumping that are based on historical regulatory ramp-downs on FPA. Moreover, groundwater recharge from the Mojave River represents the largest source of groundwater recharge to the basin; however, multiple years often pass between major recharge events, which result in a surplus. For this reason, the future water budget uses a 40-year (1982–2022) average Mojave River recharge rate to provide estimates for the future water budget. The WSA (see Appendix J) provides further details on the analytical approach.

Table 3.10-1 is adapted from values provided in Appendix J and provides average annual balance values for the Baja Subarea under historical conditions, years 2023 through 2033, and years 2033 through 2043. The average budget is based on the average budget for the Baja Subarea between years 2010 through 2021. Under historical conditions, the Baja Subarea shows significant overdraft, principally due to over-pumping. Future budget estimates for years 2023 through 2033 reflect continued regulatory ramp-downs on pumping in accordance with the stipulated judgment, whereas years 2033 through 2043 reflect the average annual budget for the Baja Subarea after the basin has reached the production safe yield (PSY) and further regulatory ramp-downs are not required. See Appendix J for discussion on future projections and analytical methods.

Table 3.10-1. Baseline Annual Budget under Historical Conditions and Projections for Years 2023–2033 and Years 2033–2043

Inflow or Outflow	Historical Average (af/yr)	Average for Years 2023–2033 (af/yr)	Average for Years 2033–2043 (af/yr)
Water Outflow Source			
Evapotranspiration	2,000	2,000	2,000
Total pumping (production)*	22,665.0	12,272.2	7,450.7
Total Outflow	**24,665.38**	**14,272.2**	**9,450.7**
Water Inflow Source			
River recharge†	5,806.6	5,806.6	5,806.6
SWP enhanced recharge	572.15	572.0	572.0
Subsurface inflow from Centro Subarea	1,462.0	1,462.0	1,462.0
Mountain front recharge	980.0	980.0	980.0
Return flow (recirculated production)	2,855.84	1,546.0	939.0
Total Inflow	**11,676.58**	**10,366.6**	**9,759.6**
Average Final Annual Balance (af/yr)	**−12,989.0**	**−3,905.6**	**308.9**

*Pumping values are from the Mojave Basin Area Watermaster annual reports (MWA 2011–2020, 2021b, 2022, 2023).
†Value represents the 40-year average recharge rate from the Mojave River (USGS 2023b).

GROUNDWATER QUALITY

This section provides information on groundwater quality for the Lower Mojave River Valley Groundwater Basin and the associated MWA service area, as well as both basins underlying the project site: the Soda Lake Valley Groundwater Basin and the Cronise Valley Groundwater Basin.

Cronise Valley Groundwater Basin

Groundwater within the Cronise Valley Groundwater Basin is classified as impaired and is considered inferior for domestic and irrigation purposes. Analyses conducted across the basin have shown elevated concentrations of total dissolved solids (TDS), boron, and fluoride. On average, fluoride concentrations measure approximately 2.9 milligrams per liter (mg/L). Boron levels averaging 2.2 mg/L were observed, with concentrations as high as 4.2 mg/L. TDS concentrations average 1,690 mg/L in the basin with levels as high as 2,550 mg/L in some sampling wells (DWR 2004a).

The Lower Mojave River Valley Groundwater Basin and the Mojave Water Agency Service Area

Many studies, dating as early as the first decade of the twentieth century, have been developed by differing agencies in order to characterize the groundwater quality in the MWA service area. The most current of these studies was the Mojave Salt and Nutrient Management Plan (SNMP), which was completed in 2015. Although there is evidence of groundwater quality degradation, the studies have typically confirmed that the groundwater quality is sufficient for beneficial uses within the region. In particular, these studies, and associated investigations, have examined the source and occurrence of naturally occurring, key groundwater contaminants, including hexavalent chromium and arsenic, in the region (MWA 2021a).

Key groundwater constituents that are of particular concern within the MWA service area include nitrates (NO^{3-}), iron, arsenic, manganese, hexavalent chromium (Cr-VI), fluoride, and TDS. Some of these constituents are caused by anthropogenic activities in the region, while others naturally occur in desert environments (MWA 2021a). Some of these constituents have been measured to exceed safe drinking water standards within the Mojave River Basin and the Morongo Basin.

The MWA SNMP evaluated potential groundwater quality issues resulting from salts and nutrients and whether the beneficial uses within the basin would be decreased if these TDS and maximum contaminant loads (MCLs) were found to be in excess. TDS and NO^{3-} levels were analyzed as respective indicators of salt and nutrient constituents (MWA 2021a). High levels of NO^{3-}, a contaminant that is extensively found in California groundwater, can cause a condition called methemoglobinemia. TDS, as expressed as an indicator of salinity, can cause infrastructure damage, including the decreased lifespan of pipes and water-based appliances in homes and businesses (MWA 2021a). Concentrations of TDS have been found to generally increase in downgradient portions of the Mojave River Basin, and along flow paths of groundwater, away from the Mojave River, which is the primary recharge source within the basin. Elevated TDS concentrations (greater than 1,000 mg/L) are generally associated with natural processes, including mineralization and evaporation beneath dry lake beds. Mean TDS concentrations have been found to be very low in the upgradient portions of the Mojave River Basin (less than 300 mg/L), and they increase adjacent to the pathways alongside and away from the Mojave River due to natural processes such as mineralization, as well as impacts from anthropogenic loading (MWA 2021a).

According to the SNMP analysis of subregions for constituents of concern, the Baja – Floodplain and the Baja – Regional display average existing TDS concentrations of 401 and 617 mg/L, respectively, and average existing concentrations of NO^{3-} of 3.9 and 1.4 mg/L, respectively. Nitrate levels at these two locations are very low (less than 5 mg/L), while TDS concentrations vary. Baja – Floodplain TDS concentrations are below the recommended secondary MCL of 500 mg/L; however, Baja – Regional TDS concentrations are above the 500-mg/L recommended secondary MCL for TDS. MCLs consist of primary and secondary MCLs. Primary MCLs are associated with a health-based risk of water consumption due to exceedance of a particular concentration level, while secondary MCLs are associated with no health risk (MWA 2021a). Secondary MCLs are less critical and are associated primarily with aesthetic concerns, including taste and odor.

