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2018 SECOND SEMIANNUAL and ANNUAL
GROUNDWATER DETECTION MONITORING REPORT
Genesis Solar Energy Project

Riverside County, California

COC S&W-6

December 26, 2018

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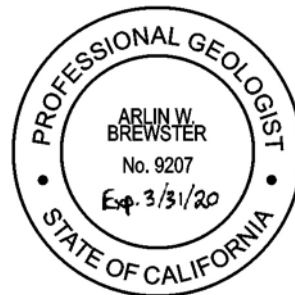
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2018 SECOND SEMIANNUAL and ANNUAL GROUNDWATER DETECTION MONITORING REPORT

RIVERSIDE COUNTY, CALIFORNIA

PROFESSIONAL STATEMENT

I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations.



Arlin W. Brewster

Professional Geologist 9207

December 26, 2018

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1.0 INTRODUCTION

Northstar Environmental Remediation (Northstar) has prepared this 2018 Second Semiannual and Annual Groundwater Detection Monitoring Report on behalf of Genesis Solar, LLC (Genesis). This report details groundwater detection monitoring performed in the second half of 2018 at the Genesis Solar Energy Project (GSEP).

The GSEP lies roughly 25 miles west of the city of Blythe, California in eastern Riverside County on lands managed by the Bureau of Land Management (BLM) (**Figure 1**). The GSEP consists of two independent concentrated solar electric generating facilities with a nominal net electrical output of 125 megawatts (MW) each (a total net electrical output of 250 MW).

Northstar conducts groundwater detection monitoring in accordance with Condition of Certification Soil & Water 6 (COC S&W-6) as presented in the California Energy Commission (CEC) Final Decision document dated October 12, 2010 (CEC, 2010). The COC S&W-6 requires compliance with Waste Discharge Requirements (WDR) and Monitoring and Reporting Program (MRP) Board Order No. R7-2013-0005, issued by the California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB).

1.1 Background

Genesis submitted an updated Plan of Development (POD) for the GSEP in September 2010 (Genesis Solar, LLC 2010). In addition, Genesis filed an Application for Certification (AFC) for the GSEP to the CEC in August 2009 (Genesis Solar, LLC 2009). The CEC issued its Final Decision on the GSEP on October 12, 2010 (CEC, 2010). The BLM issued the Final Environmental Impact Statement (FEIS) for the GSEP for public comment on August 27, 2010.

The GSEP uses dry cooling technology and relies on groundwater as a water source during operation. Three groundwater production wells installed at the GSEP between July and October 2011 are permitted to pump groundwater at an average rate of 202 acre-feet per year (afy) (up to 1,348 afy during construction).

The Final Decision and FEIS discuss the potential impacts associated with the proposed groundwater use by the GSEP. Groundwater drawdown impacts are anticipated to be less than significant, but because the prediction of groundwater level effects by computer modeling entails inherent uncertainty, both the Final Decision and the FEIS adopted COC S&W-2 for the GSEP to monitor groundwater level at the vicinity of the GSEP.

Two evaporation ponds (licensed as Class II Surface Impoundments) located between Solar Fields 1 and 2 accept wastewater generated during GSEP operation (**Figure 3**). Three detection monitoring wells (DM-1, DM-2, and DM-3) were installed, per the Final Decision, along the west, east, and south perimeter of the

evaporation ponds in February 2012 (**Figure 4**). Groundwater samples were collected for four quarterly events prior to GSEP operation to establish baseline conditions. Semiannual sampling will be conducted to comply with the requirements of COC S&W-6 and the WDR and MRP documents.

1.2 Geographic Setting

The GSEP lies between the communities of Blythe and Desert Center, California. Land use is predominantly open space and conservation and wilderness areas occupied by a community of low creosote and bursage vegetation. Chuckwalla and Ironwood State Prisons are located approximately 6 miles southeast of the GSEP.

The GSEP lies on broad, relatively flat topography sloping north to south at elevations between 400 and 370 feet above mean sea level (amsl). The surface is underlain by alluvial deposits derived from the Palen Mountains to the north-northwest, and the McCoy Mountains to the northeast (**Figure 1**).

The deposits immediately adjacent to the mountains have formed alluvial fans from multiple identifiable sources, and multiple fan surfaces have coalesced into a single bajada surface that wraps around each of these mountain fronts. Between the bajada surfaces from each mountain chain lies a broad valley-axial drainage that extends southward between the mountains and drains to the Ford Dry Lake playa, located about 1 mile south of the GSEP facility.

Climatic data collected from Weather Station Blythe Riverside Airport (33.61°N, -114.71°W, at an elevation of about 387 feet amsl) indicate the average maximum temperature in the airport vicinity is approximately 87.8°F (31.0°C). Average rainfall is reported to be approximately 3.83 inches (97.3 mm). Northstar obtained this data from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information 1981-2010 Normals.

1.3 Hydrogeologic Setting

The GSEP lies within the Chuckwalla Valley Groundwater Basin (Chuckwalla Basin) which has a surface area of 940 mi² (2,435 km²) underlying Chuckwalla Valley. It is bounded upgradient by three groundwater basins including the eastern part of the Orocopia Valley and Pinto Valley Groundwater Basins and the southern part of the Cadiz Valley Groundwater Basin, and downgradient by the Palo Verde Mesa Groundwater Basin (Palo Verde Basin) (**Figure 2**). Groundwater occurs at depths of about 80 to 140 feet below ground surface (bgs) and groundwater flow is generally southeast to eastward, from the Chuckwalla Basin to the Palo Verde Basin (**Figure 2**).

Sources of groundwater recharge to the Chuckwalla Basin includes precipitation, inflow from the Orocopia Valley and Pinto Valley Groundwater Basins, and return flows from agricultural sources and treated wastewater effluent. Groundwater is the only available water resource in Chuckwalla Valley, with extraction to meet local demand the primary source of groundwater outflow. Other minor sources of

outflow include underflow to the Palo Verde Basin and evapotranspiration in portions of Palen Dry Lake (where shallow groundwater is present).

Calculations of the Chuckwalla Basin groundwater budget prior to GSEP operations indicate a stable surplus of 2,600 afy (CEC, 2010). Current operational demand, based on calendar year 2017 extraction data, is approximately 116 afy.

The region of the Chuckwalla Basin occupied by the GSEP and associated groundwater monitoring wells is underlain by four geological units. The shallowest unit is the unconsolidated Holocene-aged Alluvium, consisting of geologically recent lake, river, and wind deposits (DWR, 1963). Beneath the Alluvium is the unconsolidated Pleistocene-aged Pinto Formation, consisting of coarse alluvial fan deposits (known as fanglomerate), interspersed with clays and basalt (DWR, 1963). Beneath the Pinto Formation is the unconsolidated to partially consolidated Pliocene-aged Bouse Formation, consisting of coarse alluvium and fanglomerate deposits (Wilson and Owen-Joyce, 1994). Below the Bouse Formation is bedrock consisting of metamorphic rocks and intrusive igneous basalts (DWR, 1963).

Groundwater in the GSEP monitoring region occurs in two aquifers: the shallower Alluvium aquifer (extending to a maximum approximate depth of 250 feet below ground surface); and, the deeper Bouse Formation aquifer (extending between approximately 250 to 6,500 feet below ground surface) (Wilson and Owen-Joyce, 1994). The Pinto Formation exists only on the eastern fringe of the Chuckwalla Basin and is generally not encountered by the GSEP monitoring wells. Monitoring data indicate a downward vertical hydraulic gradient of groundwater flow from the Alluvium to the Bouse Formation aquifer.

Based on recent monitoring data, the depth to groundwater in the Bouse Formation ranges from approximately 86.75 feet bgs (300.65 feet amsl) in TW-1, located upgradient of the site, to 127.38 feet bgs (266.09 feet amsl) in TW-2, located downgradient of the site. Perched water exists at the Chuckwalla State Prison but is unlikely to occur within the GSEP boundaries.

1.4 Monitoring Program Objectives

Northstar performs groundwater detection monitoring in accordance with COC S&W-6 as described in the CEC's Final Decision. The primary objectives for the evaporation pond detection as outlined in the MRP are to:

- Establish baseline conditions by conducting four quarters of monitoring prior to discharge of wastewater to the ponds;
- Collect water level elevation data to characterize groundwater flow conditions in the uppermost water-bearing zone beneath the evaporation pond area;
- Collect and evaluate water quality data using approved statistical and other methods to identify potential changes in the existing water quality of the aquifer immediately underlying the evaporation ponds; and,

- Demonstrate compliance with the discharge requirements contained in COC S&W-6 and the WDR for the GSEP.

2.0 EVAPORATION PONDS

2.1 Evaporation Pond Overview

The North and South Evaporation Ponds (sometimes referred to as the West and East ponds, respectively) were designed by Fluor Corp. and are identified on **Figure 3**. Each pond is constructed with multiple layers of containment that drain to a centralized collection trench. The trench slopes away from the centerline of the ponds to the north and south and is equipped with a set of three leakage detection probes in each side. Each pond is also equipped with a pump to return all leaked water back to the pond surface.

2.2 Monitoring Methods

On a semiannual basis, a sample is collected from each of the evaporation ponds and identified as the North Pond and South Pond. Representative water is collected in a clean, dedicated 5-gallon bucket and processed into sample containers inside the containment area. Laboratory samples are submitted to SunStar Laboratories, Inc. (SunStar) of Lake Forest, California. SunStar subcontracts the heat transfer fluid analysis to TestAmerica Laboratories, Inc. (TestAmerica) of Irvine, California. They also subcontract the oxygen-18 and deuterium analysis to Isotech Laboratories, Inc. of Champaign, Illinois. All laboratories are state and federally certified and analyze the samples by the following methods, as detailed in the Final Decision, WDR, and MRP documents:

- Chloride, Sulfate, and Nitrate by EPA Method 300.0;
- Mercury by Standard Method 7470A;
- Total Dissolved Solids by Standard Method 2540C;
- pH by Standard Method 4500H;
- Specific Conductance by Standard Method 2510B;
- Heat Transfer Fluid (HTF) by EPA Method 8015B;
- Heavy Metals by EPA Method 200.7 and 200.8;
- Oil & Grease by EPA Method 1664A; and,
- Oxygen-18 and Deuterium by Isotope Geochemistry.

2.3 Evaporation Pond Sample Results

Analytical data for the evaporation ponds is included in **Table 4** and certified laboratory reports are included in **Appendix B**. In summary:

- The laboratory did not detect iron, antimony, cadmium, chromium, cobalt, lead, selenium, mercury, or heat transfer fluid in either pond; and,
- Compound concentrations were generally higher in the North Pond.

3.0 LEAKAGE DETECTION SYSTEM

3.1 Leakage Detection System Overview

A cross-sectional schematic of the leakage detection system is included in **Figure 5**. As shown in the figure, each pond is equipped with a total of six probes (Watermark Model 200SS electrical resistance probes) installed at a distance of 15, 70, and 110 feet from the pond centerline.

The leaked water return pumps are installed on the north side of the North Pond and the south side of the South Pond. Readings from the totalizers on each pump are recorded on a quarterly basis.

3.2 Monitoring Methods

Terminals attached to the probe wire leads are stored in a weatherproof vault at the north and south end of each pond, where resistivity readings can be collected using a Watermark 30-KTCD-NL meter. Values can range from 0-10 centibars (saturated) to 199 centibars (dry). Readings are collected from the probes and the nearby water return pumps on a quarterly basis and summarized in **Table 5**. If the pump totalizers show any signs of increase, or if the probes display values within the saturated range (usually started with probe #1 in the lowest end of the trench), Northstar notifies NextEra operations who then conduct further investigation.

3.3 Monitoring Results

The water return pump totalizers have not increased during the reporting period, and currently read 1,688.26 gallons for the North Pond and 24.21 gallons for the South Pond.

None of the leak detection probes showed signs of water saturation, though several showed signs of humidity in the collection trench, including: North Pond #1W, 2W, and 3E and South Pond #1E and #2E, intermittently. These probes have shown signs of sensor drift and sensitivity in previous events.

4.0 DETECTION MONITORING WELLS

4.1 Detection Monitoring Well Overview

A total of three detection monitoring wells were installed around the perimeter of the evaporation ponds (**Figure 4**). Detection monitoring wells DM-1, DM-2, and DM-3 were installed to a total depth of 120 feet bgs into the shallow Alluvium aquifer with screened intervals between 100 to 120 feet bgs. **Table 1** provides construction details for the wells. Well DM-1 is located upgradient, west of the ponds. Well DM-2 and DM-3 are located downgradient, east and south of the ponds, respectively.

4.2 Monitoring Methods

Northstar measured the depth to groundwater in each well using a Solinst interface probe. Field staff documented depth to water to the nearest hundredth (0.01) foot below a surveyed measuring mark located on the north side of the top of casing (toc) on a groundwater level measurement form (**Appendix A**). **Table 2** includes the groundwater level measurements and calculated water level elevations. **Figure 4** illustrates the groundwater elevation contours and flow direction.

Each detection monitoring well has a dedicated 1.66-inch diameter Geotech® stainless steel submersible bladder pump and dedicated Teflon-lined tubing with water intakes set at the middle of wetted screen at approximately 115 feet btoc. Field staff collected samples using the low-flow purging method in accordance with the guidelines established in the EPA document *Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures* (Puls and Barcelona, 1996).

Field staff decontaminated reusable/non-dedicated equipment (water level probe and flow-through cell) prior to use at each well. Decontamination of reusable equipment consisted of washing with a laboratory-grade non-phosphate detergent (Liquinox or equivalent) and potable water solution followed by a double rinse with demineralized water.

Field staff measured groundwater parameters with a Horiba U-52 field instrument (Horiba). Staff calibrated the Horiba at the beginning of each day and decontaminated the instrument prior to use and between wells. Measurements of field parameters (pH, electrical conductivity (EC), temperature, turbidity, and oxidation-reduction potential (ORP)) were taken periodically and at the time of sampling as part of the low flow purge method of sampling.

Wells were purged until water quality parameters stabilized over three successive readings (+/- 0.2 for pH, +/- 10% for EC, ORP and turbidity). Northstar staff recorded the sampling methods, volume of water purged, pumping rate, field parameter measurements, and observations of water turbidity and odor on the groundwater sampling field form (**Appendix A**).

After purging and parameter stabilization, the flow-through cell was disconnected so samples could be collected from the pump discharge. Field staff wore new nitrile gloves to collect groundwater samples in clean bottles (preserved as appropriate) provided by the laboratory. Where required, samples were field filtered with a new 0.45-micron filter attached to the end of the discharge tubing. Staff labeled sample containers with the well identification, date, time, sampler, analytical method, and placed them in a chilled ice chest. Northstar delivered the samples under proper chain-of-custody protocol to the laboratory.

Groundwater purged from DM-1, DM-2, and DM-3 was temporarily contained in a sealed 5-gallon bucket and then disposed in the evaporation ponds as directed in the MRP. **Table 3** includes the measured field parameters documented at the end of purging activities.

