

**Water Supply Assessment
For the ZGlobal North Star 2
Solar Energy Project
Imperial County, California**

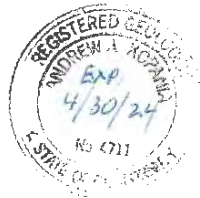
Prepared for:

ECORP Consulting, Inc.
2525 Warren Drive
Rocklin, CA 95677

Prepared by:

Dr. Andrew A. Kopania
California Professional Geologist No. 4711
California Certified Hydrogeologist No. HG31
EMKO Environmental, Inc.
551 Lakecrest Drive
El Dorado Hills, California 95762

March 8, 2023



Water Supply Assessment For the ZGlobal North Star 2 Solar Energy Project Imperial County, California

Table of Contents

1.0	INTRODUCTION	2
2.0	PROJECT DESCRIPTION	2
3.0	WATER SUPPLY PLANNING UNDER SB 610 and SB 1262	7
3.1	Is the Proposed Project Subject to CEQA?	7
3.2	Is the Proposed Project a “Project” Under SB 610?	8
3.3	Is There a Public Water System That Will Service the Proposed Project?	8
3.4	Is There a Current Urban Water Management Plan That Accounts for the Project Demand?	8
3.5	Is Groundwater a Component of the Supplies for the Project?	9
3.6	Are There Sufficient Supplies to Serve the Project Over the Next Twenty Years?	10
4.0	PROJECT WATER SUPPLY	11
4.1	Groundwater Basin	11
4.2	Groundwater Supply and Recharge	11
4.3	Groundwater Sustainability	16
5.0	PROJECT WATER DEMAND	16
6.0	DRY YEAR SUPPLY.....	17
7.0	FINDINGS AND DISCUSSION.....	19
8.0	DOCUMENTS CONSIDERED AND REFERENCES CITED	20

LIST OF TABLES

- 1 USGS Water Quality Data (March 31, 2010)
- 2 Project Water Demand

LIST OF FIGURES

- 1 Regional Location Map
- 2 Project Location
- 3 Site Plan
- 4 Imperial Valley Groundwater Basin
- 5 USGS Groundwater Level Hydrograph
- 6 Water Year Rainfall at Brawley 2 SW

Water Supply Assessment For the ZGlobal North Star 2 Solar Energy Project Imperial County, California

1.0 INTRODUCTION

EMKO Environmental, Inc. (EMKO) has prepared this Water Supply Assessment (WSA) as a subconsultant to ECORP Consulting, Inc. for the proposed ZGlobal North Star 2 Solar Energy Project (Project) in Imperial County, California at the location indicated on Figure 1. Project water use includes dust control and soil conditioning requirements during construction and routine maintenance, primarily panel washing, during operation.

Water Code Sections 10910 through 10915 were amended by Senate Bill 610 (SB 610) in 2002. SB 610 requires that under specific circumstances, as detailed below, an assessment of available water supplies must be conducted. The purpose of the assessment is to determine if available water supplies are sufficient to serve the demand generated by the Project, as well as the reasonably foreseeable demand in the region over the next 20 years under average normal year, single dry year, and multiple dry year conditions. Water Code Section 10910 was further amended by SB 1262 on September 24, 2016 to require a Water Supply Assessment to include additional information regarding the groundwater basin designation and adjacent water systems. This report provides the information required for a Water Supply Assessment (WSA), as described in the October 2003 *Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 to Assist Water Suppliers, Cities, and Counties in Integrating Water and Land Use Planning*, published by the California Department of Water Resources (DWR Guidebook) along with the additional information required by SB 1262.

2.0 PROJECT DESCRIPTION

ZGlobal is proposing to construct and operate the North Star 2 solar energy generation and storage facilities on private lands in the Imperial Valley in Imperial County. The Project site is located approximately 15 miles east of the City of Brawley along the north side of State Route 78 (see Figures 1 and 2). The Project includes approximately 614 acres in Sections 35 and 36 of Township 13 South, Range 16 East of the San Bernardino Base and Meridian (SBB&M) within the “Holtville NE” 7.5-minute U.S. Geologic Survey (USGS) quadrangle. The Project site covers Imperial County Assessor’s Parcel Numbers (APNs) 039-140-013 (approximately 460 acres) and APN 039-140-014 (approximately 154 acres). The site is located between the East Highline Canal and the Coachella Canal (see Figure 2). North Star 2 will include a 130-

megawatt solar photovoltaic system and integrated 175-megawatt battery energy storage system along with related substations and transmission lines. The project water supply will be provided by a new well or wells to be drilled onsite. Figure 3 is a Site Plan showing the Project layout and ancillary facilities.