Additional emerging water quality constituents of concern include perfluoroalkyl and polyfluoroalkyl substances (PFAS) and perfluorooctanoic acid (PFOA). These chemical constituents have been associated primarily with domestic industrial items, including Teflon pans, fast food packaging, and stain-resistant carpets. MWA has been addressing these emerging constituents via regionwide management of groundwater resources and the imported supplies that augment local sources. Statewide regulatory actions are also meant to regulate these emerging sources of constituent concern (MWA 2021a).

Soda Lake Valley Groundwater Basin

Groundwater within the Soda Lake Groundwater Basin is classified as impaired and is considered marginal to inferior for domestic and irrigation purposes. Analyses conducted across the basin have observed elevated concentrations of TDS, boron, and fluoride. On average, fluoride concentrations measure approximately 3.5 mg/L, with levels as high as 33.3 mg/L in some wells. Boron levels exceeding 1.0 mg/L occurred in the majority of sampling wells. TDS concentrations of 1,000 mg/L were observed in

60% of sampling wells; however, TDS concentrations were as high as 8,300 mg/L near Soda Lake (DWR 2004c).

3.10.2.4 Surface Water

HYDROLOGY AND FLOODING

The study area is situated in the Mojave Watershed (Hydrologic Unit Code [HUC]-8 18090208) and subwatersheds (HUC-12 180902082502) (19,830 acres) and partially within HUC-12 180902082504 (21,888 acres) and HUC-12 180902081706 (21,809.75 acres) (USGS 2023c). Hydrology in the vicinity generally flows from west to east and then once on-site drains in two diverging directions, with the northern portion of the site draining north, terminating in Soda Lake, and the southern portion draining south, also terminating in Soda Lake. Soda Lake is a playa in the Mojave Desert that periodically holds water after rainfall and comprises salt and alkali deposits. Soda Lake does not drain to WOTUS or a TNW. A small area in the southwestern portion of the site is part of the watershed that drains to Cronise Valley and East Cronise Lake, also a dry lakebed that does not drain to WOTUS or a TNW.

The study area is in the Soda Lake Valley Groundwater Basin surrounded by Soda Lake Valley Highlands, with a small area in the southern portion of the project site draining to East Cronise Lake, which is surrounded by Cronise Valley Highlands (see Figure 3.10-2).

Hydrology within these watersheds at the site have been historically disturbed following construction of Interstate 15; flow concentrates on the highway's north side and is conveyed through a series of underpass culverts directed onto the project site.

The USGS StreamStats drainage area at the site includes the Soda Mountains, which are located on either side of the study area (USGS 2023d). StreamStats reports the drainage area as 24.7 square miles ranging in elevation from 989 to 3,642 feet with a mean basin elevation of 1,792 feet.

FLOOD HAZARD ZONE

FEMA has not mapped a Special Flood Hazard Area for any portion of the project site (Figure 3.10-3). The project site is located on Flood Insurance Rate Map 06071C2875H and is designated as "Zone D," areas in which flood hazards are possible but undetermined, as no analysis of flood hazards has been conducted (FEMA 2023). The flood insurance study and map for the Soda Mountain San Bernardino County, California, incorporated areas by FEMA were used to determine the extent of the zone and the regulations within the zone. The coordinate points used to generate the Soda Mountain flood insurance rate map project site were 35.1575°N, 116.1821°W. Based on Best Available Map (BAM) provided by DWR, the project site is not within the floodplain (DWR 2024). Although the site does not have a determined flood level, multiple drainages traverse the site and may cause flooding after rain/storm (see Appendix K). Between Baker and east of Soda Mountain lies a floodplain Zone A, which indicates areas with a 1% annual chance of flooding.