Laboratory samples are submitted to SunStar Laboratories, Inc. (SunStar) of Lake Forest, California. SunStar subcontracts the heat transfer fluid analysis to TestAmerica Laboratories, Inc. (TestAmerica) of Irvine, California. They also subcontract the oxygen-18 and deuterium analysis to Isotech Laboratories, Inc. of Champaign, Illinois. All laboratories are state and federally certified and analyze the samples by the following methods, as detailed in the Final Decision, WDR, and MRP documents:

- Chloride, Sulfate, and Nitrate by EPA Method 300.0;
- Mercury by Standard Method 7470A;
- Total Dissolved Solids by Standard Method 2540C;
- pH by Standard Method 4500H;
- Specific Conductance by Standard Method 2510B;
- Heat Transfer Fluid (HTF) by EPA Method 8015B;
- Heavy Metals by EPA Method 200.7 and 200.8;
- Oil & Grease by EPA Method 1664A; and,
- Oxygen-18 and Deuterium by Isotope Geochemistry.

The laboratory conducted standard Quality Assurance/Quality Control (QA/QC) to assure analytical accuracy and precision. This included preparation and analysis of method blanks, surrogate spikes, matrix spike/matrix spike duplicate (MS/MSD) pairs and laboratory control samples (LCS), as required, with each analytical batch.

Northstar collects a duplicate sample once per sampling event that is submitted to the laboratory without identifiers that associate the sample with a well, date, or time. During this event, a duplicate sample from well PW-2 was collected for analysis. **Table 4** of the *Groundwater Quality Monitoring Report* (Northstar, 2018) provides a summary of analytical results for the duplicate sample.

In addition to these methods, a set of quality control blank samples is collected and put on hold at the laboratory pending analysis of the groundwater samples. These samples include a field blank and trip blank. The field blank bottle set is filled with demineralized water and set adjacent to the work area with the lids off during the work day and is intended to screen out constituents in ambient air. The trip blank

bottle set is prepared at the laboratory and is sealed throughout the groundwater sampling event. It is stored inside the sample coolers and is intended to screen out constituents in the coolers. The quality control blank samples are only analyzed if there is anomalous data present for the groundwater sampling results.

4.3 Results of Water Level Measurements

Table 2 provides the wellhead reference elevation (toc elevation), depth-to-groundwater, and water level elevations for each detection monitoring well. Depth to groundwater ranged from 104.68 (well DM-3) to 107.80 (well DM-2) feet bgs, and the calculated groundwater elevations range from 283.52 (well DM-2) to 284.04 (well DM-1) feet amsl.

Northstar used groundwater elevation data to generate a potentiometric surface contour map of the uppermost water-bearing zone beneath the evaporation pond (**Figure 4**). The groundwater flow direction and gradient beneath the site were determined based on linear interpolation between contours of equal elevation. Groundwater flow beneath the evaporation ponds was determined to be predominantly in an east direction at a gradient of approximately 0.0007 feet/foot. The groundwater flow direction and gradient are consistent with historical monitoring events. Groundwater flow direction has historically ranged between east-northeast and southeast and the gradient has ranged between 0.0004 and 0.0007 feet/foot.

4.4 Groundwater Flow Velocity

The average horizontal groundwater flow velocity beneath the evaporation ponds was estimated using the following equation:

$$V = (KhI)/ne$$

Where:

V = average linear groundwater velocity

Kh = aquifer horizontal hydraulic conductivity

I = average hydraulic gradient (vertical change in groundwater elevation/corresponding horizontal distance), and

ne = effective aquifer porosity.

Each monitoring well is screened from 100-120 feet bgs in fine-grained sand, as detailed in the Detection Monitoring Well Installation Report (WorleyParsons, 2012). The reported hydraulic conductivity for fine-grained sand is approximately 0.03 to 60 feet/day, as stated in scientific references (Domenico and Schwartz, 1990). Based on the characteristics of the shallow Alluvium aquifer in which the detection monitoring wells are screened, this calculation assumes an average hydraulic conductivity value of 15 to 30 feet/day, an effective porosity of 25 percent, and an average gradient of 0.0007 feet/foot, as estimated from **Figure 4**.

Based on these calculations, the average groundwater velocity estimated in the uppermost water-bearing zone beneath the evaporation ponds is approximately 0.042 to 0.084 feet laterally per day, or 15.33 to 30.66 lateral feet per year. Historically, estimates of groundwater flow velocity have ranged from 8.76 to 30.66 lateral feet per year.

4.5 General Chemical Analysis

Table 4 provides a summary of the detection monitoring well groundwater sample analytical results. **Appendix C** contains copies of the laboratory analytical reports for the groundwater samples. Groundwater samples from detection monitoring wells DM-1, DM-2, and DM-3 were analyzed for the parameters listed in Section 4.2. The concentration of detected analytes is generally similar between the detection monitoring wells. Similarity in the concentrations of analytes is expected as the three wells are located within 1,000 feet of each other and are screened at the same depth interval (100-120 feet bgs).

The following is a summary of the groundwater monitoring results for the detection monitoring wells since the beginning of the monitoring program:

- **Chloride** detections have been consistent for all wells and have ranged from 4,400 to 8,180 milligrams per liter (mg/L), averaging 5,187 mg/L.
- **Sulfate** detections have been consistent for all wells and have ranged from 1,600 to 3,280 mg/L, averaging 2,088 mg/L.
- **Nitrate** detections have been consistent for all wells and have ranged from non-detect to 17.5 mg/L, averaging 8.1 mg/L.
- **Total dissolved solid** levels have been consistent for all wells and have ranged from 7,100 to 13,000 mg/L, averaging 10,943 mg/L.
- **pH** levels have been consistent for all wells and have ranged from 7.66 to 7.95 standard units, averaging 7.83 standard units.
- **Specific conductivity** levels have been consistent for all wells and have ranged from 13,000 to 22,000 microsiemens per centimeter ($\mu\text{s}/\text{cm}$), averaging 17,576 $\mu\text{s}/\text{cm}$.
- **Antimony** has not been detected above the reporting limit for all wells.
- **Arsenic** detections have been consistent for all wells and have ranged from 4.7 to 20 $\mu\text{g}/\text{L}$, averaging 10.1 $\mu\text{g}/\text{L}$.
- **Barium** detections have been inconsistent between all wells, averaging 37 $\mu\text{g}/\text{L}$ in upgradient well DM-1, 78 $\mu\text{g}/\text{L}$ in downgradient well DM-2, and 19 $\mu\text{g}/\text{L}$ in downgradient well DM-3.
- **Cadmium** has not been detected above the reporting limit for all wells.
- **Calcium** detections have been consistent for all wells and have ranged from 210 to 470 mg/L, averaging 258 mg/L.
- **Chromium (Total)** detections have been inconsistent because the concentrations are frequently between the MDL and RL. Reportable concentrations have ranged from 3.1 to 3.7 $\mu\text{g}/\text{L}$, averaging 3.4 $\mu\text{g}/\text{L}$.
- **Cobalt** has not been detected above the reporting limit for all wells.

- **Copper** detections have been inconsistent because the concentrations are frequently between the MDL and RL. Reportable concentrations have ranged from 0.025 to 0.027 mg/L, averaging 0.026 mg/L.
- **Lead** has not been detected above the reporting limit for all wells.
- **Mercury** has only been detected once above the reporting limit in upgradient well DM-1 at a concentration of 0.26 µg/L. Mercury has not been detected at or above the reporting limit in wells DM-2 and DM-3.
- **Nickel** has only been detected once above the reporting limit in downgradient well DM-3 at a concentration of 10 µg/L. Nickel has not been detected at or above the reporting limit in wells DM-1 or DM-2.
- **Selenium** detections have been inconsistent because the concentrations are frequently between the MDL and RL. Reportable concentrations have ranged from 3.3 to 6.3 µg/L, averaging 5.0 µg/L.
- **Zinc** detections have been inconsistent because the concentrations are frequently between the MDL and RL. Reportable concentrations have ranged from 4.5 to 28 µg/L, averaging 10.8 µg/L.

4.6 Non-Statistical Analysis

In accordance with the MRP Part II.A.5 and Part III.A.2, a non-statistical analysis has been applied to the groundwater analytical results for this sampling event.

The non-statistical analysis requires all detections of the constituents of concern (ie, those defined in Part II.A.4 of the same document) reported above the method detection limit (MDL) in the downgradient wells (DM-2 and DM-3) that do not appear in the upgradient well (DM-1) be identified, and where there are either a) two or more constituents identified in this list from a single downgradient monitoring point, or b) one of the identified constituents in this list exceeds the Practical Quantification Limit (PQL), a release is tentatively indicated.

For the purposes of this report, the PQL is equal to the reporting limit (RL) as identified for each constituent in the laboratory report, which is generally 5 times the MDL. The results of the non-statistical method for this sampling event is as follows:

- Well DM-2: Zinc occurs above the reporting limit at a concentration of 28 µg/L and was not detected in either DM-1 or DM-3. The history of zinc in the detection monitoring well network is not well known because the reporting limits were historically above 100 µg/L, and all zinc detections to date have been 28 µg/L or lower. It is believed that this detection is a result of a change to lower reporting limits, and therefore is not indicative of a release.
- Well DM-3: There are no constituents of concern that meet the release detection criteria.

4.7 Quality Assurance/Quality Control

As documented in the attached laboratory reports (see **Appendix C**), groundwater samples collected from the evaporation pond detection monitoring wells during this sampling event were received by the laboratory in good condition, within the temperature limits required, and analyzed within the required holding times using the specified methods (with the exception of temperature and pH, which have a 15-minute hold time).

None of the analytes were detected in the laboratory blank samples. MS/MSD and LCS recoveries for each method and analytical batch were within the laboratory's established control limits.

5.0 LAND TREATMENT UNIT SUMMARY

The Land Treatment Unit (LTU) is an onsite bioremediation landfarm utilized for the treatment of soil contaminated with the heat transfer fluid (HTF) Therminol. Soil from all HTF spills is excavated within 48 hours and placed in one of four treatment bays, numbered LTU #1 to 4. The soil is then tested to determine whether it can be effectively treated onsite (under 10,000 mg/kg of HTF) or if it is hazardous and must be treated offsite (above 10,000 mg/kg of HTF). Soil in the LTUs is overturned on a weekly basis by onsite staff to aid in the bioremediation of the soil. A representative composite soil sample is collected from each bay on a quarterly basis and analyzed by EPA Method 8260B for benzene to monitor the progress of remediation. Once the concentration is less than 100 mg/kg of HTF, the soil may be removed from the LTU and staged onsite for later use. Treatment is enhanced by the addition of moisture and fertilizers.

Contaminated soil in all LTUs was overturned on a weekly basis during the 2018 calendar year. Soil was tested from LTU #1 (June), LTU #2 (March, September and December), and LTU #3 (March) and found to be below the 100 mg/kg threshold on all occasions.

6.0 ANNUAL SUMMARY

In accordance with WDR R7-2013-0005, this section presents a summary of the monitoring activities conducted during the 2018 monitoring period. Monitoring activities during this period included the following:

- Semiannual groundwater sampling and analysis of the detection monitoring network; and,
- Semiannual groundwater level measurements of the detection monitoring network.

The groundwater level and analytical data are included in **Tables 2** and **4**, respectively.

The data collected during the semiannual detection well monitoring events during the 2018 calendar year represents the fifth year of post-construction normal facility operation. The laboratory analytical data from the 2018 calendar year is consistent with the historical background data collected prior to settlement pond construction and operation.

The non-statistical analysis identified one potential release in detection monitoring well DM-2 only in December 2018. A zinc concentration of 28 µg/L was detected in this well but not in the upgradient well DM-1 or downgradient well DM-3. Given that zinc concentrations are relatively unknown (due to a historical reporting limit above 100 µg/L), it is believed that this detection does not represent a release so much as a normal detection with lower reporting limit protocols. No other evidence of release was detected.

During the 2018 calendar year, the groundwater gradient was a consistent 0.0007 feet per linear foot to the east; groundwater elevations ranged from 283.52 feet amsl in well DM-2 to 284.39 feet amsl in well DM-1; and groundwater flow velocity ranged between 0.042 to 0.084 feet laterally per day, or 15.33 to 30.66 lateral feet per year.

Each of the settlement ponds is equipped with a leakage detection system consisting of six moisture probes installed in a drain pipe below the pond liners. Northstar monitors the probes quarterly at a minimum. If leaks are detected, the pond is drained and the lining inspected and repaired as necessary. The pond lining was most recently repaired in 2016, and the moisture probes under the north pond were replaced in December of that year after becoming saturated. During the 2018 calendar year, the moisture probes have indicated some residual humidity in the pipe, but no significant leaks. Should a leak occur, each pond is equipped with two recirculation pumps to drain the lining and redeposit the water in the pond until an inspection can be performed.

7.0 CONCLUSIONS

Based on the available data obtained during this sample event:

- Sample results do not indicate a release at the GSEP to date.
- Available groundwater quality data is generally stable with minor trend fluctuations.
- The non-statistical analysis of the constituents of concern has not identified any potential releases.
- Groundwater flow direction, gradient, and velocity is consistent with historical events.

All data currently indicates compliance with the discharge requirements contained in COC S&W-6 and the WDR for the GSEP.