The parcels are not currently located within the Imperial County Renewable Energy Overlay Zone. Thus, an amendment to the County's General Plan must be approved, along with a Conditional Use Permit (CUP), to allow construction and operation of the Project. These are discretionary actions by the County requiring compliance with the California Environmental Quality Act (CEQA). This Water Supply Assessment is intended to support and be a part of the CEQA analysis.

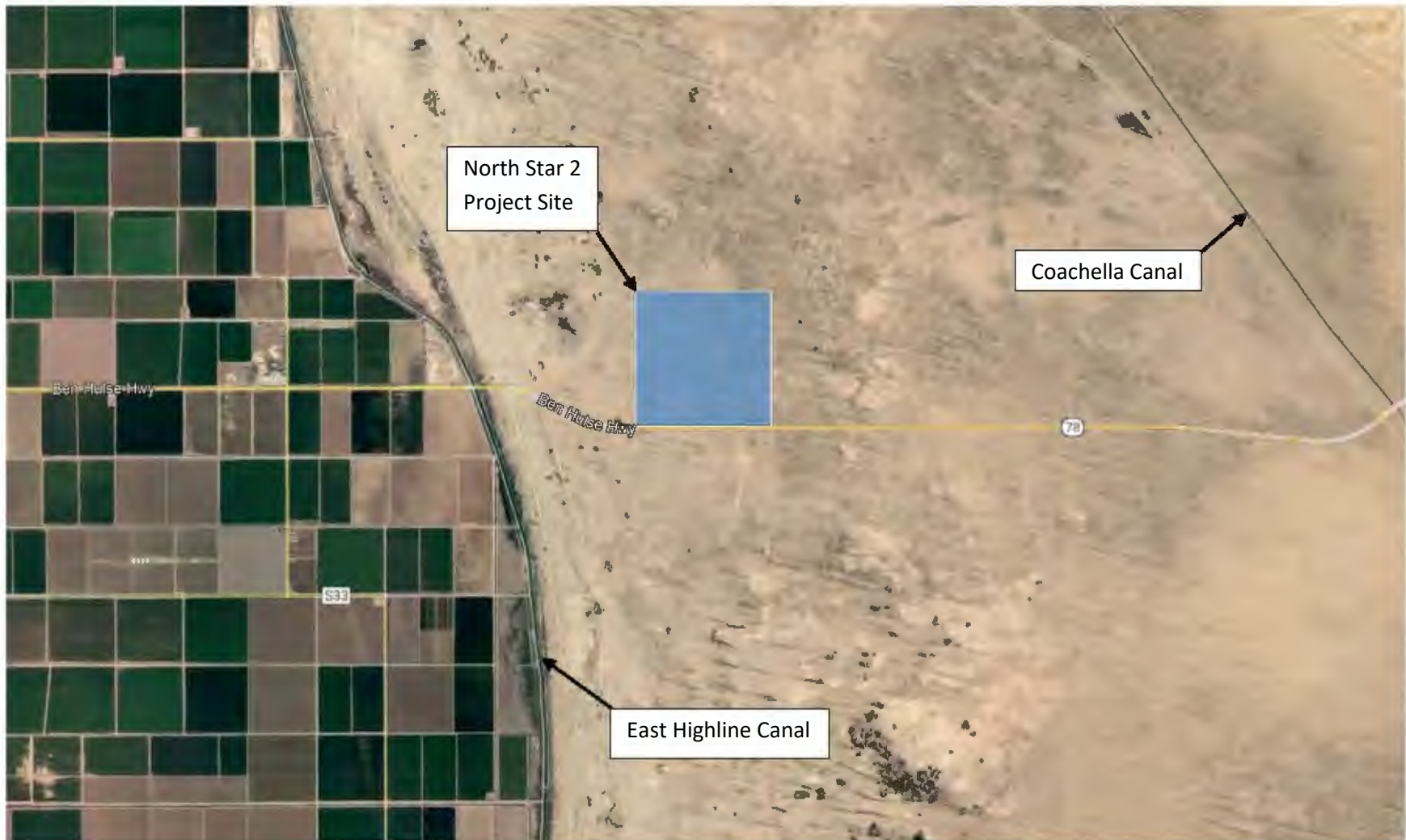
Domestic water and sanitation facilities would be required during construction. These would be provided through bottled water and portable facilities. A domestic/potable water connection would not be required.

Construction is anticipated to require 12 to 18 months to complete. Anticipated operational Project life is 25 to 30 years.

Figure 1. Regional Location Map



Figure 2. Project Location



3.0 WATER SUPPLY PLANNING UNDER SB 610 and SB 1262

SB 610, effective January 1, 2002, amends Sections 10910 through 10915 of the Water Code by requiring preparation of a WSA for development projects subject to CEQA and other criteria, as discussed below. SB 610 also amends Section 10631 of the Water Code, which relates to Urban Water Management Plans (UWMPs). The WSA process under SB 610 is designed to rely on the information typically contained in UWMPs, where available.