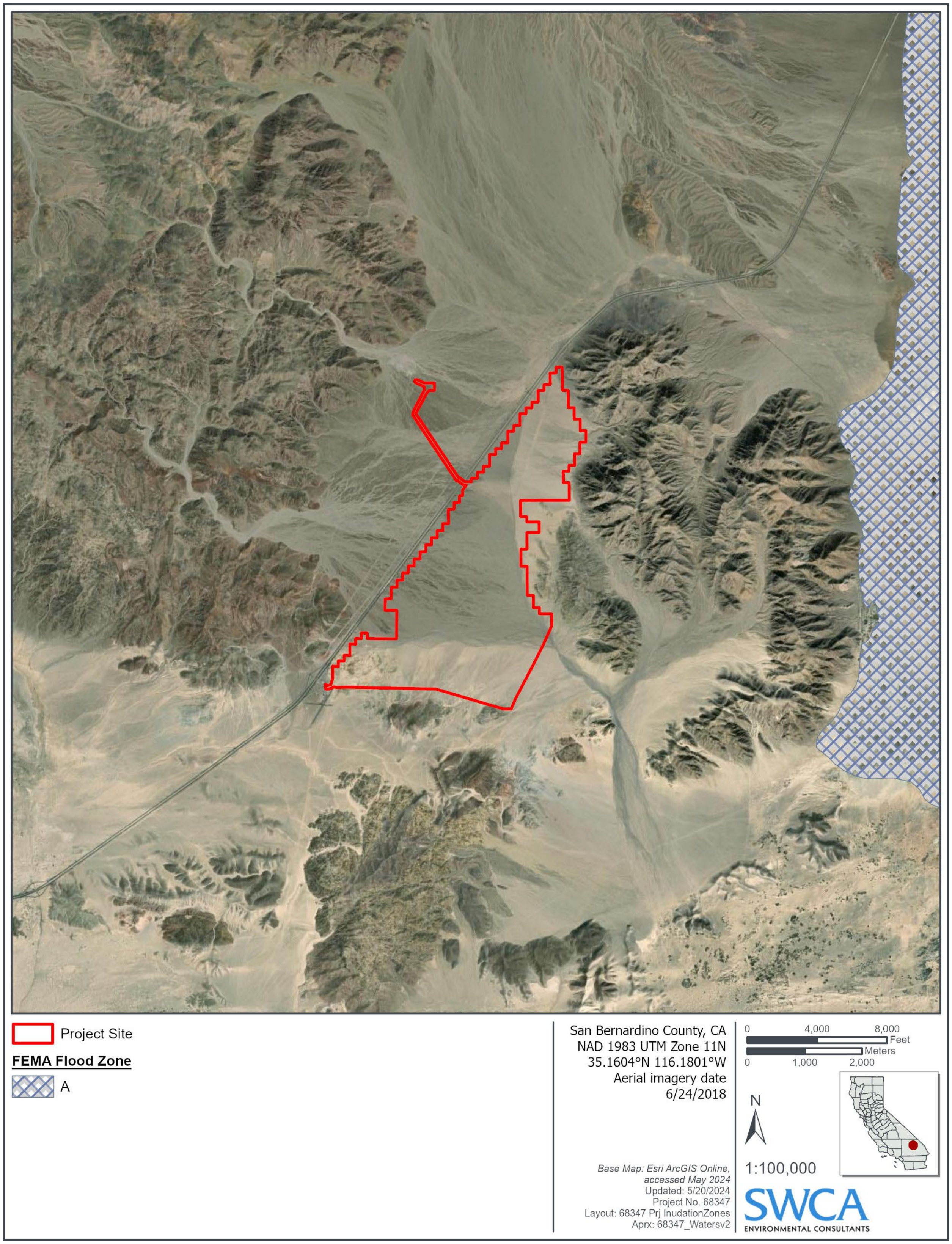

Figure 3.10-3. FEMA Flood Zone map.

USGS calculates the 50% flood event (2-year storm/return interval) at 52.2 cubic feet per second (average standard error of 214) and the 1% flood event (100-year storm/return interval) at 6,840 cubic feet per second (average standard error of 444) (USGS 2023d). Conceptually, a 50% flood event appears as 52 cubic boxes for each cubic foot flowing past a single point every second. Similarly, a 1% flood event would appear as 6,840 cubic boxes for each cubic foot flowing past a single point every second. The estimated channel width and depth are highly variable, between 20.5 and 39.4 feet wide and averaging 0.9 foot deep (USGS 2023d).

WATER QUALITY

The study area is in the southern portion of the Lahontan Region, one of the nine RWQCBs in California. The LRWQCB's Basin Plan establishes beneficial uses for water and identifies water quality control objectives to uphold surface and groundwater quality standards. The study area overlaps multiple potential stream features that are classified by the National Hydrography Dataset as ephemeral, and the Basin Plan lists specific beneficial uses of water that apply to washes within the study area.

Beneficial uses of surface water within the Soda Mountain Groundwater Basin and the Cronise Valley Groundwater basin are defined by the water quality control plan and include the following:

- Municipal and domestic supply
- Agricultural supply
- Groundwater recharge
- Freshwater replenishment
- Water contact recreation
- Non-contact water recreation
- Warm freshwater habitat
- Cold freshwater habitat
- Wildlife habitat
- Preservation of biological habitats of special significance for rare threatened and endangered species
- Spawning reproduction and development
- Water quality enhancement
- Flood peak attenuation/flood water storage

Beneficial uses of groundwater water within the Soda Mountain Groundwater Basin and the Cronise Valley Groundwater Basin are defined by the water quality control plan and include the following:

- Municipal and domestic supply (MUN)
- Agricultural Supply (AGR)
- Industrial Service Supply (IND)
- Freshwater Replenishment (FRSH)

3.10.3 Impact Analysis

3.10.3.1 Thresholds of Significance

The determinations of significance of project impacts are based on applicable policies, regulations, goals, and guidelines defined by CEQA and San Bernardino County. Specifically, the project would be considered to have a significant effect on hydrology and water quality if the effects exceed the significance criteria described below:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    i. Result in substantial erosion or siltation on- or off-site;
    ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    iii. 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; or
    iv. Impede or redirect flood flows?
4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Each of these thresholds is discussed under Section 3.10.3.4, Impact Assessment, below.

3.10.3.2 Methodology

The potential direct and indirect impacts of the project on hydrology and water quality are determined by evaluating existing hydrology and water quality conditions and considering the project's potential to adversely affect these resources. Specifically, the impact analysis considers the project's direct and indirect potential to violate water quality standards, deplete groundwater supplies, and alter drainage patterns through the introduction of erosion or alteration of geomorphic features and resources.

3.10.3.3 Applicant-Proposed Measures

The applicant has identified and committed to implement the following APMs as part of the proposed project to avoid or substantially lessen potentially significant impacts to hydrology and water quality, to the extent feasible. The APMs, where applicable, are discussed in the impact analysis section below.

APM BIO-5: Herbicides shall not be applied during rain events, within 48 hours of a forecasted rain event with a 50% or greater chance of precipitation, or when wind velocity exceeds 10 miles per hour (mph) (for liquids) and 15 mph for granular herbicides.

APM GEO-3: Roads shall be constructed at grade to maintain existing drainage patterns during storm events. Unpaved access roads shall be constructed of compacted native soils. Rock or gravel may be added to unpaved roads for stabilization to prevent rutting or erosion.

APM HAZ-1: An Environmental Inspection and Compliance Monitoring program and plan for construction and operation will be developed and implemented to ensure that hazardous materials are properly stored and potentially hazardous waste is properly disposed of. A Project Environmental Manager will be designated to oversee the program and plan. All contractors and employees will be educated about hazardous materials storage, waste sorting, appropriate recycling storage areas, and reduction of landfill waste. The Environmental Inspection and Compliance Monitoring program and plan shall include, but not be limited to, the following elements:

- On-site fueling specifications. On-site fueling of equipment and vehicles shall be completed in areas at least 100 feet away from drainages or in designated fueling areas. Fuel stored on-site will be in areas with secondary containment, unless secondary containment is built into the tank.
- Conductor installation guidance. During conductor installation, guard structures consisting of temporary H-frame poles shall be erected over any natural or human-made obstacles to shield them from falling objects.
- Transformer inspection. Transformers shall be inspected for oil leakage on a regular basis, and diversionary structures shall be provided for all oil-containing equipment, including transformers, at the project site.

APM HWQ-1: Prior to site mobilization, the applicant shall submit a Drainage, Erosion, and Sedimentation Control Plan (DESCP) to the CDFW and the BLM for managing stormwater during project construction and operations. The DESCP must ensure proper protection of water quality and soil resources, address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. The plan must also cover all linear project features such as the proposed generation-tie line.

The DESCP shall contain, at a minimum, the elements presented below that outline site management activities and erosion and sediment-control BMPs to be implemented during site mobilization, excavation, construction, and postconstruction (operating) activities.