8.0 REFERENCES

- Bureau of Land Management, 2010. *Final Environmental Impact Statement, Genesis Solar Energy Project*. August 27, 2010.
- California Department of Water Resources (DWR), 1963. *Data on Water Wells and Springs in the Chuckwalla Valley Area, Riverside County, California*. Bulletin No. 91-7.
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FIGURES



-  GSEP Footprint
-  Prisons
-  Wilderness Area

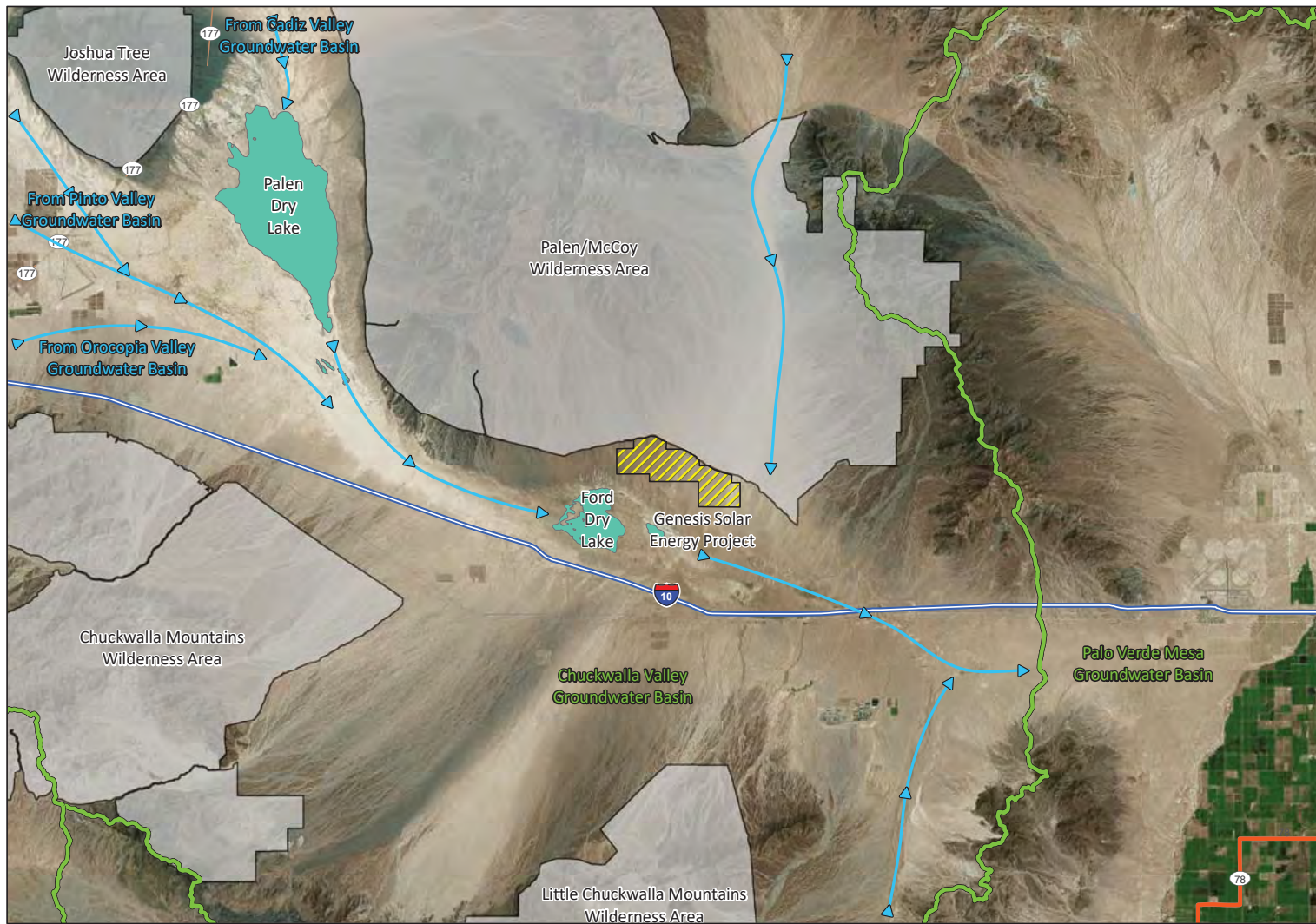


Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest, California 92630
 (949) 580-2800

Project Number:
 196-004-06






Genesis Solar Energy Project
 11995 Wiley's Well Road
 Blythe, California 92225

Figure 1
 Site Vicinity Map



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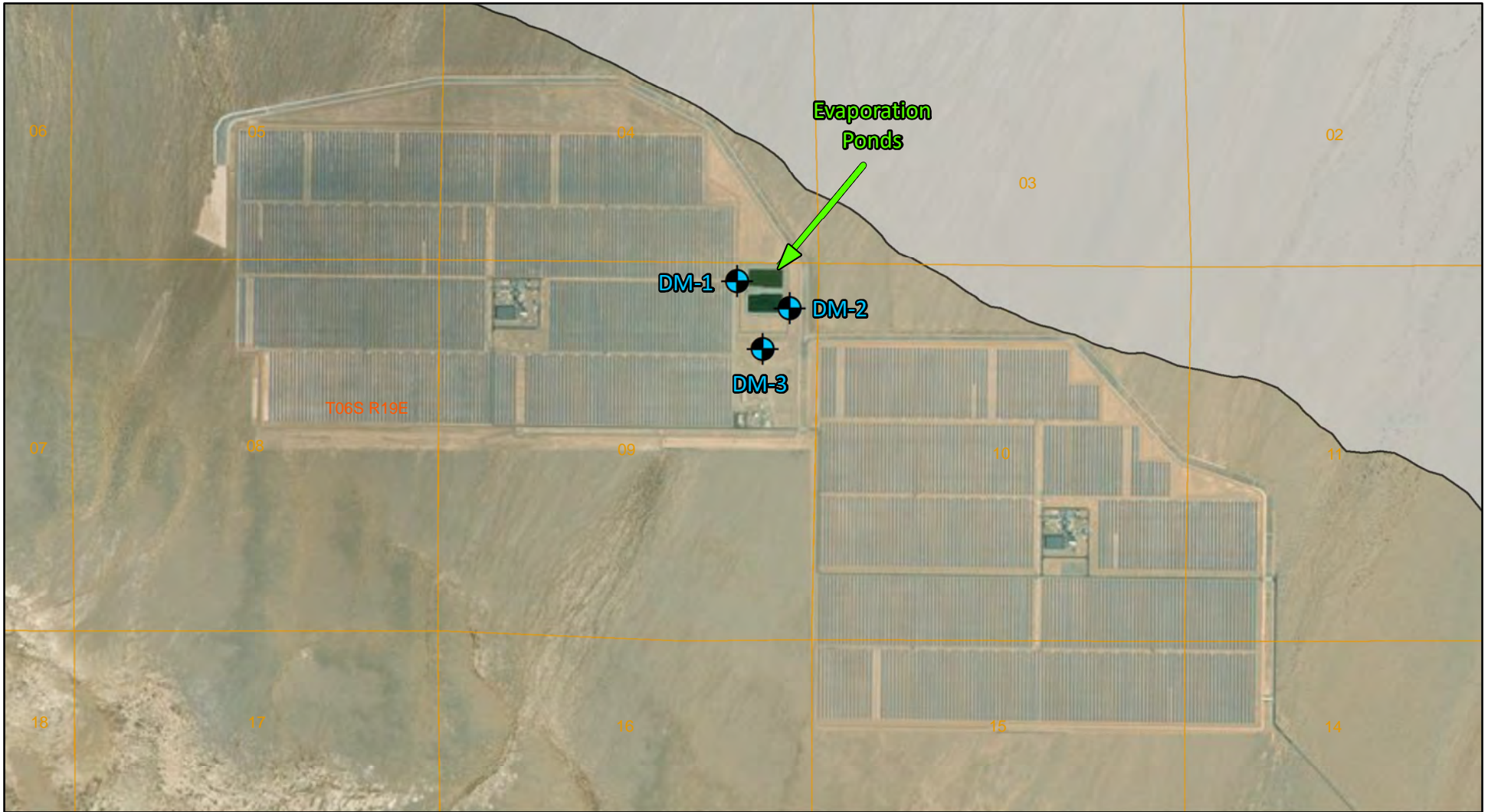
Project Number:
 196-004-06

-  GSEP Footprint
-  Watershed Boundary
-  Lake
-  Wilderness Area
-  Water Flow Direction

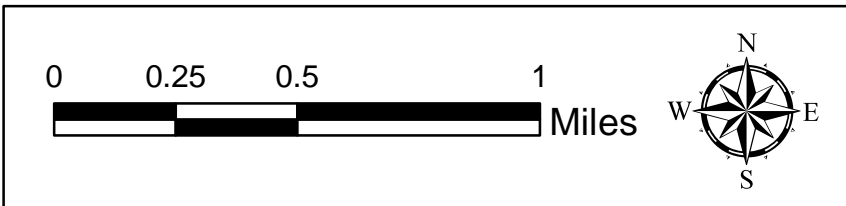


Genesis Solar Energy Project
 11995 Wiley's Well Road
 Blythe, California 92225

Figure 2
 Hydrogeologic Setting



 Detection Monitoring Well

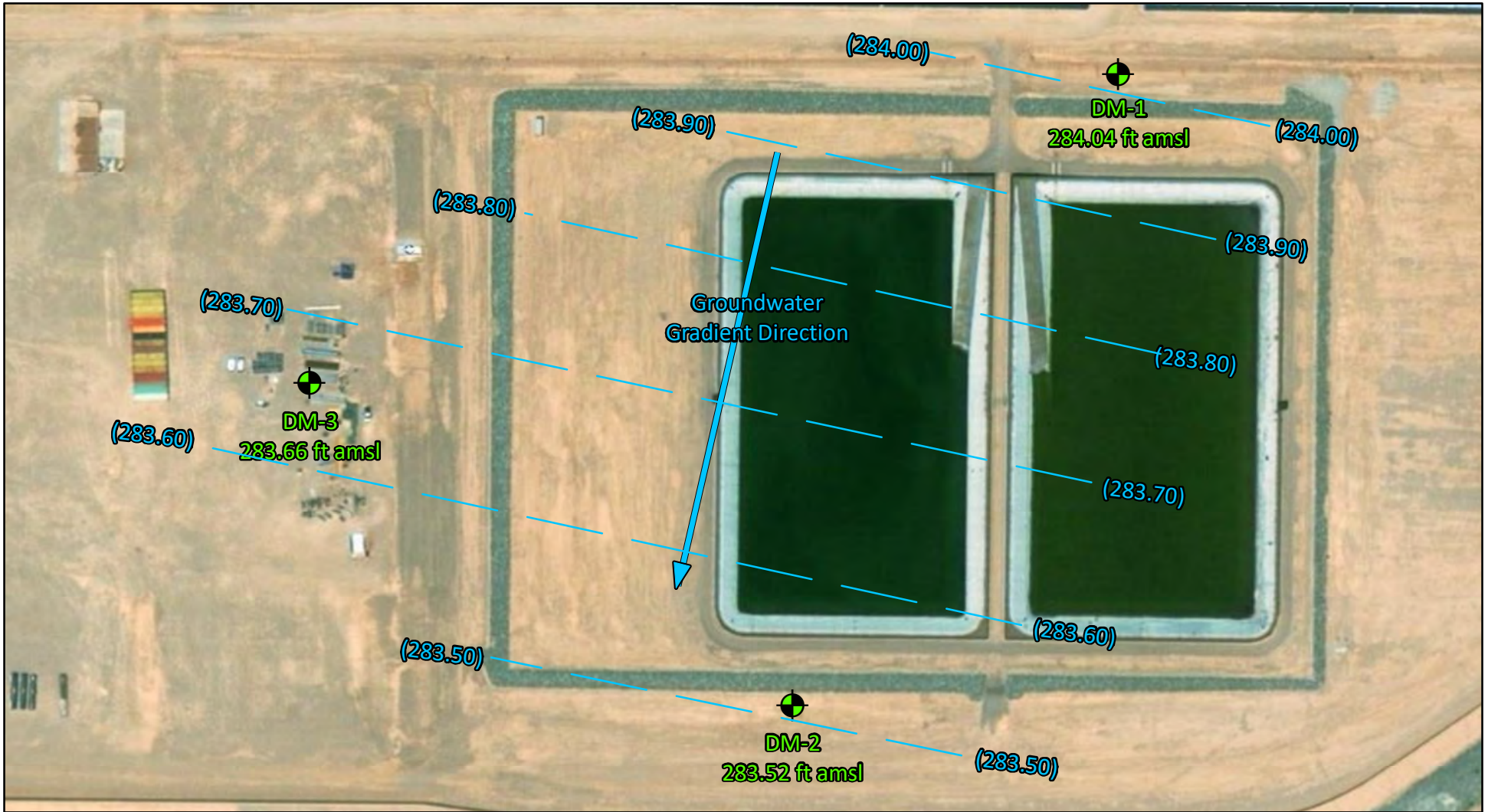


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Project Number: 196-004-06

Genesis Solar Energy Project
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Figure 3
 Evaporation Pond and Detection
 Monitoring Well Locations



Detection Monitoring Well

— Groundwater Elevation Contour Line

(284.00) Groundwater Elevation in Feet Above Mean Sea Level

Approximate Scale:
1 inch = 180 feet

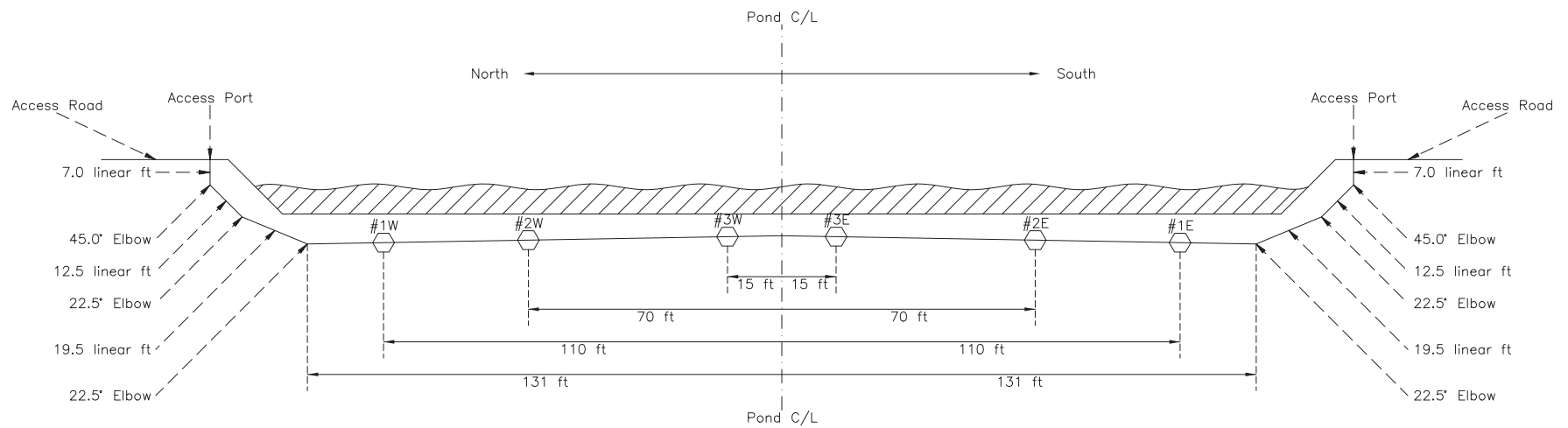


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(949) 580-2800

Project Number: 196-004-06

Genesis Solar Energy Project
11995 Wiley's Well Road
Blythe, California 92225

Figure 4
Groundwater Elevation
Contour Map



NOTE: ALL DIMENSIONS ARE APPROXIMATE AND ARE BASED UPON FIELD OBSERVATIONS.

- Notes:
1. Probes installed at #1W through #1E are Irrrometer/Watermark Model 200SS Moisture Probes.
 2. Access port is 4-inch diameter HDPE pipe.
 3. Moisture probes are tied to 1/4-inch diameter braided steel pull-through cable (total length of approximately 340 feet).
 4. Probes installed in 4-inch diameter perforated pipe with approximate 1 degree slope away from C/L.
 5. Moisture probes furnished with two leads for direct read by Watermark Model 30 KTC-D-NL meter.