On September 24, 2016, SB 1262 further amended Section 10910 of the Water Code to require additional information related to adjacent public water systems and the status of the groundwater basin. These amendments provide additional consistency with the Sustainable Groundwater Management Act of 2014, as discussed further in Section 4.4.

The first steps in the WSA process are to determine whether SB 610 applies to the proposed Project. If so, then documentation of available water supplies, anticipated Project demand, and the sufficiency of supplies must be conducted. These issues are summarized by the following questions, as outlined in the DWR Guidebook:

1. Is the proposed Project subject to CEQA?
2. Is the proposed Project a “Project” under SB 610?
3. Is there a public water system that will service the proposed Project?
4. Is there a current UWMP that accounts for the project demand?
5. Is groundwater a component of the supplies for the Project?
6. Are there sufficient supplies to serve the Project over the next twenty years?

Each of these issues are discussed in the following sections as they relate to the proposed Project.

3.1 *Is the Proposed Project Subject to CEQA?*

The first step in the SB 610 process is to determine whether the proposed project is subject to CEQA. Water Code Section 10910(a) states that any city or county that determines that an application meets the definition of “project”, per Water Code Section 10912 (see Section 3.2, below), and is subject to CEQA, shall prepare a water supply assessment for the project. CEQA applies to projects requiring issuance of a discretionary permit by a public agency, projects undertaken by a public agency, or projects funded by a public agency. As noted in Section 2.0, the proposed Project requires discretionary approval of a General Plan Amendment and a CUP by Imperial County, a public agency. Therefore, the Project is subject to CEQA. This WSA has been prepared to support the environmental review that will be conducted by Imperial County under CEQA.

3.2 Is the Proposed Project a “Project” Under SB 610?

The second step in the SB 610 process is to determine if the proposed Project meets the definition of “project” under Water Code Section 10912(a). Under Section 10912(a) a “project” is defined as meeting any of the following criteria:

1. a proposed residential development of more than 500 dwelling units;
2. a proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
3. a proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
4. a proposed hotel or motel, or both, having more than 500 rooms;
5. a proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
6. a mixed-use project that includes one or more of the projects defined above; or
7. a project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The North Star 2 site is 614 acres. As a result, the Project will include an industrial site that is larger than 40 acres and thus this WSA is being prepared in accordance with criterion 5, above.

3.3 Is There a Public Water System That Will Service the Proposed Project?

Section 10912(c) of the Water Code identifies a public water system as a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections. The Project site is approximately 15 miles east of the City of Brawley. The Project parcels are also within IID’s East Mesa Unit (<https://mygis.iid.com/portal/apps/webappviewer/index.html?id=a33cfeb3714f4eb8a1c85320613a2d1b>) but do not have water service from IID. Thus, there is not a public water system that will serve the Project. The water supply will be provided by a new onsite groundwater supply well or wells to be drilled and installed as part of the Project.

3.4 Is There a Current Urban Water Management Plan That Accounts for the Project Demand?

The Water Code requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet per year, must prepare an UWMP. The DWR Guidebook (page iii) states that SB 610 repeatedly refers to the UWMP as a planning document that can be used to meet the standards set

forth in the statute, and that UWMPs act as a foundation to fulfill the requirements of the statute. As noted in Section 3.3, above, there is no public water system that will serve the Project and, therefore, there is not an UWMP that addresses the Project area or Project demand. Since there is not an UWMP that accounts for the Project demand, this WSA is based upon available and relevant information from DWR, the U.S. Geological Survey (USGS), and other publicly available data. As this WSA has been prepared for use by the CEQA lead agency, this document includes an evaluation of whether the total projected water supplies, determined to be available during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed Project, in addition to existing and planned future uses, including agricultural and manufacturing uses, in accordance with Water Code § 10910(c)(4).

3.5 Is Groundwater a Component of the Supplies for the Project?

Water Code Section 10910(f), paragraphs 1 through 5, must be addressed if groundwater is a source of supply for the proposed Project. As described in Section 3.3, the water supply will be provided by a new groundwater supply well or wells that will be drilled and installed as part of the Project. Therefore, an assessment of groundwater conditions is included in this document.

Water Code Section 10910(f) paragraphs 1 through 5, as modified by SB 1262, state:

(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment:

- (1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.
- (2) (A) A description of any groundwater basin or basins from which the proposed project will be supplied. (B) For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. (C) For a basin that has not been adjudicated that is a basin designated as high- or medium priority pursuant to Section 10722.4, information regarding the following: (i) Whether the department has identified the basin as being subject to critical conditions of overdraft pursuant to Section 12924; and (ii) If a groundwater sustainability agency has adopted a groundwater sustainability plan or has an approved alternative, a copy of that alternative or plan. (D) For a basin that has not been adjudicated that is a basin designated as low- or very-low priority pursuant to Section 10722.4, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the

condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

Since the Project water supply will be provided by a new well or wells to be drilled on the Project site, Paragraphs 1 through 4, above, are addressed in Section 4.0, below, including a description of the groundwater basin, groundwater conditions, and available supply. Section 5.0 presents available information regarding water demand for the Project.