Elements of the DESCP:

- Vicinity Map: A map(s), at a minimum scale of 1 inch to 500 feet, shall be provided indicating the location of all project elements with depictions of all significant geographic features including swales, storm drains, drainage concentration points, and sensitive areas.
- Site Delineation: All areas subject to soil disturbance for the proposed project shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures and drainage facilities.
- Clearing and Grading Plans: The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography shall be illustrated by tying in proposed contours with existing topography.

- Clearing and Grading Narrative: The DESCP shall include a table with the estimated quantities of material excavated or filled for the site and all project elements, whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.
- Erosion Control: The plan shall address exposed soil treatments to be used during construction and operation, including specifically identifying all chemical-based dust palliatives, soil bonding, and weighting agents appropriate for use that would not cause adverse effects to vegetation. BMPs shall include measures designed to prevent wind and water erosion, including the application of chemical dust palliatives after rough grading to limit water use.
- Best Management Practices Plan: The DESCP shall identify on the topographic site map(s) the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control stormwater runoff and sediment transport.
- Best Management Practices Narrative: The DESCP shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used before initial grading, during excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule shall include postconstruction maintenance of structural-control BMPs, or a statement provided about when such information would be available.

The DESCP shall be prepared, stamped, and sealed by a professional engineer or erosion control specialist. The DESCP shall include copies of recommendations, conditions, and provisions from CDFW and/or the BLM.

APM HWQ-2: If crossing existing washes is necessary, then at-grade crossings will be constructed to maintain existing flow channels and sediment transport, thereby leaving stormwater runoff volume unchanged.

3.10.3.4 Impact Assessment

Impact HYD-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? (Less than Significant)

Project construction would require the use of heavy machinery for vegetation grubbing, grading, and installation of roads, pipelines, generation facilities, transmission facilities, buildings, the solar field, and other facilities. Construction of these facilities would involve the use of bulldozers, graders, semi-trucks, and other heavy machinery, and would involve changes to on-site topography. These activities would potentially loosen existing surface soils and sediments, increasing the potential for erosion during storm events and discharging sediment or other pollutants into waterways. Additionally, the use of construction equipment may involve the accidental release of fuel, oils, lubricants, antifreeze, and other potentially hazardous substances at the construction site. These water quality pollutants could become entrained in surface water during storm events, and/or be infiltrated into groundwater and the underlying aquifer, resulting in the degradation of water quality.

Potential threats to surface water and groundwater quality related to operation and maintenance include leaching of treated wastewater from the proposed septic field into underlying groundwater; potential increases in sediment loads to adjacent washes due to release of sediments from the site during storm events; and accidental spills of hydrocarbon fuels, oils, and greases, antifreeze, and other liquids associated equipment maintenance and usage on-site, which could become entrained in stormwater or groundwater.

Similarly, decommissioning of the project will result in impacts to hydrology and water quality, similar to construction activities. Demolition, excavation, and site reclamation has the potential to increase sediment loads to drainage features and result in accidental release of fuel, oils, lubricants, antifreeze, and other potentially hazardous substances at the construction site. Therefore, a Closure, Decommissioning, and Reclamation Plan would be prepared for the project, which serves to ensure public health and safety, environmental protection, and compliance with applicable laws, ordinances, regulations, and standards, including those related to water quality and hydrology.

The project site contains potentially jurisdictional aquatic resources including prominent and non-prominent drainages that meet the definition of waters of the State (Appendix E-1). The SWRCB regulates discharges of pollutants into "waters of the state," broadly defined as any surface water or groundwater within the boundaries of the state. As the project could discharge pollutants (including fill material for construction) into these waters of the State during standard construction activities, the project would submit a Notice of Intent application for a WDR permit to the LRWQCB (see Section 3.10.1.3). As the project would obtain a permit for discharge of any fill materials to waters of the State in compliance with the Porter-Cologne Act, the project would not violate any WDRs.

As the project contains construction activities on area over 1 acre, it would apply for coverage under the NPDES Construction Stormwater General Permit (Order 2022-0057-DWQ) and any following versions applicable at the time of construction (SWRCB 2024). The Construction General Permit was developed to ensure that stormwater is managed and erosion is controlled on construction sites. The Construction General Permit requires preparation and implementation of a SWPPP, which requires implementation of BMPs to control stormwater run-on and runoff from construction work sites. BMPs may include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of infiltration swales, and protection of stockpiled materials. The application of a BMP plan serves to prevent and manage erosion, siltation, and accidental spills during construction, playing a crucial role in upholding water quality objectives and protecting the beneficial uses outlined by the LRWQCB. The permit also would require monitoring and reporting and would implement the water quality standards, guidelines, and prohibitions in the Basin Plan (described in Section 3.10.2.4).

As outlined in APM HWQ-1, the project would also implement a DESCP to reduce the impact of runoff during construction and operation. The DESCP would ensure proper protection of water quality and soil resources, address disturbed soil stabilization treatments at the project site for both road and non-road surfaces, and identify all methods used for temporary and final stabilization of inactive areas. The Plan would cover all project component areas subject to disturbance. The DESCP would cover site mobilization, excavation, construction, and post-construction (i.e., operation and maintenance) activities. Site monitoring would involve inspections to ensure that the BMPs required by the project-specific SWPPP and DESCP are properly maintained and reducing the risk of runoff to an adequate level. Implementation of the project-specific SWPPP and DESCP would ensure that downstream water bodies are not affected by sediment transport. Additionally, erosion control measures for future decommissioning activities would be included in the Decommissioning and Reclamation Plans implemented during the decommissioning phase. Future decommissioning would involve site restoration, improving conditions to approximate pre-project status.

With the implementation of APM HWQ-1 and APM HAZ-1, in addition to the requirements of general statewide WDRs, the project would minimize or avoid the degradation of water quality or the violation of water quality standards, especially during major storm events. Therefore, impacts would be **less than significant.**

Impact HYD-2: Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (Less than Significant)

The proposed project water supply source lies within the Baja Subarea of the Mojave Basin and is within the jurisdictional boundary of the MWA. The project site is not located within the jurisdictional boundary of the MWA; however, water will be trucked on-site for construction and operation purposes. The project would source water from two private groundwater wells, located approximately 40 miles southwest of the project site in Newberry Springs, California. The water rights for these wells are owned by the well owner, Eagle Well Drilling and Pump Service (see Appendix J).