PROJECT NAME GENESIS SOLAR ENERGY PROJECT	PROJECT NUMBER 196-004-05
PROJECT ADDRESS 11995 WILEY'S WELL RD, BLYTHE, CA	DRAWN/CHECKED BY AWB
CONSULTING FIRM NORTHSTAR ENVIRONMENTAL REMEDIATION	DATE DRAWN 12/05/2016
FIGURE DESCRIPTION LEAK DETECTION SYSTEM DETAIL	FIGURE NUMBER FIGURE 5

TABLES

TABLE 1
DETECTION MONITORING WELL DETAILS
 Genesis Solar Energy Project, Riverside County, California

Well ID	Other Name	Owner	Installation Date	Use/Status	Well Casing Diameter (inches)	Approximate Ground Surface Elevation (feet amsl)	Top Of Casing Elevation (feet amsl)	Well Depth (feet bgs)	Screened Interval (feet bgs)	Geologic Unit
WELLS INCLUDED IN THE GROUNDWATER MONITORING PROGRAM										
DM-1	Detection Monitoring Well 1	Genesis Solar, LLC	2/22/2012	Monitoring / Active	4	--	391.49	120	100 to 120	Alluvium
DM-2	Detection Monitoring Well 2	Genesis Solar, LLC	2/21/2012	Monitoring / Active	4	--	391.32	120	100 to 120	Alluvium
DM-3	Detection Monitoring Well 3	Genesis Solar, LLC	2/20/2012	Monitoring / Active	4	--	388.34	120	100 to 120	Alluvium

Notes:

-- = information is not available or unknown

amsl = above mean sea level

bgs = below ground surface

TABLE 2
GROUNDWATER LEVEL MEASUREMENTS
 Genesis Solar Energy Project, Riverside County, California

Well ID	Date	Source	Top of Casing Elevation (feet amsl)	Depth to Water (feet below toc)	Groundwater Elevation (feet amsl)	Comments / Use
WELLS INCLUDED IN THE GROUNDWATER LEVEL MONITORING PROGRAM						
DM-1	2/27/2012	WorleyParsons	391.49	106.63	284.86	Monitoring
DM-1	5/24/2012	WorleyParsons	391.49	107.11	284.38	Monitoring
DM-1	7/26/2012	WorleyParsons	391.49	107.10	284.39	Monitoring
DM-1	11/14/2012	WorleyParsons	391.49	108.15	283.34	Monitoring
DM-1	3/29/2013	WorleyParsons	391.49	107.34	284.15	Monitoring
DM-1	6/19/2013	WorleyParsons	391.49	107.19	284.30	Monitoring
DM-1	8/13/2013	WorleyParsons	391.49	107.07	284.42	Monitoring
DM-1	11/12/2013	WorleyParsons	391.49	107.22	284.27	Monitoring
DM-1	2/26/2014	WorleyParsons	391.49	107.13	284.36	Monitoring
DM-1	5/22/2014	Northstar	391.49	107.05	284.44	Monitoring
DM-1	8/8/2014	Northstar	391.49	107.11	284.38	Monitoring
DM-1	12/4/2014	Northstar	391.49	107.03	284.46	Monitoring
DM-1	6/11/2015	Northstar	391.49	107.01	284.48	Monitoring
DM-1	12/10/2015	Northstar	391.49	106.98	284.51	Monitoring
DM-1	6/2/2016	Northstar	391.49	107.18	284.31	Monitoring
DM-1	11/30/2016	Northstar	391.49	107.27	284.22	Monitoring
DM-1	6/1/2017	Northstar	391.49	107.12	284.37	Monitoring
DM-1	12/5/2017	Northstar	391.49	107.38	284.11	Monitoring
DM-1	5/30/2018	Northstar	391.49	107.10	284.39	Monitoring
DM-1	12/4/2018	Northstar	391.49	107.45	284.04	Monitoring
DM-2	2/27/2012	WorleyParsons	391.32	106.92	284.40	Monitoring
DM-2	5/24/2012	WorleyParsons	391.32	107.37	283.95	Monitoring
DM-2	7/26/2012	WorleyParsons	391.32	107.33	283.99	Monitoring
DM-2	11/14/2012	WorleyParsons	391.32	108.33	282.99	Monitoring
DM-2	3/29/2013	WorleyParsons	391.32	107.59	283.73	Monitoring
DM-2	6/19/2013	WorleyParsons	391.32	107.41	283.91	Monitoring
DM-2	8/13/2013	WorleyParsons	391.32	107.31	284.01	Monitoring
DM-2	11/12/2013	WorleyParsons	391.32	107.63	283.69	Monitoring
DM-2	2/26/2014	WorleyParsons	391.32	107.40	283.92	Monitoring
DM-2	5/22/2014	Northstar	391.32	107.28	284.04	Monitoring
DM-2	8/8/2014	Northstar	391.32	107.28	284.04	Monitoring
DM-2	12/4/2014	Northstar	391.32	107.43	283.89	Monitoring
DM-2	6/11/2015	Northstar	391.32	107.40	283.92	Monitoring
DM-2	12/10/2015	Northstar	391.32	107.30	284.02	Monitoring
DM-2	6/2/2016	Northstar	391.32	107.38	283.94	Monitoring
DM-2	11/30/2016	Northstar	391.32	107.52	283.80	Monitoring
DM-2	6/1/2017	Northstar	391.32	107.47	283.85	Monitoring
DM-2	12/5/2017	Northstar	391.32	107.78	283.54	Monitoring
DM-2	5/30/2018	Northstar	391.32	107.45	283.87	Monitoring
DM-2	12/4/2018	Northstar	391.32	107.80	283.52	Monitoring
DM-3	2/27/2012	WorleyParsons	388.34	103.85	284.49	Monitoring
DM-3	5/24/2012	WorleyParsons	388.34	104.35	283.99	Monitoring
DM-3	7/26/2012	WorleyParsons	388.34	104.28	284.06	Monitoring
DM-3	11/14/2012	WorleyParsons	388.34	105.25	283.09	Monitoring
DM-3	3/29/2013	WorleyParsons	388.34	104.35	283.99	Monitoring
DM-3	6/19/2013	WorleyParsons	388.34	104.20	284.14	Monitoring
DM-3	8/13/2013	WorleyParsons	388.34	104.31	284.03	Monitoring
DM-3	11/12/2013	WorleyParsons	388.34	104.43	283.91	Monitoring
DM-3	2/26/2014	WorleyParsons	388.34	104.31	284.03	Monitoring
DM-3	5/22/2014	Northstar	388.34	104.20	284.14	Monitoring
DM-3	8/8/2014	Northstar	388.34	104.21	284.13	Monitoring
DM-3	12/4/2014	Northstar	388.34	104.39	283.95	Monitoring
DM-3	6/12/2015	Northstar	388.34	104.18	284.16	Monitoring
DM-3	12/11/2015	Northstar	388.34	103.96	284.38	Monitoring
DM-3	6/3/2016	Northstar	388.34	104.38	283.96	Monitoring
DM-3	12/2/2016	Northstar	388.34	104.28	284.06	Monitoring
DM-3	6/1/2017	Northstar	388.34	104.25	284.09	Monitoring
DM-3	12/5/2017	Northstar	388.34	104.62	283.72	Monitoring
DM-3	5/30/2018	Northstar	388.34	104.27	284.07	Monitoring
DM-3	12/4/2018	Northstar	388.34	104.68	283.66	Monitoring

Notes:

amsl = above mean sea level

toc = top of casing

TABLE 3
FIELD DATA COLLECTED DURING THE MOST RECENT GROUNDWATER MONITORING EVENT
 Genesis Solar Energy Project, Riverside County, California

Well ID	Date	Groundwater Purging			Field Parameters					
		Rate of Groundwater Discharge (mL/min)	Purging Method	Total Volume Purged (mL)	pH	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temperature (C ^o)	ORP (mV)
DM-1	12/4/2018	188	Bladder Pump	6,254	7.78	19.3	6.6	4.86	21.60	+66
DM-2	12/4/2018	112	Bladder Pump	5,646	7.81	17.9	75.0	3.07	22.82	+100
DM-3	12/4/2018	121	Bladder Pump	5,718	7.80	18.8	3.2	4.34	22.33	+130

NOTES:

mL = milliliters

mL/min = milliliters per minute

mS/cm = millisiemens per centimeter

NTU = Nephelometric Turbidity Units

DO = Dissolved Oxygen

mg/L = milligrams per liter

^oC = degree Celsius

mV = millivolts

TABLE 5
SUMMARY OF LEAKAGE DETECTION SYSTEM DATA
 Genesis Solar Energy Project, Riverside County, California

Date of Reading	Sensor Readings ¹														Comments
	North Pond							South Pond							
	#1W	#2W	#3W	#1E	#2E	#3E	Totalizer	#1W	#2W	#3W	#1E	#2E	#3E	Totalizer	
1st Qtr 2014	199	199	199	199	199	199	-	199	199	199	199	199	199	-	All probes are dry
2nd Qtr 2014	199	199	199	199	199	199	-	199	199	199	199	199	199	-	
3rd Qtr 2014	199	199	199	199	199	199	-	199	199	199	199	199	199	-	
12/05/2014	199	199	199	199	199	199	-	199	199	199	199	199	199	-	
03/26/2015	199	199	199	199	199	199	-	199	199	199	199	199	199	-	
06/12/2015	133	199	199	199	199	199	-	199	199	199	199	199	199	-	
09/03/2015	78	199	199	199	199	199	-	199	199	199	199	199	199	-	
09/15/2015	67	199	199	199	199	199	-	199	199	199	199	199	199	-	
12/10/2015	0	75	199	199	199	199	-	199	199	199	199	199	199	-	Sump pumps turned on - no water
03/01/2016	6	101	199	199	199	199	-	199	199	199	199	199	199	-	
06/02/2016	4	80	199	199	199	199	-	199	199	199	199	199	199	-	
09/01/2016	0	42	146	199	175	105	-	199	199	199	199	199	199	-	
12/01/2016	0	59	199	199	199	188	1,144.79	199	199	199	183	199	199	24.21	Readings on arrival
12/01/2016	199	199	199	199	199	199	1,144.79	199	199	199	183	199	199	24.21	Readings on departure, new probes in North Pond
03/02/2017	199	199	199	199	199	199	1,144.79	199	199	199	199	199	199	24.21	
06/01/2017	199	199	199	199	199	199	1,144.79	199	199	199	199	199	199	24.21	
09/04/2017	199	199	199	199	199	199	1,695.44	199	199	199	192	178	199	24.21	
12/05/2017	114	165	199	199	179	180	1,695.66	199	199	199	166	199	199	24.21	To date, all totalizer increases are from pump testing
03/06/2018	186	199	199	199	199	199	1,695.66	199	199	199	199	199	199	24.21	
06/01/2018	159	199	199	199	199	199	1,695.66	199	199	199	177	186	199	24.21	
09/12/2018	78	192	199	199	199	192	1,694.83	199	199	199	197	187	199	24.21	
12/03/2018	119	181	199	199	199	199	1,688.26	199	199	199	199	168	199	24.21	

1 - Readings in centibars, collected with a Watermark 30 KTCD-NL Soil Moisture Meter

APPENDIX A

FIELD DATA SHEETS



GROUNDWATER SAMPLING FIELD FORM

Event: 2018 2nd Semiannual	Site: Genesis Solar Energy Project	Project No: 196-004-06
Project: Groundwater Quality Monitoring Program		Project Manager: AWB
Technicians: RCD/AWB		Weather: Cool, clear

Sampling Method: Geotech Submersible Bladder Pump - Low Flow Purge (< 250 mL/minute); Flow-Through Cell;
 Parameters Stable Once Within 10%

Well No.	DM-1	Time	Water Level (ft btoc)	Temp °C	pH	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	DO (mg/L)
Casing Diameter (in.)	4.0	6:24	107.46	21.59	7.72	19.1	7.2	+68	4.82
Total Depth (ft btoc)	120	6:26	107.46	21.60	7.76	19.2	6.8	+64	4.86
Screened Interval (ft btoc)	100 - 120	6:28	107.46	21.60	7.78	19.3	6.6	+66	4.86
Depth to Water (ft btoc)	107.45								
Depth of Inlet (ft btoc)	115.00								
Discharge Time (sec)	25								
Fill Time (sec)	15								
Cycles per Minute	1.5								
Volume per Cycle (mL)	125								
Pump Rate (mL/min)	188								
Sample Date	12/4/2018								
Sample Time	6:30								

General Well Location: West side of settlement ponds

COMMENTS:

Well No.	DM-2	Time	Water Level (ft btoc)	Temp °C	pH	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	DO (mg/L)
Casing Diameter (in.)	4.0	6:54	107.90	22.79	7.79	17.6	76.1	+104	3.12
Total Depth (ft btoc)	120	6:56	107.90	22.81	7.79	17.7	75.1	+101	3.08
Screened Interval (ft btoc)	100 - 120	6:58	107.90	22.82	7.81	17.9	75.0	+100	3.07
Depth to Water (ft btoc)	107.80								
Depth of Inlet (ft btoc)	115.00								
Discharge Time (sec)	27								
Fill Time (sec)	40								
Cycles per Minute	0.9								
Volume per Cycle (mL)	125								
Pump Rate (mL/min)	112								
Sample Date	12/4/2018								
Sample Time	7:00								

General Well Location: East side of settlement ponds

COMMENTS:

Well No.	DM-3	Time	Water Level (ft btoc)	Temp °C	pH	Conductivity (mS/cm)	Turbidity (NTUs)	ORP (mV)	DO (mg/L)
Casing Diameter (in.)	4.0	7:24	104.74	22.33	7.82	18.8	2.7	+127	4.31
Total Depth (ft btoc)	120	7:26	104.74	22.28	7.80	18.8	3.1	+128	4.33
Screened Interval (ft btoc)	100 - 120	7:28	104.74	22.33	7.80	18.8	3.2	+130	4.34
Depth to Water (ft btoc)	104.68								
Depth of Inlet (ft btoc)	115.00								
Discharge Time (sec)	27								
Fill Time (sec)	35								
Cycles per Minute	0.97								
Volume per Cycle (mL)	125								
Pump Rate (mL/min)	121								
Sample Date	12/4/2018								
Sample Time	7:30								

General Well Location: South side of settlement ponds

COMMENTS:

APPENDIX B

LABORATORY ANALYTICAL RESULTS

EVAPORATION PONDS



25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

26 December 2018

Arlin Brewster
Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest, CA 92630
RE: Genesis Solar LTUs & Ponds

Enclosed are the results of analyses for samples received by the laboratory on 12/05/18 10:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joann Marroquin
Client Services Manager



25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
Project Number: 196-004-05
Project Manager: Arlin Brewster

Reported:
12/26/18 15:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NORTH POND	T183599-01	Water	12/03/18 12:00	12/05/18 10:50
SOUTH POND	T183599-02	Water	12/03/18 12:20	12/05/18 10:50

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin, Client Services Manager

Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
Project Number: 196-004-05
Project Manager: Arlin Brewster

Reported:
12/26/18 15:12

DETECTIONS SUMMARY

Sample ID: NORTH POND

Laboratory ID: T183599-01

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Arsenic	1000	25		ug/l	200.8	
Barium	68	25		ug/l	200.8	
Copper	2.9	0.50		mg/l	EPA 200.7	
Nickel	59	25		ug/l	200.8	
Calcium	630	10		mg/l	EPA 200.7	
Potassium	8300	10		mg/l	EPA 200.7	
Magnesium	27	10		mg/l	EPA 200.7	
Sodium	46000	50		mg/l	EPA 200.7	
Total Dissolved Solids	400000	55		mg/l	TDS by SM2540C	
pH	7.6	0.10		pH Units	SM4500	O-04
Specific Conductance (EC)	241000	10.0		umhos/cm	SM2510b mod.	
Chloride	241000	2500		mg/l	EPA 300.0	
Sulfate as SO4	18600	2500		mg/l	EPA 300.0	
Nitrate as NO3	24.3	10.0		mg/l	EPA 300.0	O-07

Sample ID: SOUTH POND

Laboratory ID: T183599-02

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Arsenic	390	25		ug/l	200.8	
Barium	310	25		ug/l	200.8	
Copper	2.8	0.50		mg/l	EPA 200.7	
Zinc	160	25		ug/l	200.8	
Calcium	410	10		mg/l	EPA 200.7	
Magnesium	27	10		mg/l	EPA 200.7	
Potassium	420	10		mg/l	EPA 200.7	
Sodium	34000	50		mg/l	EPA 200.7	
Oil & Grease	36.4	5.00		mg/l	EPA 1664B	
pH	8.9	0.10		pH Units	SM4500	O-04
Total Dissolved Solids	39000	55		mg/l	TDS by SM2540C	
Specific Conductance (EC)	61200	10.0		umhos/cm	SM2510b mod.	
Chloride	33200	500		mg/l	EPA 300.0	
Sulfate as SO4	8710	500		mg/l	EPA 300.0	

SunStar Laboratories, Inc.