The Paragraph 5 requirement to provide an analysis of the sufficiency of the groundwater basin to meet the projected water demand associated with the proposed project is addressed in Section 6.0, below.

3.6 *Are There Sufficient Supplies to Serve the Project Over the Next Twenty Years?*

Water Code Section 10910(c)(4) requires the WSA to “*include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and future planned uses, including agricultural and manufacturing uses.*”

The sufficiency of water supply for the proposed Project is addressed in Sections 6.0 and 7.0, below.

4.0 PROJECT WATER SUPPLY

As stated in Section 3.3, above, water for the Project will be provided by a new well or wells to be drilled on the Project site. As such, groundwater will be the sole water supply for both the construction and operational water needs. Because there are no public water systems that rely on groundwater, or other significant users of groundwater in the groundwater basin, there are no Urban Water Management Plans or similar planning documents available that include information regarding groundwater supply. Thus, limited information is available regarding groundwater conditions in the Project vicinity.

Overall conditions within the groundwater basin are described in Section 4.1. Groundwater recharge and available supply are discussed in Section 4.2. Groundwater level trends and the status of the basin relative to the Sustainable Groundwater Management Act of 2014 (SGMA) are provided in Section 4.3, as required by SB 1262.

4.1 Groundwater Basin

The Project is located within the eastern part of the Imperial Valley Groundwater Basin (Basin), designated as basin number 7-030, as defined by DWR (2023a), as indicated on Figure 4. The Basin is bounded on the east by the Sand Hills and on the west by the igneous and metamorphic rocks of the Fish Creek and Coyote Mountains (DWR, 2003). The northern boundary is the Salton Sea while the southern boundary is the international border with Mexico. The groundwater basin has an area of approximately 1,200,000 acres, or 1,870 square miles (DWR, 2003). The Basin has not been adjudicated (DWR, 2023b). Figure 4 shows the groundwater basin boundary and the approximate location of the Project.

Groundwater occurs within two major aquifers, separated at depth by a semi-permeable aquitard that averages 60 feet thick and reaches a maximum thickness of 280 feet. The aquifers consist mostly of alluvial deposits of late Tertiary and Quaternary age that have eroded from the adjacent mountains and filled the valley. The upper aquifer has an average thickness of approximately 200 feet with a maximum thickness of 450 feet. The lower aquifer averages approximately 380 feet thick with a maximum thickness of 1,500 feet. (DWR, 2003)

4.2 Groundwater Supply and Recharge

Much of the Basin area consists of irrigated agriculture. Surface water from the Colorado River provides almost all of the irrigation and municipal water supply, through the Imperial Irrigation District (IID). Ninety-seven percent of IID's 3.1-million-acre-foot

entitlement is used to irrigate almost 500,000 acres of farmland (IID, 2023). The remaining three percent of IID's allocation supplies municipal, commercial, industrial, and rural domestic needs. DWR (2023b) reports that the population in the Imperial Valley Groundwater Basin in 2010 was approximately 164,037 persons and that the population is expected to increase 30 percent by 2030. Growth in municipal areas often occurs on land that was previously irrigated. Due to the very small percentage of water demand that is due to municipal and domestic uses, and the offset of previous irrigation use, the projected future population growth is not expected to result in a measurable change in water demand in the Basin.

The total groundwater storage capacity of the Basin is estimated to be as much as 14,000,000 acre-feet (DWR, 2003). However, much of the groundwater is not usable for agricultural and municipal purposes due to high levels of dissolved solids (see additional discussion below). As a result, there are only seven public water supply wells and 57 total wells present within the 1,200,000-acre Basin (DWR, 2023b).

The average annual rainfall is very low, as discussed further in Section 6.0 below, and typically does not provide a sufficient quantity of moisture to percolate deep into the alluvial sediments. As a result, recharge of groundwater occurs primarily due to deep percolation of applied irrigation water and lateral inflow from adjacent groundwater basins. The average annual increase in groundwater storage in the Basin is estimated to be 17,000 acre-feet per year (DWR, 2003).