These wells are south of the Mojave River, in an area that includes farmland and scattered rural residential development. The highest consumptive uses that are listed for the 2017–2018 Baja Subarea indicate that agricultural and urban land uses require the most water; however, agricultural water use has declined significantly over the last decade (MWA 2023). Residential, commercial, and industrial land uses are primarily concentrated around the main urban areas including Daggett, Newberry Springs, and portions of Barstow. MWA has monitored groundwater levels at a well (state well number: 09N03E34D007S) near the project's water supply source in Newberry Springs, California, since 2010. Although groundwater levels have remained mostly constant over the last 13 years, the trend does depict a noticeable decline in water levels beginning around 2013. In 2010, groundwater elevation levels were approximately 1,718 feet; in 2013, they were at 1,716 feet; by 2017, groundwater levels had dropped about 11 feet and were at 1,705 feet. They have increased since 2017, and in 2020, they were at 1,711 feet (DWR 2020).

In January 1996, a stipulated judgment was issued by the Superior Court, which served to address shortages in water supply across the Mojave Basin. The adjudication of the Mojave Basin Area was the legal process by which the rights to produce water were allocated, and the MWA was appointed as the basin Watermaster and tasked with the responsibility of keeping the Mojave Basin and its five separate subareas in balance through replacement water and the establishment of a decreasing FPA. Although each basin has seen significant improvement due to regulation ramp-downs following the stipulated judgment, the Baja Subarea remains in overdraft.

The judgment determines water rights for each person or entity using 10 af/yr or more (major producers) based on their historical production. These rights are referred to as BAP, which represent the highest possible production for a given producer. Specifically, BAP rights were assigned per court judgment to each major producer. The MWA established an FPA, which serves to control the amount of water that can be produced free of replacement obligations by any producer. In the event that any producer exceeds their share of the FPA, they must pay the Watermaster a Replacement Water Assessment. The FPA represents a percentage of the BAP and is determined based on the PSY of the basin; in the 2023–2024 water year, it was recommended that the FPA be 20.5% of the BAP for the Baja Subarea, which is unchanged from the previous water year. The PSY represents the average annual amount of water that can be produced from a subarea without resulting in a long-term reduction in groundwater storage. The PSY is based on the average natural long-term water budget for each subbasin within the MWA jurisdictional area and considers consumptive use that would not result in a long-term deficit to the groundwater. In 2018, the PSY was updated for each basin. For the 2021–2022 water year, the BAP for the Baja Subarea was 66,157 af/yr, the FPA was 12,213 af/yr, the PSY was 12,189 af/yr, and the production for the 2022–2023 water year was 10,521 af (MWA 2023). 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 MWA and are also reported to the California Statewide Groundwater Elevation Monitoring Program.

Over the last 27 years, the Baja Subarea has observed a reduction in groundwater totaling approximately 490,000 af, raising concern that further reductions in groundwater could not be sustained by the basin. In the 2021–2022 water year, the basin observed net change in storage, totaling 7,283 af. Despite this, the Baja Subarea has observed a 56% decrease in pumping between 2017 and 2022, principally due to agricultural water use declining. As a result, some hydrographs have indicated that groundwater levels are responding to decreased pumping across the basin. It is expected that groundwater level declines will continue to slow and possibly begin to remain constant in the future due to rapid decreases in pumping.

Project construction will use water sourced from the aforementioned wells approximately 40 miles southwest of the project site. During the 18-month construction period, it is estimated that the project would require up to 336 af (109,486,080 gallons) of water. This water would be used for common construction-related activities, including dust control, sanitation, initial system demand, and other miscellaneous purposes. Water used for project operation and maintenance would be sourced from the same wells. During the approximately 30-year operating period, it is estimated that the project would require up to 5.6 af/yr (1,824,768 gallons per year). Operational water use would primarily include periodic washing of the photovoltaic modules, which is expected to occur twice per year to remove dust and maintain power generation efficiency. Washing would be done using a truck-mounted pressure washer. The washing would require approximately 2.8 af (912,384 gallons) of water per year. In total, the 35-year period, including the project construction and operational phase, would require approximately 523.6 af of water (170,615,554 gallons), or an average of 19.36 af/yr.

Table 3.10-2 is adapted from values provided in Appendix J and provides average annual balance values for the Baja Subarea with project demands for the time periods 2023 through 2033, and 2033 through 2043. Future budget estimates for years 2023 through 2033 reflect continued regulatory ramp-downs on pumping in accordance with the stipulated judgment (see Appendix J for discussion on future projections and analytical methods), whereas years 2033 through 2043 reflect the average annual budget for the Baja Subarea after the basin has reached PSY and further regulatory ramp-downs are not required. During the period 2023 through 2033, it is predicted that the proposed project could initially contribute to a groundwater deficit (approximately −3,942.84 af/yr), which is predicted to continue until years 2033 through 2043, when project water demands will not likely contribute to a groundwater deficit.

Table 3.10-2. Future Water Budget for the Baja Subarea

Water Outflow	Average Water Budget for Years 2023–2033 (af/yr)	Average Water Budget for Years 2033–2043 (af/yr)
Evapotranspiration	2,000	2,000
Total pumping (production)*	12,272.2	7,450.7
Project demand	37.24	5.6
Total outflow	**14,309.44**	**9,456.3**

Water Outflow	**Average Water Budget for Years 2023–2033 (af/yr)**	**Average Water Budget for Years 2033–2043 (af/yr)**
Water Inflow Source	**Average Water Budget for Years 2023–2033 (af/yr)**	**Average Water Budget for Years 2023–2033 (af/yr)**
River recharge†	5,806.6	5,806.6
SWP enhanced recharge	572	572
Subsurface inflow from Centro Subarea	1,462	1,462
Mountain front recharge	980	980
Return flow (recirculated production)	1,546	939
Total inflow	**10,366.6**	**9,759.6**
Average Final Annual Balance (af/yr)	−3,942.84	303.3

*Pumping values are from the Mojave Basin Area Watermaster Annual Reports (MWA 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021b, 2022, 2023).

†Value represents the 40-year average recharge rate from the Mojave River (USGS 2023b).