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Joann Marroquin, Client Services Manager



25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

Northstar Environmental Remediation 26225 Enterprise Court Lake Forest CA, 92630	Project: Genesis Solar LTUs & Ponds Project Number: 196-004-05 Project Manager: Arlin Brewster	Reported: 12/26/18 15:12
--	--	-----------------------------

Sample ID: SOUTH POND

Laboratory ID: T183599-02

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Nitrate as NO3	65.1	0.500		mg/l	EPA 300.0	O-07

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin, Client Services Manager



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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
 Project Number: 196-004-05
 Project Manager: Arlin Brewster

Reported:
 12/26/18 15:12

NORTH POND
T183599-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
---------	--------	-----------------	-------	----------	-------	----------	----------	--------	-------

SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	2.9	0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	630	10	"	"	"	"	"	"	
Iron	ND	20	"	"	"	"	"	"	R-07
Magnesium	27	10	"	"	"	"	"	"	
Potassium	8300	10	"	"	"	"	"	"	
Sodium	46000	50	"	500	"	"	12/13/18	"	
Antimony	ND	25	ug/l	50	8121043	12/10/18	12/12/18	200.8	
Arsenic	1000	25	"	"	"	"	"	"	
Barium	68	25	"	"	"	"	"	"	
Cadmium	ND	25	"	"	"	"	"	"	
Chromium	ND	25	"	"	"	"	"	"	
Cobalt	ND	25	"	"	"	"	"	"	R-07
Lead	ND	25	"	"	"	"	"	"	R-07
Nickel	59	25	"	"	"	"	"	"	
Selenium	ND	25	"	"	"	"	"	"	
Zinc	ND	25	"	"	"	"	"	"	R-07

Cold Vapor Extraction EPA 7470/7471

Mercury	ND	0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND	5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	241000	10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	7.6	0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	400000	55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

SunStar Laboratories, Inc.

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Joann Marroquin, Client Services Manager



25712 Commercentre Drive
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 949.297.5020 Phone
 949.297.5027 Fax

Northstar Environmental Remediation 26225 Enterprise Court Lake Forest CA, 92630	Project: Genesis Solar LTUs & Ponds Project Number: 196-004-05 Project Manager: Arlin Brewster	Reported: 12/26/18 15:12
--	--	-----------------------------

NORTH POND

T183599-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	241000	2500	mg/l	500	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	18600	2500	"	"	"	"	"	"	
Nitrate as NO3	24.3	10.0	"	20	"	"	12/06/18	"	O-07

SunStar Laboratories, Inc.

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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
 Project Number: 196-004-05
 Project Manager: Arlin Brewster

Reported:
 12/26/18 15:12

SOUTH POND

T183599-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	2.8	0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	410	10	"	"	"	"	"	"	
Iron	ND	20	"	"	"	"	"	"	R-07
Magnesium	27	10	"	"	"	"	"	"	
Potassium	420	10	"	"	"	"	"	"	
Sodium	34000	50	"	500	"	"	12/13/18	"	
Antimony	ND	25	ug/l	50	8121043	12/10/18	12/12/18	200.8	
Arsenic	390	25	"	"	"	"	"	"	
Barium	310	25	"	"	"	"	"	"	
Cadmium	ND	25	"	"	"	"	"	"	
Chromium	ND	25	"	"	"	"	"	"	
Cobalt	ND	25	"	"	"	"	"	"	R-07
Lead	ND	25	"	"	"	"	"	"	R-07
Nickel	ND	25	"	"	"	"	"	"	
Selenium	ND	25	"	"	"	"	"	"	
Zinc	160	25	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND	0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	36.4	5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	61200	10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	8.9	0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	39000	55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

SunStar Laboratories, Inc.

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Northstar Environmental Remediation 26225 Enterprise Court Lake Forest CA, 92630	Project: Genesis Solar LTUs & Ponds Project Number: 196-004-05 Project Manager: Arlin Brewster	Reported: 12/26/18 15:12
--	--	-----------------------------

SOUTH POND

T183599-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	33200	500	mg/l	100	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	8710	500	"	"	"	"	"	"	
Nitrate as NO3	65.1	0.500	"	1	"	"	12/05/18	"	O-07

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 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
 Project Number: 196-004-05
 Project Manager: Arlin Brewster

Reported:
 12/26/18 15:12

Metals by EPA 200 Series Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120712 - EPA 3010A

Blank (8120712-BLK1)

Prepared: 12/07/18 Analyzed: 12/13/18

Copper	ND	0.005	mg/l							
Calcium	ND	0.10	"							
Iron	ND	0.20	"							
Potassium	ND	0.10	"							
Magnesium	ND	0.10	"							
Sodium	ND	0.10	"							QB-01

LCS (8120712-BS1)

Prepared: 12/07/18 Analyzed: 12/13/18

Copper	0.485	0.005	mg/l	0.500		97.0	85-115			
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Matrix Spike (8120712-MS1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/13/18

FILT

Copper	3.27	0.50	mg/l	0.500	ND	653	70-130			
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Matrix Spike Dup (8120712-MSD1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/13/18

FILT

Copper	3.27	0.50	mg/l	0.500	ND	654	70-130	0.161	30	
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Batch 8121043 - EPA 3010A

Blank (8121043-BLK1)

Prepared: 12/10/18 Analyzed: 12/12/18

Antimony	ND	0.50	ug/l							
Arsenic	ND	0.50	"							
Barium	ND	0.50	"							
Beryllium	ND	0.50	"							
Cadmium	ND	0.50	"							
Chromium	ND	0.50	"							
Cobalt	ND	0.50	"							
Lead	ND	0.50	"							
Nickel	ND	0.50	"							
Selenium	ND	0.50	"							
Zinc	ND	0.50	"							

SunStar Laboratories, Inc.

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 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
 Project Number: 196-004-05
 Project Manager: Arlin Brewster

Reported:
 12/26/18 15:12

Metals by EPA 200 Series Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8121043 - EPA 3010A

LCS (8121043-BS1)

Prepared: 12/10/18 Analyzed: 12/12/18

Arsenic	57.1	0.50	ug/l	50.0		114	75-125			
Barium	48.3	0.50	"	50.0		96.6	75-125			
Cadmium	54.0	0.50	"	50.0		108	75-125			
Chromium	46.6	0.50	"	50.0		93.1	75-125			
Lead	47.0	0.50	"	50.0		94.1	75-125			

Matrix Spike (8121043-MS1)

Source: T183598-01

Prepared: 12/10/18 Analyzed: 12/12/18

Arsenic	116	10	ug/l	50.0	6.69	218	75-125			QM-01
Barium	62.3	10	"	50.0	13.6	97.3	75-125			
Cadmium	48.7	10	"	50.0	1.27	94.9	75-125			
Chromium	110	10	"	50.0	2.50	216	75-125			QM-01
Lead	107	10	"	50.0	ND	213	75-125			QM-01

Matrix Spike Dup (8121043-MSD1)

Source: T183598-01

Prepared: 12/10/18 Analyzed: 12/12/18

Arsenic	61.3	10	ug/l	50.0	6.69	109	75-125	61.5	20	QM-01
Barium	60.4	10	"	50.0	13.6	93.6	75-125	3.05	20	
Cadmium	45.9	10	"	50.0	1.27	89.2	75-125	6.10	20	
Chromium	52.8	10	"	50.0	2.50	101	75-125	70.6	20	QM-01
Lead	51.3	10	"	50.0	ND	103	75-125	70.2	20	QM-01

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 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
 Project Number: 196-004-05
 Project Manager: Arlin Brewster

Reported:
 12/26/18 15:12

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120723 - EPA 7470A Water

Blank (8120723-BLK1)

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury	ND	0.50	ug/l							
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LCS (8120723-BS1)

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury	5.53	0.50	ug/l	5.00		111	80-120			
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Matrix Spike (8120723-MS1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury	3.45	0.50	ug/l	5.00	ND	68.9	75-125			QM-05
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Matrix Spike Dup (8120723-MSD1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury	4.48	0.50	ug/l	5.00	ND	89.5	75-125	26.0	20	QM-05
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Northstar Environmental Remediation 26225 Enterprise Court Lake Forest CA, 92630	Project: Genesis Solar LTUs & Ponds Project Number: 196-004-05 Project Manager: Arlin Brewster	Reported: 12/26/18 15:12
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120530 - General Preparation

Duplicate (8120530-DUP1)		Source: T183598-01			Prepared & Analyzed: 12/05/18					
pH	7.91	0.10	pH Units		7.89			0.253	20	

Batch 8120531 - General Preparation

Duplicate (8120531-DUP1)		Source: T183598-01			Prepared & Analyzed: 12/05/18					
Specific Conductance (EC)	23600	10.0	umhos/cm		23600			0.00	15	

Batch 8120538 - General Preparation

Blank (8120538-BLK1)		Prepared: 12/05/18 Analyzed: 12/06/18								
Total Dissolved Solids	ND	55	mg/l							

LCS (8120538-BS1)		Prepared: 12/05/18 Analyzed: 12/06/18								
Total Dissolved Solids	512	55	mg/l	500		102	80-120			

Duplicate (8120538-DUP1)		Source: T183598-01			Prepared: 12/05/18 Analyzed: 12/06/18					
Total Dissolved Solids	17100	55	mg/l		16800			1.30	5	

Batch 8120722 - General Preparation

Blank (8120722-BLK1)		Prepared: 12/07/18 Analyzed: 12/11/18								
Oil & Grease	ND	5.00	mg/l							

LCS (8120722-BS1)		Prepared: 12/07/18 Analyzed: 12/11/18								
Oil & Grease	36.5	5.00	mg/l	40.0		91.2	83-101			

SunStar Laboratories, Inc.

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 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
 Project Number: 196-004-05
 Project Manager: Arlin Brewster

Reported:
 12/26/18 15:12

Conventional Chemistry Parameters by APHA/EPA/ASTM Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120722 - General Preparation

LCS Dup (8120722-BSD1)

Prepared: 12/07/18 Analyzed: 12/11/18

Oil & Grease	33.7	5.00	mg/l	40.0		84.2	83-101	7.98	11	
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Northstar Environmental Remediation 26225 Enterprise Court Lake Forest CA, 92630	Project: Genesis Solar LTUs & Ponds Project Number: 196-004-05 Project Manager: Arlin Brewster	Reported: 12/26/18 15:12
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Anions by EPA Method 300.0 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120528 - General Preparation

Blank (8120528-BLK1)

Prepared & Analyzed: 12/05/18

Fluoride	ND	0.500	mg/l							
Chloride	ND	5.00	"							
Sulfate as SO4	ND	5.00	"							
Nitrate as NO3	ND	0.500	"							

LCS (8120528-BS1)

Prepared & Analyzed: 12/05/18

Chloride	26.4	5.00	mg/l	25.0		106	75-125			
Sulfate as SO4	26.4	5.00	"	25.0		106	75-125			
Nitrate as NO3	26.8	0.500	"	25.0		107	75-125			

Matrix Spike (8120528-MS1)

Source: T183598-01

Prepared: 12/05/18 Analyzed: 12/06/18

Chloride	7920	100	mg/l	25.0	7680	963	75-125			QM-02
Sulfate as SO4	7450	100	"	25.0	7130	NR	75-125			QM-02
Nitrate as NO3	26.5	0.500	"	25.0	5.52	83.9	75-125			

Matrix Spike Dup (8120528-MSD1)

Source: T183598-01

Prepared: 12/05/18 Analyzed: 12/06/18

Chloride	9040	100	mg/l	25.0	7680	NR	75-125	13.2	20	QM-02
Sulfate as SO4	8560	100	"	25.0	7130	NR	75-125	13.9	20	QM-02
Nitrate as NO3	31.6	0.500	"	25.0	5.52	104	75-125	17.6	20	

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Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest CA, 92630

Project: Genesis Solar LTUs & Ponds
Project Number: 196-004-05
Project Manager: Arlin Brewster

Reported:
12/26/18 15:12

Notes and Definitions

- R-07 Reporting limit for this compound(s) has been raised to account for dilution necessary due to high levels of interfering compound(s) and/or matrix affect.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
- QM-02 The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
- QM-01 The % recovery is outside of established control limits due to matrix interference and/or sample dilution due to matrix effect. The batch was accepted based on acceptable LCS recovery.
- QB-01 The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.
- O-07 The sample was analyzed outside the EPA recommended holding time of 48 hours.
- O-04 This sample was received and analyzed outside the EPA recommended holding time.
- FILT The sample was filtered prior to analysis.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

SunStar Laboratories, Inc.