DWR's SGMA Data Viewer website (DWR, 2023a) and the U.S. Geological Survey's (USGS's) National Water Information System mapping application (<https://maps.waterdata.usgs.gov/mapper/index.html>) indicate that there are approximately 15 active groundwater monitoring locations within the Basin at the time this report was prepared. However, all but one of the wells are located along the Interstate Highway 8 corridor near the international border with Mexico. The nearest active monitoring well to the Project site is approximately 13 miles to the southeast of the Project site and 15 miles east of Holtville. The well has USGS identification number 325045115061901, which identifies the latitude and longitude of the well (i.e., 32°50'45" latitude, -115°06'19" longitude), and California state well number 015S018E15M001, which indicates the township, range, and quarter-quarter section (i.e., northwest quarter or the southwest quarter of township 15S, range 18E, San Bernardino Base and Meridian). The ground surface elevation at the well location is reported to be 119.8 feet above mean sea level (ft msl – NGVD29 datum) while the well depth is reported to be 902 feet below ground surface (ft bgs) (USGS, 2023a).

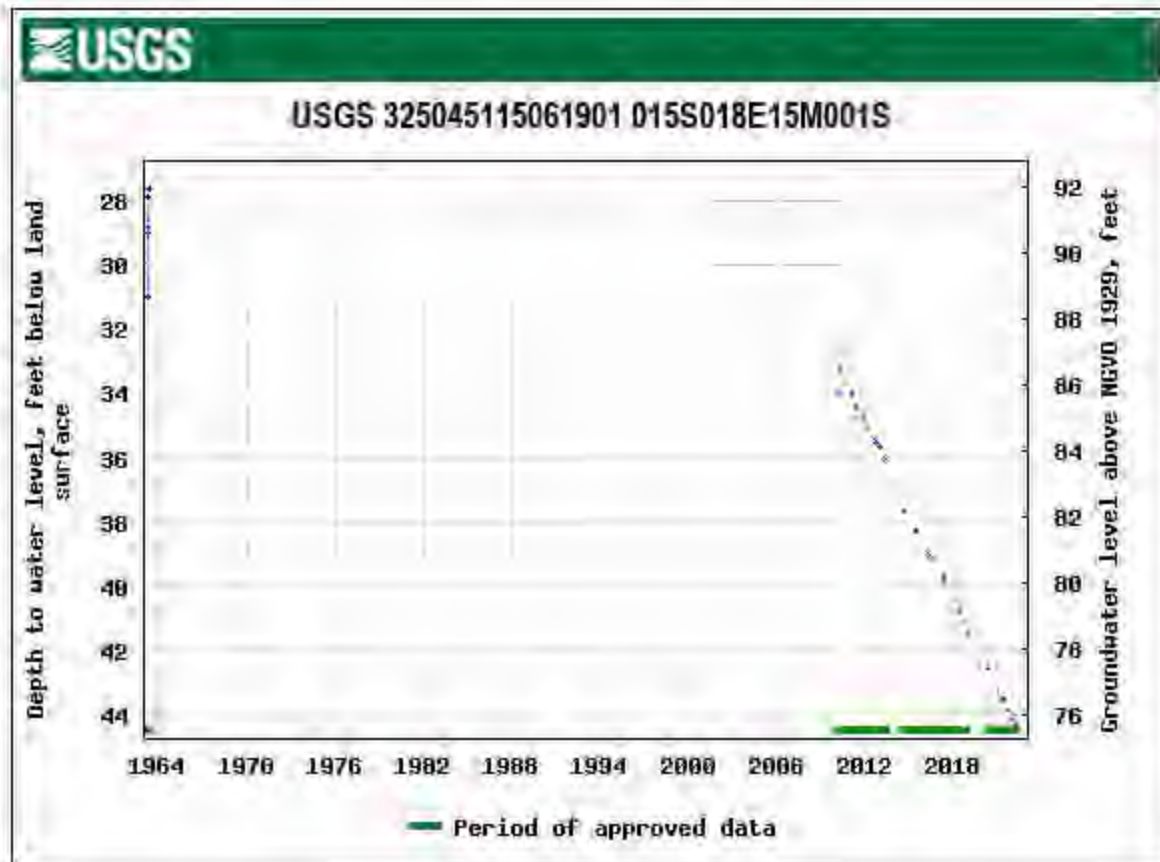
FIGURE 4. Imperial Valley Groundwater Basin



Source: DWR, 2023a

Figure 5 is a hydrograph from USGS (2023a) showing the groundwater level and groundwater elevation measured since 1963 in Well 325045115061901. Data were measured in 1963 and from 2010 to 2022. As indicated on Figure 5, in 1963 the depth to groundwater varied from approximately 27.6 ft bgs to 31 ft bgs. From 2010 to 2022, the depth to groundwater decreased at a relatively constant rate of about 0.5 foot per year from approximately 33.3 ft bgs to 44.3 ft bgs. Despite the persistent decline in the groundwater level, the total volume of groundwater remaining in storage has not been significantly affected given that the well is over 900 feet deep. Based on the depth to groundwater and the well depth for the monitoring well, the potential loss of aquifer volume since 1963 is less than two percent of the total available storage reported by DWR (2003).