Periods of drought have historically contributed to deficits in the groundwater across the Baja Subarea and this trend will predictably continue into the future, regardless of any regulatory efforts or decrease in production. These periods are offset by sporadic surplus recharge events that replenish available groundwater over long periods of time (see Appendix J, Figure 7). The WSA prepared for the project addresses possible drought scenarios with the project demand that includes water budgets for single dry and multiple dry water years. During a single dry year with project demands, the basin could observe a deficit of 8,425 af; however, this deficit represents only 42.4% of the groundwater deficit that would occur during a historical dry year, which does not include project water requirements (−19,871 af). Similarly, during a future period of multiple dry years mirroring the years 2000 through 2003, the basin could observe a cumulative 3-year deficit of −20,946.1 af.

Despite the deficits to groundwater that would accrue during single dry and multiple dry water years, there is a sufficient water supply to meet the water demand associated with the proposed project. The estimated groundwater in storage for the main portion of the Baja Subarea, including areas north and south of the Mojave River, is estimated to be 6,816,000 af (Todd Engineers 2013). A single dry year event would result in a reduction to groundwater storage of around 0.12%. Under a future multiple dry year scenario, the accrued 3-year groundwater deficit of 20,946.1 af would result in a reduction to groundwater storage of around 0.31%. Reductions in groundwater storage of less than 1% will not have a significant impact to groundwater levels. For example, the main portion of the Baja Subarea is 130,000 acres, with an average saturated thickness of 329 feet (Todd Engineers 2013). A 3-year groundwater deficit of 20,946 would amount to drawdown, or change in groundwater levels of around 1 foot, which would not significantly reduce groundwater supply for Baja Subarea. Therefore, reductions in groundwater storage following single and multiple dry water years will not result in insufficient groundwater supply to meet project water demands.

Despite the potential for any producer to further contribute to a decrease in groundwater supply, the rights to production still exist for producers across the Mojave Basin Area, including the water supply source for the proposed project. The project would not increase, nor likely decrease, the amount of pumping from the subbasin because the maximum amount of pumping is capped and controlled under the stipulated judgment. Therefore, the proposed project would fit within an existing framework that is managed by the Mojave Basin Watermaster, and project water demands would not, by law, contribute to basin overdraft that is not already considered admissible given the current state of the basin as described by the Mojave Basin Watermaster. The state of the basin will continue to be monitored and it is expected that FPA and pumping will continue to decrease until groundwater declines are no longer observed. Adequate water supplies for project construction and operation have been secured through agreement with the water supplier for the project; therefore, the project water demand must fall within the specified allocation and cannot, by law, exceed without requiring the purchase of replacement water from the Mojave Basin Watermaster. The impacts to groundwater would be **less than significant**.

Impact HYD-3: Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

a. Result in substantial erosion or siltation on- or off-site (Less Than Significant);

Construction of the project requires earthwork involving the use of heavy machinery for tasks such as vegetation removal, grading, and the installation of various facilities such as roads, solar fields, transmission facilities, buildings, substations, switchyards, energy storage systems, and others. The use of tractors, bulldozers, graders, trucks, and other heavy equipment, along with minor alterations to on-site topography, is anticipated during both construction and future decommissioning. These activities may result in the loosening of existing surface soils and sediments, heightening the risk of erosion during storm events and increased downstream sediment yields from disturbed areas.

The development of solar arrays would maintain sheet flow where possible, exiting the site along existing natural contours and flows. The project would deliberately avoid major washes on-site to preserve existing drainage patterns. Despite ground disturbances from compaction, micro-grading, and disc-and-roll grading, efforts are made to limit alterations to drainage patterns. Light grubbing for leveling and trenching, along with the careful treatment of access roads, is expected. Impervious ground cover is confined to specific structures and areas. Due to the proposed strategy of minimal grading of major drainages and large washes, maintaining sheet flow across the majority of the sites, and avoiding the largest washes, alterations to the existing drainage pattern and associated risks of erosion or siltation would be minimal. Existing hydrologic patterns would be preserved concerning runoff. The implementation of APM HWQ-1 would ensure that construction and operation of the proposed project would not result in a net impact relating to on-site drainage or patterns and rates of erosion or sedimentation by requiring the applicant to develop and implement a comprehensive drainage, stormwater, and sedimentation control plan. Under APM HWQ-2, at-grade crossings would be constructed to maintain existing flow channels and sediment transport, thereby leaving stormwater runoff volume unchanged, reducing the potential for increased erosion and sedimentation of stormwater. APM GEO-3 would ensure that, if crossing existing washes is necessary, at-grade crossings will be constructed to maintain existing flow channels and sediment transport, thereby leaving stormwater runoff volume unchanged.

Berms would be constructed along the edge of key drainages as detailed in the proposed project's stormwater report (see Appendix K). The berms would be located outside main swale flow areas and would be constructed to prevent occasional side channel flows that may develop during high runoff events from entering the solar array field. Once construction is complete, the surface of the soil under the solar panels will generally be the same as the present condition except in areas where soil has been compacted, or rocks have been removed by grading. Vegetation would be allowed to naturally reestablish and may be trimmed during operation and maintenance of the project as necessary. There would be minor changes to the soil and land cover conditions resulting from vegetation removal, soil compaction, grading, and gravel base for the permanent access roads. Implementation of APM HWQ-1 would ensure that changes to surface water drainage do not result in a net impact to downstream waterways from erosion or sedimentation during operation and maintenance by requiring the applicant to develop and implement a comprehensive drainage, stormwater, and sedimentation control plan. Existing flow paths and drainage patterns would not be changed in the post-development condition, and it is not anticipated that runoff volumes, peak discharges, or sediment transport, all of which are factors affecting the release of sediments from the site during storm events, would be substantially altered from pre-development conditions.

The project would not substantially alter the existing drainage pattern of the site or area such that would result in significant erosion or siltation on-site or off-site. Impacts are **less than significant**.

b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site (Less Than Significant);

c. 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 (Less Than Significant);

Although the project site itself is undeveloped, there are drainage enhancements along the adjacent portion of I-15. The I-15 includes four large box culverts under the freeway to convey upslope flows to downslope areas within the project site. In addition to the four box culverts, the I-15 itself serves as an impervious surface to concentrate and convey rainfall. The paved freeway includes a short paved elevated berm along its outer edge on the downslope side with constructed disruptions, or water conveyance flumes in the berm which convey water off the freeway into the study area. There are approximately 23 flumes each spaced between 400 and 1,300 feet apart along the freeway's edge

The proposed project carries a minor potential to increase the frequency of runoff rates by introducing impervious areas and modifying ground surface characteristics through grading and vegetation removal. Impervious areas will be confined to the foundations for proposed solar panels, transmission structures, buildings, energy storage systems, and portions of substations and switchyards. Compacted parking areas and roadways will contribute to increased runoff potential. These features are anticipated to constitute only a small fraction of the 2,670-acre site; however, localized heightened surface runoff could occur near proposed impervious surfaces.