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Joann Marroquin, Client Services Manager

Chain of Custody Record

SunStar Laboratories, Inc.
 25712 Commercentre Dr
 Lake Forest, CA 92630
 949-297-5020

Client: Northstar Environmental Remediation _____
 Address: 26225 Enterprise Court, Lake Forest, CA 92630 _____
 Phone: 949-274-1719 _____ Fax: _____
 Project Manager: Arlin Brewster _____

Date: 12/03/18 Page: 1 of 1
 Project Name: Genesis Solar LTUs & Ponds _____
 Collector: Arlin Brewster _____ Client Project #: 196-004-05 _____
 Batch #: ~~71825~~ 7182592 EDF #: T10000006093 _____

Sample ID	Date Sampled	Time	Sample Type	Container Type	200.7 - Metals: Ca, Cu, Na, K, Fe, Mg (FIELD FILTERED)	200.8 - Metals: Sb, As, Ba, Cd, Cr, Co, Pb, Ni, Se, Zn (F.F.)	300.0 - Chloride, Nitrate, Sulfate	1664 - Oil and Grease	7470A - Mercury	9040 - pH	SM2510B - Conductivity, Specific	SM2540C - Total Dis. Solids	8015M - Therminol (Subcontract)	Laboratory ID #	Comments/Preservative	Notes
					X	X	X	X	X	X	X	X				
North Pond	12/03/18	1200	W	Various	X	X	X	X	X	X	X	X	01			
South Pond	12/03/18	1230	W	Various	X	X	X	X	X	X	X	X	02	HOLD		
Field Blank	N/A	N/A	W	Various									03	HOLD		
Trip Blank	N/A	N/A	W	Various									04	HOLD		
Relinquished by: (signature) _____					Date / Time	Received by: (signature) _____					Date / Time	Total # of containers				
Relinquished by: (signature) _____					Date / Time	Received by: (signature) _____					Date / Time	Total # of containers				
Relinquished by: (signature) _____					Date / Time	Received by: (signature) _____					Date / Time	Total # of containers				
Relinquished by: (signature) _____					Date / Time	Received by: (signature) _____					Date / Time	Total # of containers				
Relinquished by: (signature) _____					Date / Time	Received by: (signature) _____					Date / Time	Total # of containers				

Sample disposal Instructions: Disposal @ \$2.00 each _____ Return to client _____ Pickup _____

Turn around time: Standard

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: T183599

Client Name: NORTHSTAR ENV. Project: GENESIS SOLAR LTUS & POND

Delivered by: Client SunStar Courier GSO FedEx Other

If Courier, Received by: _____ Date/Time Courier Received: _____

Lab Received by: SUNNY Date/Time Lab Received: 12.5.18 / 10:50

Total number of coolers received: 1

Temperature:	Cooler #1	1.2	°C +/- the CF (1.2°C) =	2.4	°C corrected temperature
Temperature:	Cooler #2		°C +/- the CF (1.2°C) =		°C corrected temperature
Temperature:	Cooler #3		°C +/- the CF (1.2°C) =		°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) Within criteria? Yes No

If NO:

Samples received on ice? Yes No → Complete Non-Conformance Sheet

If on ice, samples received same day collected? Yes → Acceptable No → Complete Non-Conformance Sheet

Custody seals intact on cooler/sample Yes No* N/A

Sample containers intact Yes No*

Sample labels match Chain of Custody IDs Yes No*

Total number of containers received match COC Yes No*

Proper containers received for analyses requested on COC Yes No*

Proper preservative indicated on COC/containers for analyses requested Yes No* N/A

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times Yes No*

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: SK 12.5.18

Comments: _____

WORK ORDER

T183599

Client: Northstar Environmental Remediation
Project: Genesis Solar Groundwater

Project Manager: Joann Marroquin
Project Number: 196-004-05

Report To:

Northstar Environmental Remediation
 Arlin Brewster
 26225 Enterprise Court
 Lake Forest, CA 92630

Date Due: 12/12/18 17:00 (5 day TAT)

Received By: Sunny Lounethone

Date Received: 12/05/18 10:50

Logged In By: Sunny Lounethone

Date Logged In: 12/05/18 11:43

Samples Received at: **2.4°C**

Custody Seals No Received On Ice Yes

Containers Intact Yes

COC/Labels Agree Yes

Preservation Confir Yes

Analysis	Due	TAT	Expires	Comments
T183599-01 NORTH POND [Water] Sampled 12/03/18 12:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	12/31/18 12:00	Oil & Grease
200.7	12/12/18 15:00	5	06/01/19 12:00	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/01/19 12:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	12/31/18 12:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/05/18 12:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/03/19 12:00	
Conductivity	12/12/18 15:00	5	12/31/18 12:00	
pH water 9040	12/12/18 15:00	5	12/04/18 12:00	
TDS-160.1	12/12/18 15:00	5	12/10/18 12:00	

T183599-02 SOUTH POND [Water] Sampled 12/03/18 12:20 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	12/31/18 12:20	Oil & Grease
200.7	12/12/18 15:00	5	06/01/19 12:20	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/01/19 12:20	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	12/31/18 12:20	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/05/18 12:20	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/03/19 12:20	
Conductivity	12/12/18 15:00	5	12/31/18 12:20	
pH water 9040	12/12/18 15:00	5	12/04/18 12:20	
TDS-160.1	12/12/18 15:00	5	12/10/18 12:20	

WORK ORDER

T183599

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-05

Analysis	Due	TAT	Expires	Comments
T183599-03 FIELD BLANK [Water] Sampled 12/03/18 00:00 (GMT-08:00)				
Pacific Time (US & [NO ANALYSES]				
T183599-04 TRIP BLANK [Water] Sampled 12/03/18 00:00 (GMT-08:00)				
Pacific Time (US & [NO ANALYSES]				

TestAmerica (Irvine) Laboratories

T183599-01 NORTH POND [Water] Sampled 12/03/18 12:00 (GMT-08:00)				
Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/01/19 12:00	8015M- Therminol
T183599-02 SOUTH POND [Water] Sampled 12/03/18 12:20 (GMT-08:00)				
Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/01/19 12:20	8015M- Therminol

WORK ORDER

T183599

Client: Northstar Environmental Remediation
Project: Genesis Solar LTUs & Ponds

Project Manager: Joann Marroquin
Project Number: 196-004-05

Report To:

Northstar Environmental Remediation
 Arlin Brewster
 26225 Enterprise Court
 Lake Forest, CA 92630

Date Due: 12/12/18 17:00 (5 day TAT)

Received By: Sunny Lounethone

Date Received: 12/05/18 10:50

Logged In By: Sunny Lounethone

Date Logged In: 12/05/18 11:43

Samples Received at: **2.4°C**

Custody Seals No Received On Ice Yes

Containers Intact Yes

COC/Labels Agree Yes

Preservation Confir Yes

Analysis	Due	TAT	Expires	Comments
T183599-01 NORTH POND [Water] Sampled 12/03/18 12:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	12/31/18 12:00	Oil & Grease
200.7	12/12/18 15:00	5	06/01/19 12:00	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/01/19 12:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	12/31/18 12:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/05/18 12:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/03/19 12:00	
Conductivity	12/12/18 15:00	5	12/31/18 12:00	
pH water 9040	12/12/18 15:00	5	12/04/18 12:00	
TDS-160.1	12/12/18 15:00	5	12/10/18 12:00	

T183599-02 SOUTH POND [Water] Sampled 12/03/18 12:20 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	12/31/18 12:20	Oil & Grease
200.7	12/12/18 15:00	5	06/01/19 12:20	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/01/19 12:20	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	12/31/18 12:20	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/05/18 12:20	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/03/19 12:20	
Conductivity	12/12/18 15:00	5	12/31/18 12:20	
pH water 9040	12/12/18 15:00	5	12/04/18 12:20	
TDS-160.1	12/12/18 15:00	5	12/10/18 12:20	

WORK ORDER

T183599

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar LTUs & Ponds	Project Number: 196-004-05

Analysis	Due	TAT	Expires	Comments
T183599-03 FIELD BLANK [Water] Sampled 12/03/18 00:00 (GMT-08:00)				
Pacific Time (US & [NO ANALYSES]				
T183599-04 TRIP BLANK [Water] Sampled 12/03/18 00:00 (GMT-08:00)				
Pacific Time (US & [NO ANALYSES]				

TestAmerica (Irvine) Laboratories

T183599-01 NORTH POND [Water] Sampled 12/03/18 12:00 (GMT-08:00)
Pacific Time (US &

Misc Water Testing #1	12/12/18 15:00	5	06/01/19 12:00	8015M- Therminol
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T183599-02 SOUTH POND [Water] Sampled 12/03/18 12:20 (GMT-08:00)
Pacific Time (US &

Misc Water Testing #1	12/12/18 15:00	5	06/01/19 12:20	8015M- Therminol
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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-226400-1

Client Project/Site: T183599

For:

SunStar Laboratories Inc

25712 Commercentre Drive

Lake Forest, California 92630

Attn: Joann Marroquin



Authorized for release by:

12/14/2018 3:37:09 PM

Danielle Roberts, Senior Project Manager

(949)261-1022

danielle.roberts@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226400-1	T183599-01	Water	12/03/18 12:00	12/05/18 14:50
440-226400-2	T183599-02	Water	12/03/18 12:20	12/05/18 14:50

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Case Narrative

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Job ID: 440-226400-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-226400-1**

Comments

No additional comments.

Receipt

The samples were received on 12/5/2018 2:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

GC Semi VOA

Method(s) 8015B: Insufficient 8015-DRO sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch preparation batch 440-515342 and analytical batch 440-515553. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch: (LCS 440-515342/2-A)

Method(s) 8015B: Surrogate recovery for the following 8015-DRO sample was outside control limits due to "heavy emulsion": T183599-01 (440-226400-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C 8015B TH preparation batch 440-515342.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Client Sample ID: T183599-01

Lab Sample ID: 440-226400-1

No Detections.

Client Sample ID: T183599-02

Lab Sample ID: 440-226400-2

No Detections.

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This Detection Summary does not include radiochemical test results.

TestAmerica Irvine

Client Sample Results

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Client Sample ID: T183599-01

Date Collected: 12/03/18 12:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226400-1

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.099	0.020	mg/L		12/06/18 09:50	12/07/18 12:52	1
1,1'-Biphenyl	ND		0.099	0.020	mg/L		12/06/18 09:50	12/07/18 12:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	18	X	45 - 120				12/06/18 09:50	12/07/18 12:52	1

Client Sample ID: T183599-02

Date Collected: 12/03/18 12:20

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226400-2

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.097	0.019	mg/L		12/06/18 09:50	12/07/18 13:34	1
1,1'-Biphenyl	ND		0.097	0.019	mg/L		12/06/18 09:50	12/07/18 13:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	60		45 - 120				12/06/18 09:50	12/07/18 13:34	1

Surrogate Summary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCN1 (45-120)
440-226400-1	T183599-01	18 X
440-226400-2	T183599-02	60
LCS 440-515342/2-A	Lab Control Sample	59
LCSD 440-515342/3-A	Lab Control Sample Dup	61
MB 440-515342/1-A	Method Blank	62

Surrogate Legend

OTCN = n-Octacosane

Method Summary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Method	Method Description	Protocol	Laboratory
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022



Lab Chronicle

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Client Sample ID: T183599-01

Date Collected: 12/03/18 12:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226400-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			1015 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 12:52	LMB	TAL IRV

Client Sample ID: T183599-02

Date Collected: 12/03/18 12:20

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226400-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			1030 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 13:34	LMB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-515342/1-A
Matrix: Water
Analysis Batch: 515553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 515342

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 11:08		1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 11:08		1
Surrogate	MB	MB	Limits			D	Prepared	Analyzed	Dil	Fac
%Recovery	Result	Qualifier								
<i>n</i> -Octacosane	62		45 - 120				12/06/18 09:50	12/07/18 11:08		1

Lab Sample ID: LCS 440-515342/2-A
Matrix: Water
Analysis Batch: 515553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515342

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits			
		Result	Qualifier							
Benzene, 1,1'-oxybis-	0.100	0.0624	J	mg/L		62	50 - 115			
1,1'-Biphenyl	0.100	0.0515	J	mg/L		51	50 - 115			
Surrogate	LCS	LCS	Limits			D	Prepared	Analyzed	Dil	Fac
%Recovery	Result	Qualifier								
<i>n</i> -Octacosane	59		45 - 120							

Lab Sample ID: LCSD 440-515342/3-A
Matrix: Water
Analysis Batch: 515553

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 515342

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit	
		Result	Qualifier							
Benzene, 1,1'-oxybis-	0.100	0.0627	J	mg/L		63	50 - 115	1	30	
1,1'-Biphenyl	0.100	0.0522	J	mg/L		52	50 - 115	1	30	
Surrogate	LCSD	LCSD	Limits			D	Prepared	Analyzed	Dil	Fac
%Recovery	Result	Qualifier								
<i>n</i> -Octacosane	61		45 - 120							

QC Association Summary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

GC Semi VOA

Prep Batch: 515342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226400-1	T183599-01	Total/NA	Water	3510C	
440-226400-2	T183599-02	Total/NA	Water	3510C	
MB 440-515342/1-A	Method Blank	Total/NA	Water	3510C	
LCS 440-515342/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 440-515342/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 515553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226400-1	T183599-01	Total/NA	Water	8015B	515342
440-226400-2	T183599-02	Total/NA	Water	8015B	515342
MB 440-515342/1-A	Method Blank	Total/NA	Water	8015B	515342
LCS 440-515342/2-A	Lab Control Sample	Total/NA	Water	8015B	515342
LCSD 440-515342/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	515342

Definitions/Glossary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: SunStar Laboratories Inc
Project/Site: T183599

TestAmerica Job ID: 440-226400-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015B	3510C	Water	1,1'-Biphenyl
8015B	3510C	Water	Benzene, 1,1'-oxybis-

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Mouton, Alain

From: Joann Marroquin <joann@sunstarlabs.com>
Sent: Thursday, December 06, 2018 8:16 PM
To: Mouton, Alain
Cc: Roberts, Danielle C.
Subject: RE: TestAmerica Sample Login Confirmation files from 440-226400 T183599

-External Email-

Alain,

Please set these to your std TAT, no rush.

Thank you,
Joann

Joann Marroquin
Southern California Sales/CSM



25712 Commercentre Dr., Lake Forest, CA 92630
Office: (949) 297-5020 | Fax: (949) 297-5027 | Cell: (949) 469-3124
CA ELAP Certification: 2250 | CA Small Business Certification: 31511

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From: Mouton, Alain [<mailto:alain.mouton@testamericainc.com>]
Sent: Thursday, December 06, 2018 4:41 PM
To: Joann Marroquin; Rose Fasheh
Cc: Danielle C. Roberts
Subject: TestAmerica Sample Login Confirmation files from 440-226400 T183599

Hello,

Attached, please find the Sample Confirmation files for job 440-226400; T183599

Please feel free to contact me or your PM, Danielle Roberts, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from

TestAmerica on this project by visiting our website at: [Project Feedback](#)

ALAIN MOUTON
Project Manager Assistant

TestAmerica Irvine
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [486738]
Attachments: 2

- 1
- 2
- 3
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SUBCONTRACT ORDER

SunStar Laboratories, Inc.