FIGURE 5. USGS Groundwater Level Hydrograph



As noted above, much of the groundwater in the Basin is not usable for agricultural and municipal purposes due to high levels of total dissolved solids (TDS). DWR (2003) reports that the TDS level may range from approximately 500 milligrams per liter (mg/L, equivalent to parts per million, or ppm) to over 7,000 mg/L. Five public supply wells in the Basin reportedly have TDS concentrations ranging from 662 mg/L to 800 mg/L (DWR, 2003). The secondary maximum contaminant level (MCL) for TDS in drinking

water ranges from 500 mg/L to 1,000 mg/L. Groundwater with TDS concentrations above 1,000 mg/L is generally considered to be nonpotable.

Water quality samples have not been collected from Well 325045115061901 by the USGS (2023a). The nearest well from which water quality samples have been collected and analyzed by the USGS is Well 3245420114590601, located approximately 21 miles southeast of the Project (USGS, 2023b). The water quality samples were collected in March 2010. Table 1 shows the water quality results from the March 2010 samples. The groundwater sampled from the monitoring well has an alkaline pH and an elevated TDS concentration. The sodium and sulfate concentrations are also somewhat high, with the sulfate level being just below the secondary MCL of 250 mg/L. The water quality reported from Well 3245420114590601 is consistent with that reported throughout the Basin by DWR (2003) and renders the groundwater marginal for potable or agricultural uses without treatment. The existing water quality is suitable for use for construction and maintenance purposes, though.

Parameter	Units	Result
Temperature	Degrees Celsius (° C)	28.5
Specific Conductance	MicroSiemens per centimeter at 25° C	1130
pH	Standard units	8.2
Alkalinity	mg/L as calcium carbonate (CaCO ₃)	59
Hardness	mg/L as CaCO ₃	136
Non-carbonate hardness	mg/L as CaCO ₃	77
Calcium	mg/L	42.4
Magnesium	mg/L	7.4
Sodium	mg/L	176
Potassium	mg/L	4.35
Chloride	mg/L	137
Sulfate	mg/L	247
Fluoride	mg/L	0.38
Silica	mg/L as silica dioxide (SiO ₂)	30.2
Dissolved Solids	mg/L	704
Boron	Micrograms per liter (mg/L)	181
Iron	(mg/L)	41.1
Manganese	(mg/L)	5.84

Source: USGS, 2023b

4.3 Groundwater Sustainability

A series of three bills passed by the California legislature were signed by Governor Brown on September 16, 2014. These three bills, Assembly Bill (AB) 1739, SB 1168, and SB 1319, together comprise the Sustainable Groundwater Management Act of 2014 (SGMA). SGMA provides a structure under which local agencies are to develop a sustainable groundwater management program. SGMA focuses on basins or subbasins designated by DWR as high or medium priority basins, and those with critical conditions of overdraft.

According to DWR (2023b), the Basin is a very low priority basin. DWR has not identified the Basin as overdrafted nor has it projected that the basin will become overdrafted if present management conditions continue (DWR, 2021 and 2023b). Thus, the Basin is not subject to the current requirements of SGMA, including the formation of a groundwater sustainability agency (GSA) and preparation of a groundwater sustainability plan (GSP).

5.0 PROJECT WATER DEMAND

Water demand varies depending on the Project phase. During construction, water will be needed for dust control and soil conditioning during installation of the photovoltaic panels, battery storage units, and related infrastructure. During the operational phase of the project, water will be needed for routine maintenance activities, which primarily consists of washing the photovoltaic panels to maintain generation efficiency.

Site	Area (acres)	Output (megawatts)	Construction Water (acre-feet)	Operational Water (acre-feet per year)
North Star 2	614	130	310	13

Table 2 provides a summary of Project parameters that affect water demand and the estimated water needs for construction and operation. The construction water demand is primarily for dust control. Thus, the water needs are proportional to the size of the disturbed area and the local climate. Construction is anticipated to require 12 to 18 months to complete. Thus, the monthly water demand during that period may range from 7.2 acre-feet to 10.8 acre-feet, on average.

The operational water demand for panel washing and other maintenance needs is based primarily on the number of panels, which relates to the energy production or output, in megawatts. The operational water demand is anticipated to be 13 acre-feet per year. Maintenance activities are anticipated to be conducted up to twice a year over a one-to-two-week period each event, so the maintenance water demand is intermittent

and not spread throughout the year. The operational water demand will occur throughout the life of the Project.