During operation and maintenance of the project, the concrete pads for the inverter-transformers, posts and foundations of the solar arrays, project substation, BESS, and operation and maintenance facilities would be impervious surfaces that would generate increased runoff compared to existing pre-project conditions. All impervious surfaces would be removed during decommissioning and the site would be restored.

The project site is within FEMA Flood Hazard Zone D, which represents areas with possible but undetermined flood hazards. The Stormwater Drainage Report assesses hydrologic conditions to understand the existing and future flood hazards for the proposed project site; determine inundation areas and spatial distribution of stormwater depths and velocities for the 2-year, 10-year, and 100-year 24-hour storm events; and identify any flood hazard areas within the site. The Stormwater Drainage Report details runoff volumes and rates to prevent both on- and off-site flooding during operations (Appendix K). The report illustrates the relationship of drainage and flood to project design features, including buildings and substations, fences, access roads, culverts, and linear features, thereby ensuring adequate design to protect from flooding, erosion, and scour without adverse effects on adjacent property. The report includes details of design of flood retention features necessary to avoid any increase in downstream flood peak flow rates, thereby minimizing the potential for off-site erosion and siltation of any downstream wash.

The project would construct three distinct channels traverse the project site from east to west. According to the report, each of these channels has the capacity to flow at rates of greater than 3.50 feet per second in a 100-year flood event. These areas represent possible areas of inundation and flood hazard within the project site. The civil design plans for the proposed project account for these natural features through incorporating three distinct drainage channels that correspond to the three natural high-flow channels that cross the project site. Drainage channels would be designed to handle flood water associated with surplus precipitation events. Drainage Channel 1 would be 60 feet wide and 2,700 feet long, Channel 2 would be 80 feet wide and 4,984 feet long, and Channel 3 would be 60 feet wide and 8,056 feet long, and each would be 3 feet deep. A series of berms would direct flood water eastward through the project site and exit into natural drainage features outside of the project site. The proposed project will grade the surface of proposed solar area to drain into detention basins, and with the inclusion of the proposed berms, channels, and catchments to redirect water flow and mimic natural flow patterns, the project is not likely to substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. Additionally, very little change is predicted in the 100-year hydrographs at either side of the site, as infiltration capacity is far exceeded by rainfall intensity under both existing and proposed conditions.

With the implementation of APM HWQ-1 and APM HWQ-2, the project would not substantially alter the existing drainage conditions of the site or area in a manner that would result in flooding on- or off-site and create runoff water that would exceed the capacity of stormwater drainage systems. This includes avoiding alterations to the course of a stream or river, preventing the addition of impervious surfaces, or introducing polluted runoff into drainage features. Impacts would be **less than significan**t.

d. Impede or redirect flood flows? (Less Than Significant)

The project site is within FEMA Flood Hazard Zone D, which represents areas with possible but undetermined flood hazards. A Stormwater Drainage Report was prepared for the proposed project, which analyzes hydrologic conditions to understand the existing and future flood hazards for the proposed project site; determine inundation areas and spatial distribution of stormwater depths and velocities for the 2-year, 10-year, and 100-year 24-hour storm events; and identify any flood hazard areas within the site (Appendix K). The Stormwater Drainage Report indicates that three distinct channels traverse the project site from east to west. According to the report, each of these channels has the capacity to flow at rates of greater than 3.50 feet per second in a 100-year flood event. These areas represent possible areas of inundation and flood hazard within the project site. The civil design plans for the proposed project account for these natural features through incorporating three distinct drainage channels that correspond to the three natural high-flow channels that cross the project site. Drainage channels will be designed to handle flood water associated with surplus precipitation events. A series of berms will direct flood water eastward through the project site to a series of catchments at two locations where water leaves the project site. Flow will exit into natural drainage features outside of the project site. The proposed project will grade the surface of proposed solar area to drain into detention basins, and with the inclusion of the proposed berms, channels, and catchments to redirect water flow and mimic natural flow patterns, the project is not likely to substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. Additionally, very little change is predicted in the 100-year hydrographs at either side of the site, as infiltration capacity is far exceeded by rainfall intensity under both existing and proposed conditions.

Project components with the capacity to obstruct or alter flood flow consist of solar panels and perimeter fencing, which could elevate flood risk both within and beyond the site boundaries. Moreover, buildings erected within or close to drainage areas have the potential to obstruct or divert floodwater.
No flow-obstructing fences (such as chain-link or block wall) will be constructed perpendicular to existing drainage patterns, and all fencing will allow unimpeded runoff across the project site. Additionally, if possible, the development of proposed structures will be situated outside primary drainages and the 100-year floodplain. If located within these areas, the structures will be designed to avoid impeding or redirecting flood flows, preventing increased flooding of off-site properties. Lastly, the project will purchase flood insurance to mitigate risks associated with any flood damage to solar installations and related infrastructure.

Therefore, the project would not significantly alter the existing drainage pattern of the sites or area in a manner that would impede or redirect flood flows. Impacts would be **less than significant**.

Impact HYD-4: Would the project result in a flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation? (Less than Significant)

The project site is situated in an inland desert area and is not susceptible to tsunami inundation. Furthermore, there are no water bodies (e.g., lake, reservoir, and canals) in the project vicinity that are capable of generating a seiche. There would be **no impacts** related to pollutant release due to a tsunami or seiche.

To prevent polluted runoff on-site, APM HAZ-1 mandates that on-site fueling of equipment and vehicles is to be completed in areas at least 100 feet away from drainages, or in designated fueling areas. Fuel stored on-site will be located in areas with secondary containment, unless secondary containment is built into the tank. Additionally, APM BIO-5 ensures that herbicides are not to be applied during rain events, within 48 hours of a forecast rain event with a 50% or greater chance of precipitation, or when wind velocity exceeds 10 mph for liquids or 15 mph for granular herbicides.