T183599

SENDING LABORATORY:

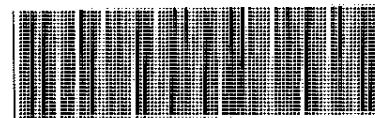
SunStar Laboratories, Inc.
25712 Commercentre Drive
Lake Forest, CA 92630
Phone: (949) 297-5020
Fax: (949) 297-5027
Project Manager: Joann Marroquin

RECEIVING LABORATORY:


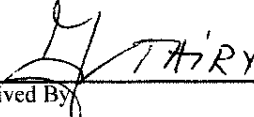
TestAmerica (Irvine) Laboratories
17461 Derian Ave, #100
Irvine, CA 92614
Phone : (949) 261-1022
Fax: N/A

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: T183599-01	Water	Sampled: 12/03/18 12:00		
Misc Water Testing #1	12/12/18 15:00	06/01/19 12:00		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183599-02	Water	Sampled: 12/03/18 12:20		
Misc Water Testing #1	12/12/18 15:00	06/01/19 12:20		8015M- Therminol
<i>Containers Supplied:</i>				

23/LB
12/5/19



440-226400 Chain of Custody

Released By  Date 12-5-18 1450 Received By  Date 12/5/18 1450

Released By _____ Date _____ Received By _____ Date _____

40/3.5 R93 Page 1 of 1

Login Sample Receipt Checklist

Client: SunStar Laboratories Inc

Job Number: 440-226400-1

Login Number: 226400

List Number: 1

Creator: Bonta, Lucia F

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



APPENDIX C

LABORATORY ANALYTICAL RESULTS

DETECTION MONITORING WELLS



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21 December 2018

Arlin Brewster
Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest, CA 92630
RE: Genesis Solar Groundwater

Enclosed are the results of analyses for samples received by the laboratory on 12/05/18 10:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads 'Joann Marroquin'. The signature is written in a cursive style and is centered within a light gray rectangular box.

Joann Marroquin
Client Services Manager



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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
OBS-1	T183598-01	Water	12/04/18 10:25	12/05/18 10:50
TW-1	T183598-02	Water	12/04/18 11:00	12/05/18 10:50
TW-2	T183598-03	Water	12/04/18 09:00	12/05/18 10:50
PW-0	T183598-04	Water	12/04/18 08:25	12/05/18 10:50
PW-2	T183598-05	Water	12/04/18 08:35	12/05/18 10:50
DM-1	T183598-06	Water	12/04/18 06:30	12/05/18 10:50
DM-2	T183598-07	Water	12/04/18 07:00	12/05/18 10:50
DM-3	T183598-08	Water	12/04/18 07:30	12/05/18 10:50
DUP	T183598-09	Water	12/04/18 00:00	12/05/18 10:50



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Northstar Environmental Remediation
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 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

DETECTIONS SUMMARY

Sample ID: OBS-1

Laboratory ID: T183598-01

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Barium	14	10	ug/l	200.8	
Selenium	80	10	ug/l	200.8	
Calcium	480	10	mg/l	EPA 200.7	
Potassium	63	10	mg/l	EPA 200.7	
Magnesium	140	10	mg/l	EPA 200.7	R-07
Sodium	12000	10	mg/l	EPA 200.7	
pH	7.9	0.10	pH Units	SM4500	O-04
Total Dissolved Solids	17000	55	mg/l	TDS by SM2540C	
Specific Conductance (EC)	23600	10.0	umhos/cm	SM2510b mod.	
Chloride	7680	100	mg/l	EPA 300.0	
Sulfate as SO4	7130	100	mg/l	EPA 300.0	
Nitrate as NO3	5.52	0.500	mg/l	EPA 300.0	

Sample ID: TW-1

Laboratory ID: T183598-02

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	20	10	ug/l	200.8	
Barium	15	10	ug/l	200.8	
Calcium	89	10	mg/l	EPA 200.7	
Potassium	35	10	mg/l	EPA 200.7	
Sodium	4800	10	mg/l	EPA 200.7	
Total Dissolved Solids	8100	55	mg/l	TDS by SM2540C	
pH	10	0.10	pH Units	SM4500	O-04
Specific Conductance (EC)	13900	10.0	umhos/cm	SM2510b mod.	
Chloride	6910	100	mg/l	EPA 300.0	
Sulfate as SO4	2400	100	mg/l	EPA 300.0	

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Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest CA, 92630

Project: Genesis Solar Groundwater
Project Number: 196-004-06
Project Manager: Arlin Brewster

Reported:
12/21/18 10:53

Sample ID: TW-2 **Laboratory ID:** T183598-03

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	11	10	ug/l	200.8	
Barium	40	10	ug/l	200.8	
Zinc	39	10	ug/l	200.8	
Calcium	87	10	mg/l	EPA 200.7	
Potassium	30	10	mg/l	EPA 200.7	
Sodium	1200	10	mg/l	EPA 200.7	
pH	10	0.10	pH Units	SM4500	O-04
Total Dissolved Solids	2600	55	mg/l	TDS by SM2540C	
Specific Conductance (EC)	5540	10.0	umhos/cm	SM2510b mod.	
Chloride	1930	50.0	mg/l	EPA 300.0	
Sulfate as SO4	454	5.00	mg/l	EPA 300.0	

Sample ID: PW-0 **Laboratory ID:** T183598-04

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	45	10	ug/l	200.8	
Barium	55	10	ug/l	200.8	
Zinc	92	10	ug/l	200.8	
Calcium	100	10	mg/l	EPA 200.7	
Potassium	25	10	mg/l	EPA 200.7	
Sodium	1100	10	mg/l	EPA 200.7	
pH	7.9	0.10	pH Units	SM4500	O-04
Total Dissolved Solids	2600	55	mg/l	TDS by SM2540C	
Specific Conductance (EC)	6170	10.0	umhos/cm	SM2510b mod.	
Fluoride	5.82	0.500	mg/l	EPA 300.0	
Chloride	2100	50.0	mg/l	EPA 300.0	
Sulfate as SO4	698	50.0	mg/l	EPA 300.0	

Sample ID: PW-2 **Laboratory ID:** T183598-05

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	34	10	ug/l	200.8	
Barium	41	10	ug/l	200.8	
Calcium	55	10	mg/l	EPA 200.7	
Potassium	11	10	mg/l	EPA 200.7	

Northstar Environmental Remediation
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Lake Forest CA, 92630

Project: Genesis Solar Groundwater
Project Number: 196-004-06
Project Manager: Arlin Brewster

Reported:
12/21/18 10:53

Sample ID: PW-2 **Laboratory ID:** T183598-05

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Sodium	690	10	mg/l	EPA 200.7	
pH	8.1	0.10	pH Units	SM4500	O-04
Total Dissolved Solids	1900	55	mg/l	TDS by SM2540C	
Specific Conductance (EC)	3580	10.0	umhos/cm	SM2510b mod.	
Fluoride	6.16	0.500	mg/l	EPA 300.0	
Chloride	895	50.0	mg/l	EPA 300.0	
Sulfate as SO4	454	5.00	mg/l	EPA 300.0	

Sample ID: DM-1 **Laboratory ID:** T183598-06

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	10	10	ug/l	200.8	
Barium	31	10	ug/l	200.8	
Calcium	260	10	mg/l	EPA 200.7	
Magnesium	68	10	mg/l	EPA 200.7	
Potassium	33	10	mg/l	EPA 200.7	
Sodium	4800	10	mg/l	EPA 200.7	
Total Dissolved Solids	11000	55	mg/l	TDS by SM2540C	
pH	7.7	0.10	pH Units	SM4500	O-04
Specific Conductance (EC)	17400	10.0	umhos/cm	SM2510b mod.	
Chloride	8180	100	mg/l	EPA 300.0	
Sulfate as SO4	3280	100	mg/l	EPA 300.0	
Nitrate as NO3	9.00	0.500	mg/l	EPA 300.0	

Sample ID: DM-2 **Laboratory ID:** T183598-07

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Barium	57	10	ug/l	200.8	
Zinc	28	10	ug/l	200.8	
Calcium	240	10	mg/l	EPA 200.7	
Potassium	35	10	mg/l	EPA 200.7	
Magnesium	60	10	mg/l	EPA 200.7	
Sodium	4900	10	mg/l	EPA 200.7	
pH	7.8	0.10	pH Units	SM4500	O-04
Total Dissolved Solids	7100	55	mg/l	TDS by SM2540C	

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Project: Genesis Solar Groundwater
Project Number: 196-004-06
Project Manager: Arlin Brewster

Reported:
12/21/18 10:53

Sample ID: DM-2 **Laboratory ID:** T183598-07

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Specific Conductance (EC)	13000	10.0	umhos/cm	SM2510b mod.	
Chloride	5290	100	mg/l	EPA 300.0	
Sulfate as SO4	1770	100	mg/l	EPA 300.0	
Nitrate as NO3	11.4	0.500	mg/l	EPA 300.0	

Sample ID: DM-2 **Laboratory ID:** T183598-07RE1

No Results Detected

Sample ID: DM-3 **Laboratory ID:** T183598-08

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	20	10	ug/l	200.8	
Barium	34	10	ug/l	200.8	
Calcium	280	10	mg/l	EPA 200.7	
Potassium	33	10	mg/l	EPA 200.7	
Magnesium	69	10	mg/l	EPA 200.7	
Sodium	5200	10	mg/l	EPA 200.7	
pH	7.8	0.10	pH Units	SM4500	O-04
Total Dissolved Solids	9700	55	mg/l	TDS by SM2540C	
Specific Conductance (EC)	17100	10.0	umhos/cm	SM2510b mod.	
Chloride	6770	100	mg/l	EPA 300.0	
Sulfate as SO4	2840	100	mg/l	EPA 300.0	
Nitrate as NO3	2.50	0.500	mg/l	EPA 300.0	

Sample ID: DM-3 **Laboratory ID:** T183598-08RE1

No Results Detected

Northstar Environmental Remediation
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Lake Forest CA, 92630

Project: Genesis Solar Groundwater
Project Number: 196-004-06
Project Manager: Arlin Brewster

Reported:
12/21/18 10:53

Sample ID: DUP

Laboratory ID: T183598-09

Analyte	Reporting		Units	Method	Notes
	Result	Limit			
Arsenic	33	10	ug/l	200.8	
Barium	44	10	ug/l	200.8	
Calcium	72	10	mg/l	EPA 200.7	
Potassium	12	10	mg/l	EPA 200.7	
Sodium	950	10	mg/l	EPA 200.7	
Total Dissolved Solids	1800	55	mg/l	TDS by SM2540C	
Oil & Grease	15.4	5.00	mg/l	EPA 1664B	
pH	8.1	0.10	pH Units	SM4500	O-04
Specific Conductance (EC)	3580	10.0	umhos/cm	SM2510b mod.	
Chloride	998	50.0	mg/l	EPA 300.0	
Sulfate as SO4	454	5.00	mg/l	EPA 300.0	



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OBS-1
T183598-01(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	480		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	R-07
Magnesium	140		10	"	"	"	"	"	"	R-07
Potassium	63		10	"	"	"	"	12/13/18	"	
Sodium	12000		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	ND		10	"	"	"	"	"	"	
Barium	14		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	80		10	"	"	"	"	"	"	
Zinc	ND		10	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	23600		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	7.9		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	17000		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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OBS-1
T183598-01(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	7680		100	mg/l	20	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	7130		100	"	"	"	"	"	"	
Nitrate as NO3	5.52		0.500	"	1	"	"	12/05/18	"	

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Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

TW-1
T183598-02(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	89		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	
Magnesium	ND		10	"	"	"	"	"	"	R-07
Potassium	35		10	"	"	"	"	12/13/18	"	
Sodium	4800		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	20		10	"	"	"	"	"	"	
Barium	15		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	ND		10	"	"	"	"	"	"	R-07

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	13900		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	10		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	8100		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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TW-1
T183598-02(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	6910		100	mg/l	20	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	2400		100	"	"	"	"	"	"	
Nitrate as NO3	ND		0.500	"	1	"	"	12/05/18	"	

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 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

TW-2

T183598-03(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	87		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	
Magnesium	ND		10	"	"	"	"	"	"	R-07
Potassium	30		10	"	"	"	"	12/13/18	"	
Sodium	1200		10	"	"	"	"	12/13/18	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	11		10	"	"	"	"	"	"	
Barium	40		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	39		10	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	5540		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	10		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	2600		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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TW-2
T183598-03(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	1930		50.0	mg/l	10	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	454		5.00	"	1	"	"	12/05/18	"	
Nitrate as NO3	ND		0.500	"	"	"	"	"	"	

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 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

PW-0

T183598-04(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	100		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	R-07
Magnesium	ND		10	"	"	"	"	"	"	R-07
Potassium	25		10	"	"	"	"	12/13/18	"	
Sodium	1100		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	45		10	"	"	"	"	"	"	
Barium	55		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	92		10	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	6170		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	7.9		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	2600		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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Northstar Environmental Remediation 26225 Enterprise Court Lake Forest CA, 92630	Project: Genesis Solar Groundwater Project Number: 196-004-06 Project Manager: Arlin Brewster	Reported: 12/21/18 10:53
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PW-0

T183598-04(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Fluoride	5.82		0.500	mg/l	1	8120528	12/05/18	12/05/18	EPA 300.0	
Chloride	2100		50.0	"	10	"	"	12/06/18	"	
Sulfate as SO4	698		50.0	"	"	"	"	"	"	
Nitrate as NO3	ND		0.500	"	1	"	"	12/05/18	"	



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Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

PW-2
T183598-05(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	55		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	R-07
Magnesium	ND		10	"	"	"	"	"	"	R-07
Potassium	11		10	"	"	"	"	12/13/18	"	
Sodium	690		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	34		10	"	"	"	"	"	"	
Barium	41		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	ND		10	"	"	"	"	"	"	R-07

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	3580		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	8.1		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	1900		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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PW-2
T183598-05(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Fluoride	6.16		0.500	mg/l	1	8120528	12/05/18	12/05/18	EPA 300.0	
Chloride	895		50.0	"	10	"	"	12/06/18	"	
Sulfate as SO4	454		5.00	"	1	"	"	12/05/18	"	
Nitrate as NO3	ND		0.500	"	"	"	"	"	"	

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 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

DM-1
T183598-06(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	260		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	
Magnesium	68		10	"	"	"	"	"	"	
Potassium	33		10	"	"	"	"	12/13/18	"	
Sodium	4800		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	10		10	"	"	"	"	"	"	
Barium	31		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	ND		10	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	17400		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	7.7		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	11000		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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DM-1
T183598-06(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	8180		100	mg/l	20	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	3280		100	"	"	"	"	"	"	
Nitrate as NO3	9.00		0.500	"	1	"	"	12/05/18	"	

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Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

DM-2
T183598-07(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	240		10	"	"	"	"	12/13/18	"	
Iron	ND		20	"	"	"	"	"	"	R-07
Magnesium	60		10	"	"	"	"	"	"	
Potassium	35		10	"	"	"	"	12/13/18	"	
Sodium	4900		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	ND		10	"	"	"	"	"	"	
Barium	57		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	28		10	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Specific Conductance (EC)	13000		10.0	umhos/cm	1	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	7.8		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	7100		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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DM-2
T183598-07(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	5290		100	mg/l	20	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	1770		100	"	"	"	"	"	"	
Nitrate as NO3	11.4		0.500	"	1	"	"	12/05/18	"	