6.0 DRY YEAR SUPPLY

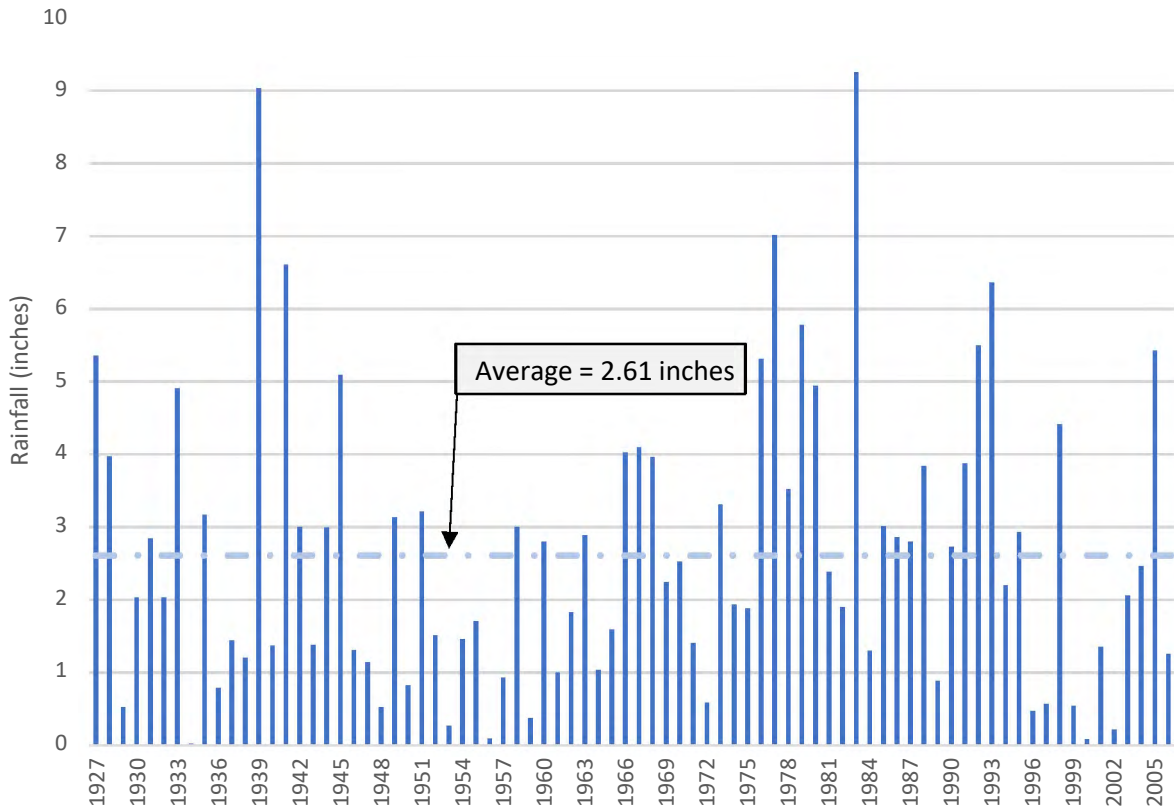
The volume and sustainability of dry-year water supply for the Project is addressed by comparing annual rainfall with changes in groundwater levels in the Basin. This comparison is made for a normal or average water year¹, for single dry year, and for multiple dry water years. Local rainfall data were obtained from the Western Region Climate Center (WRCC, 2023) for the Brawley 2 SW meteorological station in Brawley, California, located approximately 15 miles west of the Project site (see Figure 1).

Figure 6 shows the annual water year rainfall for Brawley, California from 1927 through 2007. The average water year rainfall during this period is 2.61 inches. The driest year was 2007, when no precipitation was recorded. The driest year with recorded rainfall was 1934, with only 0.2 inch of rainfall reported. The wettest year was 1983, when 9.25 inches of rain were measured. As indicated on Figure 6, a relatively wet period occurred from 1976 to 1986, with 14 of 18 water years exceeding the average annual rainfall. In comparison, the period from 1996 to 2012 was relatively dry, with 10 of 12 water years having below normal rainfall.

The historic rainfall data on Figure 6 generally shows cycles of wet and dry periods, each lasting from a few years to more than a decade. While the duration is limited, the groundwater level data shown on Figure 5 indicate a consistent declining trend, without any variation between seasons or from year to year. Thus, the available groundwater level and rainfall data do not indicate any relationship between wet, normal, single dry year, or multiple dry years and the available groundwater supply. As noted above in Section 4.2, recharge of groundwater occurs primarily due to deep percolation of applied irrigation water and lateral inflow from adjacent groundwater basins (DWR, 2003). Rainfall from individual storm events is typically insufficient to percolate to depths that would contribute to groundwater recharge.

¹ In California, a water year is defined as the period from October 1 of a calendar year through September 30 of the subsequent calendar year. A water year is designated by the year in which it ends. For example, the period from October 1, 2006 through September 30, 2007 is referred to as the 2007 water year. Due to the nature of weather patterns in the state, a water year better represents hydrologic conditions related to wet and dry periods than does a calendar year.