The project site is situated within FEMA Flood Hazard Zone D, which represents areas with possible but undetermined flood hazards. Appendix K modeled 100-year 24-hour storm events within the project site and determined that infiltration capacity far exceeds ran capacity at both ends of the site under existing and proposed conditions. Drainage channels will be designed to handle flood water associated with surplus precipitation events. Therefore, the project is not likely to risk release of pollutants during project inundation. Impacts would be **less than significant**.

Impact HYD-5: Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan or Urban Water Management Plan? (Less than Significant)

The existing state and federal water quality regulations, along with the SWPPP and the DESCP, aim to ensure compliance with water quality and waste discharge standards throughout project phases of construction, operations, and future decommissioning. Therefore, the project will not conflict with or obstruct the implementation of a water quality control plan. Impacts would be **less than significant.**

The MWA created a UWMP for 2020 that covers the entire MWA service area. The project water supply source lies within the Baja Subarea, an adjudicated water basin, and therefore, groundwater within the basin is actively managed to achieve sustainability. The project would fit within an existing framework that is managed by the Mojave Basin Watermaster and project water demands would not contribute to basin overdraft that is not already considered admissible given the current state of the basin. Additionally, adequate water supplies for project construction and operation have been secured through an agreement with the water supplier for the project. Therefore, with the incorporation of the APM HWQ-1, the project would not conflict with or obstruct a sustainable groundwater management plan or UWMP. Impacts would be **less than significant.**

3.10.4 Mitigation Measures

No mitigation measures are required.

3.10.5 Cumulative Impacts

Impact C-HYD-1: Would the impacts of the proposed project, in combination with other past, present, and reasonably foreseeable future projects, contribute to a cumulative impact related to hydrology and water quality? (Less Than Significant.)

Surface Water and Water Quality

Cumulative impacts to surface water and water quality include the impacts of the proposed project in addition to those expected from existing, proposed, and foreseeable projects within the Mojave Watershed (HUC-8 18090208). When combined, the development of multiple projects within the proposed project vicinity has the potential to collectively affect hydrological patterns and water quality within the Chuckwalla Hydrologic Unit. Cumulative impacts may introduce new pollutants or exacerbate existing ones during construction, operation, and eventual decommissioning, potentially leading to increased runoff due to increased impervious surface areas. Moreover, projects will generally intersect with watercourses that could lead to flooding, with impacts similar to those anticipated for the proposed project.

Despite the potential for cumulative project impacts, existing, proposed, and foreseeable project development within the Mojave Watershed Hydrologic Unit will be subject to same scrutiny as the proposed project. Therefore, project developers will adhere to similar requirements as the proposed project when seeking permits to comply with state, federal, and San Bernardino County floodplain development regulations. All projects will undergo environmental assessments similar to that of the proposed project. To minimize or eliminate impacts to surface water and water quality, projects would incorporate similar measures as the proposed project (see Section 3.10.3.3, Applicant-Proposed Measures).

Considering the similar hydrological context and project types among cumulative projects, individual project impacts are anticipated to be mitigated to a level deemed insignificant through adherence to regulations and mitigation efforts. Consequently, the incremental contribution of the project to cumulative water quality effects caused by other past, present, and future projects would not be of significant concern when evaluated collectively.

Groundwater

The proposed project water supply source is situated off-site, within the Baja Subarea of the Mojave Basin and is within the jurisdictional boundary of the MWA. A WSA has been prepared for the proposed project. Groundwater resources are projected to be sufficient to meet the demands of both construction and ongoing operations for the proposed project. As outlined in the WSA, when factoring in existing and expected future development within the subbasin, the project is not expected to negatively impact groundwater availability in the long term. This is attributed to the presence of current and anticipated groundwater reserves, as well as the continual regulation and management of the subbasin by the MWA.

Overdrafts within the Baja Subarea have substantially decreased over the last decade, reflecting the impact of regulatory ramp-downs; however, the basin remains in overdraft. The MWA Watermaster continues to monitor subbasin conditions and will continue to reduce FPA until the basin is in balance. The WSA prepared for the proposed project demonstrates that the project would fit within the existing framework of current overdraft across the basin. The project would not increase, nor likely decrease, the amount of pumping from the subbasin because the maximum amount of pumping is capped and controlled under the stipulated judgment. The WSA predicts that for the first 8 years of project construction and development (years 2025–2033), the project and all other projects would contribute to an existing overdraft that is becoming significantly less negative. The WSA shows a historical average overdraft of 12,989 af, and an average overdraft for years 2023 through 2045 of 1,543 af (including water requirements for the proposed project and other foreseeable project development), reflecting an 88% increase. Despite overdraft, the WSA predicts that the basin will be in balance by year 2033 and will remain in balance thereafter despite the water requirements of the proposed project and other foreseeable project pumping demands. Additionally, the WSA predicts that overdraft will occur in the basin during single and multiple dry year drought events; however, drought events are offset by infrequent surplus recharge events, such as years 2005 and 2011, that naturally recharge the basin.

In conclusion, the potential effects of the proposed project on groundwater resources may be significant and unavoidable; however, these impacts would exist regardless of whether the project is permitted due to water rights and capping of the FPA. All producers who exceed annual pumping allowance are required to purchase replacement water from the Watermaster, whereas producers who do not use their share of the FPA can sell their water rights. Lastly, significant and unavoidable cumulative impacts to groundwater resources are expected only in the early stages of the project's lifespan; however, as the basin recovers, cumulative project development will no longer have significant impacts to groundwater resources.
In total, the WSA predicts that project water demands will total 523.6 af for the total lifespan of the project, including construction. Despite the cumulative loss due to the proposed project, the WSA predicts that the basin will be in balance by the year 2033, with a positive inflow of around 300 af/yr, including current and foreseeable project development. Although these estimates are speculative and based on the trends in management and water usage, the WSA suggests that in one single year, a surplus recharge event mirroring years 2005 and 2011 would recharge the basin with around 36 to 154 times the proposed project water demand for the entire 35-year lifespan of the project. Therefore, with continued management of the basin, the proposed project and all current and foreseeable project development is not likely to result long-term decline in groundwater within the Baja Subarea.

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