Figure 6. Water Year Rainfall at Brawley 2 SW



The total groundwater storage capacity of the Basin is estimated to be 14,000,000 acre-feet and the average annual increase in groundwater storage is estimated to be 17,000 acre-feet per year (DWR, 2003), as described in Section 4.2, above. While the groundwater elevation data shown on Figure 5 indicate that there may have been a loss of groundwater in storage of up to two percent, the single year construction water demand of 310 acre-feet and the annual operational water needs of 13 acre-feet are miniscule (0.002 percent and 0.000008 percent, respectively) compared to the available groundwater in storage. Overall, there is adequate water available to supply the Project water needs during single dry year and multiple dry year periods.

7.0 FINDINGS AND DISCUSSION

This WSA has been prepared in accordance with SB 610 and SB 1262 to support the CEQA environmental review for the proposed Project and provides an assessment of water supply adequacy for the Project in accordance with Water Code Sections 10910 through 10915. As stated in Section 1.0, the purpose of the assessment is to determine if available water supplies are sufficient to serve the demand generated by the Project, as well as the reasonably foreseeable demand in the region over the next 20 years under average normal year, single dry year, and multiple dry year conditions. As noted in Section 4.2, above, while groundwater levels in the Basin have been declining, the overall effect on the volume of groundwater storage is nominal, in the range of two percent. While the population is anticipated to increase over the next several decades, any related increase in water demand is anticipated to be met using surface water from IID because the groundwater quality is generally not adequate for municipal and agricultural uses. Therefore, the Basin has adequate groundwater resources for current and anticipated future existing water needs.

The water demand for the proposed Project will consist of water needed during construction and water needed for maintenance once the Project is operational. The construction water demand is anticipated to be 310 acre-feet over 12 to 18 months, primarily for dust control. The operational demand is anticipated to be 13 acre-feet per year for panel washing and other maintenance activities. The operational demand will exist for the life of the Project, which is anticipated to be 25 to 30 years.

The construction water demand is approximately 1.8 percent of the average annual increase in groundwater storage of 17,000 acre-feet per year and 0.002 percent of the volume of groundwater in storage in the Basin. Furthermore, the construction water needs are short-term and temporary. This temporary water use is not anticipated to cause persistent and long-term lowering of groundwater levels. Therefore, the construction water demand will not cause or contribute to overdraft, exhaustion of water supplies, lowering of groundwater levels to depths that would be uneconomic for pumping, land subsidence, or significant alteration of groundwater quality.

The annual operational water needs are equivalent to 0.08 percent of the average annual increase in groundwater storage of 17,000 acre-feet per year and 0.000008 percent of the volume of groundwater in storage in the Basin.. Therefore, the long-term operation and maintenance of the Project would not have any measurable effect or impact on groundwater resources in the Basin.

Based on the analysis presented in this WSA, there will be sufficient water available for existing water uses in the Basin and the Project water demand during normal, single dry

year, and multiple dry year periods for the anticipated life of the Project, which is anticipated to be greater than 20 years.

8.0 DOCUMENTS CONSIDERED AND REFERENCES CITED

Department of Water Resources (DWR), 2003, Bulletin 118 Update 2003 – Basin Report 7_030, <https://data.cnra.ca.gov/dataset/bulletin-118-update-2003-basin-reports/resource/31404881-94e3-4eab-a213-06771ea3aa9c> , accessed January 30, 2023.

Department of Water Resources (DWR), 2021, California’s Groundwater Update 2020, Bulletin 118, https://data.cnra.ca.gov/dataset/calgw_update2020/resource/d2b45d3c-52c0-45ba-b92a-fb3c90c1d4be, accessed January 31, 2023.

Department of Water Resources (DWR), 2023a, SGMA Data Viewer, <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer#boundaries>, accessed January 30, 2023.

Department of Water Resources (DWR), 2023b, SGMA Basin Prioritization Dashboard, <https://gis.water.ca.gov/app/bp-dashboard/final/>, accessed January 30, 2023.

Imperial Irrigation District (IID), 2023, Water, <https://www.iid.com/water>, accessed January 31, 2023.

U.S. Geological Survey (USGS), 2023a, National Water Information System (NWIS) website, water level data for Well 325045115061901, 1963-2022 https://nwis.waterdata.usgs.gov/nwis/gwlevels?site_no=325045115061901&agency_cd=USGS&format=gif, accessed January 31, 2023.

U.S. Geological Survey (USGS), 2023b, National Water Information System (NWIS) website, water quality data for Well 324420114596001, March 2010, https://nwis.waterdata.usgs.gov/usa/nwis/qwdata/?site_no=324420114596001, accessed January 31, 2023.

Western Region Climate Center (WRCC), 2023, Brawley 2 SW, California Climate Summary, <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1048>, accessed January 31, 2023.