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DM-2

T183598-07RE1(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8122037	12/20/18	12/20/18	EPA 1664B	
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DM-3
T183598-08(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	280		10	"	"	"	"	"	"	
Iron	ND		20	"	"	"	"	"	"	
Magnesium	69		10	"	"	"	"	"	"	
Potassium	33		10	"	"	"	"	"	"	
Sodium	5200		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	20		10	"	"	"	"	"	"	
Barium	34		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	
Nickel	ND		10	"	"	"	"	"	"	
Selenium	ND		10	"	"	"	"	"	"	
Zinc	ND		10	"	"	"	"	"	"	

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Specific Conductance (EC)	17100		10.0	umhos/cm	1	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	7.8		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	9700		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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DM-3
T183598-08(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	6770		100	mg/l	20	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	2840		100	"	"	"	"	"	"	
Nitrate as NO3	2.50		0.500	"	1	"	"	12/05/18	"	

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DM-3

T183598-08RE1(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	ND		5.00	mg/l	1	8122037	12/20/18	12/20/18	EPA 1664B	
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Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

DUP

T183598-09(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Metals by EPA 200 Series Methods

FILT

Copper	ND		0.50	mg/l	100	8120712	12/07/18	12/13/18	EPA 200.7	
Calcium	72		10	"	"	"	"	"	"	
Iron	ND		20	"	"	"	"	"	"	R-07
Magnesium	ND		10	"	"	"	"	"	"	R-07
Potassium	12		10	"	"	"	"	"	"	
Sodium	950		10	"	"	"	"	"	"	
Antimony	ND		10	ug/l	20	8121043	12/10/18	12/12/18	200.8	
Arsenic	33		10	"	"	"	"	"	"	
Barium	44		10	"	"	"	"	"	"	
Cadmium	ND		10	"	"	"	"	"	"	
Chromium	ND		10	"	"	"	"	"	"	
Cobalt	ND		10	"	"	"	"	"	"	R-07
Lead	ND		10	"	"	"	"	"	"	R-07
Nickel	ND		10	"	"	"	"	"	"	R-07
Selenium	ND		10	"	"	"	"	"	"	
Zinc	ND		10	"	"	"	"	"	"	R-07

Cold Vapor Extraction EPA 7470/7471

Mercury	ND		0.50	ug/l	1	8120723	12/07/18	12/10/18	EPA 7470A Water	
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Conventional Chemistry Parameters by APHA/EPA/ASTM Methods

Oil & Grease	15.4		5.00	mg/l	1	8120722	12/07/18	12/11/18	EPA 1664B	
Specific Conductance (EC)	3580		10.0	umhos/cm	"	8120531	12/05/18	12/05/18	SM2510b mod.	
pH	8.1		0.10	pH Units	"	8120530	12/05/18	12/05/18	SM4500	O-04
Total Dissolved Solids	1800		55	mg/l	"	8120538	12/05/18	12/06/18	TDS by SM2540C	

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DUP
T183598-09(Water)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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SunStar Laboratories, Inc.

Anions by EPA Method 300.0

Chloride	998		50.0	mg/l	10	8120528	12/05/18	12/06/18	EPA 300.0	
Sulfate as SO4	454		5.00	"	1	"	"	12/05/18	"	
Nitrate as NO3	ND		0.500	"	"	"	"	"	"	



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Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

Metals by EPA 200 Series Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120712 - EPA 3010A

Blank (8120712-BLK1)

Prepared: 12/07/18 Analyzed: 12/13/18

Copper	ND		0.005	mg/l							
Calcium	ND		0.10	"							
Iron	ND		0.20	"							
Magnesium	ND		0.10	"							
Potassium	ND		0.10	"							
Sodium	ND		0.10	"							QB-01

LCS (8120712-BS1)

Prepared: 12/07/18 Analyzed: 12/13/18

Copper	0.485		0.005	mg/l	0.500		97.0	85-115			
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Matrix Spike (8120712-MS1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/13/18

FILT

Copper	3.27		0.50	mg/l	0.500	ND	653	70-130			
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Matrix Spike Dup (8120712-MSD1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/13/18

FILT

Copper	3.27		0.50	mg/l	0.500	ND	654	70-130	0.161	30	
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Batch 8121043 - EPA 3010A

Blank (8121043-BLK1)

Prepared: 12/10/18 Analyzed: 12/12/18

Antimony	ND		0.50	ug/l							
Arsenic	ND		0.50	"							
Barium	ND		0.50	"							
Beryllium	ND		0.50	"							
Cadmium	ND		0.50	"							
Chromium	ND		0.50	"							
Cobalt	ND		0.50	"							
Lead	ND		0.50	"							
Nickel	ND		0.50	"							
Selenium	ND		0.50	"							
Zinc	ND		0.50	"							

SunStar Laboratories, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



25712 Commercentre Drive
 Lake Forest, California 92630
 949.297.5020 Phone
 949.297.5027 Fax

Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

Metals by EPA 200 Series Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch 8121043 - EPA 3010A

LCS (8121043-BS1)

Prepared: 12/10/18 Analyzed: 12/12/18

Arsenic	57.1		0.50	ug/l	50.0		114	75-125			
Barium	48.3		0.50	"	50.0		96.6	75-125			
Cadmium	54.0		0.50	"	50.0		108	75-125			
Chromium	46.6		0.50	"	50.0		93.1	75-125			
Lead	47.0		0.50	"	50.0		94.1	75-125			

Matrix Spike (8121043-MS1)

Source: T183598-01

Prepared: 12/10/18 Analyzed: 12/12/18

Arsenic	116		10	ug/l	50.0	6.69	218	75-125			QM-01
Barium	62.3		10	"	50.0	13.6	97.3	75-125			
Cadmium	48.7		10	"	50.0	1.27	94.9	75-125			
Chromium	110		10	"	50.0	2.50	216	75-125			QM-01
Lead	107		10	"	50.0	ND	213	75-125			QM-01

Matrix Spike Dup (8121043-MSD1)

Source: T183598-01

Prepared: 12/10/18 Analyzed: 12/12/18

Arsenic	61.3		10	ug/l	50.0	6.69	109	75-125	61.5	20	QM-01
Barium	60.4		10	"	50.0	13.6	93.6	75-125	3.05	20	
Cadmium	45.9		10	"	50.0	1.27	89.2	75-125	6.10	20	
Chromium	52.8		10	"	50.0	2.50	101	75-125	70.6	20	QM-01
Lead	51.3		10	"	50.0	ND	103	75-125	70.2	20	QM-01

SunStar Laboratories, Inc.

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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

Cold Vapor Extraction EPA 7470/7471 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120723 - EPA 7470A Water

Blank (8120723-BLK1)

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury ND 0.50 ug/l

LCS (8120723-BS1)

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury 5.53 0.50 ug/l 5.00 111 80-120

Matrix Spike (8120723-MS1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury 3.45 0.50 ug/l 5.00 ND 68.9 75-125 QM-05

Matrix Spike Dup (8120723-MSD1)

Source: T183598-01

Prepared: 12/07/18 Analyzed: 12/10/18

Mercury 4.48 0.50 ug/l 5.00 ND 89.5 75-125 26.0 20 QM-05



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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

Conventional Chemistry Parameters by APHA/EPA/ASTM Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120530 - General Preparation

Duplicate (8120530-DUP1) Source: T183598-01 Prepared & Analyzed: 12/05/18

pH	7.91		0.10	pH Units		7.89			0.253	20	
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Batch 8120531 - General Preparation

Duplicate (8120531-DUP1) Source: T183598-01 Prepared & Analyzed: 12/05/18

Specific Conductance (EC)	23600		10.0	umhos/cm		23600			0.00	15	
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Batch 8120538 - General Preparation

Blank (8120538-BLK1) Prepared: 12/05/18 Analyzed: 12/06/18

Total Dissolved Solids	ND		55	mg/l							
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LCS (8120538-BS1) Prepared: 12/05/18 Analyzed: 12/06/18

Total Dissolved Solids	512		55	mg/l	500		102	80-120			
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Duplicate (8120538-DUP1) Source: T183598-01 Prepared: 12/05/18 Analyzed: 12/06/18

Total Dissolved Solids	17100		55	mg/l		16800			1.30	5	
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Batch 8120722 - General Preparation

Blank (8120722-BLK1) Prepared: 12/07/18 Analyzed: 12/11/18

Oil & Grease	ND		5.00	mg/l							
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LCS (8120722-BS1) Prepared: 12/07/18 Analyzed: 12/11/18

Oil & Grease	36.5		5.00	mg/l	40.0		91.2	83-101			
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SunStar Laboratories, Inc.

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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

Conventional Chemistry Parameters by APHA/EPA/ASTM Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120722 - General Preparation

LCS Dup (8120722-BSD1)

Prepared: 12/07/18 Analyzed: 12/11/18

Oil & Grease	33.7		5.00	mg/l	40.0		84.2	83-101	7.98	11	
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Batch 8122037 - General Preparation

Blank (8122037-BLK1)

Prepared & Analyzed: 12/20/18

Oil & Grease	ND		5.00	mg/l							
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LCS (8122037-BS1)

Prepared & Analyzed: 12/20/18

Oil & Grease	33.2		5.00	mg/l	40.0		83.0	83-101			
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LCS Dup (8122037-BSD1)

Prepared & Analyzed: 12/20/18

Oil & Grease	33.9		5.00	mg/l	40.0		84.8	83-101	2.09	11	
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SunStar Laboratories, Inc.

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Northstar Environmental Remediation
 26225 Enterprise Court
 Lake Forest CA, 92630

Project: Genesis Solar Groundwater
 Project Number: 196-004-06
 Project Manager: Arlin Brewster

Reported:
 12/21/18 10:53

Anions by EPA Method 300.0 - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8120528 - General Preparation

Blank (8120528-BLK1)

Prepared & Analyzed: 12/05/18

Fluoride	ND		0.500	mg/l							
Chloride	ND		5.00	"							
Sulfate as SO4	ND		5.00	"							
Nitrate as NO3	ND		0.500	"							

LCS (8120528-BS1)

Prepared & Analyzed: 12/05/18

Chloride	26.4		5.00	mg/l	25.0		106	75-125			
Sulfate as SO4	26.4		5.00	"	25.0		106	75-125			
Nitrate as NO3	26.8		0.500	"	25.0		107	75-125			

Matrix Spike (8120528-MS1)

Source: T183598-01

Prepared: 12/05/18 Analyzed: 12/06/18

Chloride	7920		100	mg/l	25.0	7680	963	75-125		20	QM-02
Sulfate as SO4	7450		100	"	25.0	7130	NR	75-125		20	QM-02
Nitrate as NO3	26.5		0.500	"	25.0	5.52	83.9	75-125			

Matrix Spike Dup (8120528-MSD1)

Source: T183598-01

Prepared: 12/05/18 Analyzed: 12/06/18

Chloride	9040		100	mg/l	25.0	7680	NR	75-125	13.2	20	QM-02
Sulfate as SO4	8560		100	"	25.0	7130	NR	75-125	13.9	20	QM-02
Nitrate as NO3	31.6		0.500	"	25.0	5.52	104	75-125	17.6	20	

SunStar Laboratories, Inc.

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Northstar Environmental Remediation
26225 Enterprise Court
Lake Forest CA, 92630

Project: Genesis Solar Groundwater
Project Number: 196-004-06
Project Manager: Arlin Brewster

Reported:
12/21/18 10:53

Notes and Definitions

- R-07 Reporting limit for this compound(s) has been raised to account for dilution necessary due to high levels of interfering compound(s) and/or matrix affect.
- QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
- QM-02 The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
- QM-01 The % recovery is outside of established control limits due to matrix interference and/or sample dilution due to matrix effect. The batch was accepted based on acceptable LCS recovery.
- QB-01 The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.
- O-04 This sample was received and analyzed outside the EPA recommended holding time.
- FILT The sample was filtered prior to analysis.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the Method Detection Limit (MDL)
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference



SunStar Laboratories, Inc.
 25712 Commercentre Dr
 Lake Forest, CA 92630
 949-297-5020

Chain of Custody Record

Client: Northstar Environmental Remediation
 Address: 26225 Enterprise Court, Lake Forest, CA 92630
 Phone: 949-274-1719 Fax:
 Project Manager: Arlin Brewster

Date: 12/04/18 Page: 1 of 1
 Project Name: Genesis Solar Groundwater
 Collector: Arlin Brewster Client Project #: 196-004-06
 Batch #: 7183528 EDF #: T10000006093

Sample ID	Date Sampled	Time	Sample Type	Container Type	200.7 - Metals: Ca, Cu, Na, K, Fe, Mg (FIELD FILTERED)	200.8 - Metals: Sb, As, Ba, Cd, Cr, Co, Pb, Ni, Se, Zn (F.F.)	300.0 - Chloride, Nitrate, Sulfate	1664 - Oil and Grease	7470A - Mercury	9040 - pH	SM2510B - Conductivity, Specific	SM2540C - Total Dis. Solids	8015M - Therminol (Subcontract)	Deuterium, Oxygen-18 (Subcont)	300.0 - Fluoride	Laboratory ID #	Comments/Preservative	Total # of containers	Chain of Custody seals Y/N/NA			Notes				
																			Received by: (signature)	Date / Time	Seals intact? Y/N/NA					
23a	12/04/18	1025	W	Various	X	X	X	X	X	X	X	X	X	X	01			66	Y	Y	NA	** Deuterium & Oxygen-18 subcontract has 10 day TAT				
OBS-1		1100	W	Various	X	X	X	X	X	X	X	X	X	X	02											
TW-1		0900	W	Various	X	X	X	X	X	X	X	X	X	X	03											
TW-2		0825	W	Various	X	X	X	X	X	X	X	X	X	X	04											
PW-0		0835	W	Various	X	X	X	X	X	X	X	X	X	X	05											
PW-2		0630	W	Various	X	X	X	X	X	X	X	X	X	X	06											
DM-1		0700	W	Various	X	X	X	X	X	X	X	X	X	X	07											
DM-2		0730	W	Various	X	X	X	X	X	X	X	X	X	X	08											
DM-3		N/A	W	Various	X	X	X	X	X	X	X	X	X	X	09											
DUP		N/A	W	Various											10											
Field Blank		N/A	W	Various											11											
Trip Blank		N/A	W	Various											12											
																			Received good condition/cold	2.3			Reporting limits must match previous reports			
																			Turn around time: Standard **	3.6						
																				2.5						

Relinquished by: (signature) [Signature] Date / Time 12/05/18 @ 1050

Relinquished by: (signature) [Signature] Date / Time 12:51P 10:50

Received by: (signature) [Signature] Date / Time

Received by: (signature) [Signature] Date / Time

Received by: (signature) [Signature] Date / Time

Sample disposal Instructions: Disposal @ \$2.00 each _____ Return to client _____ Pickup _____

SAMPLE RECEIVING REVIEW SHEET

Batch/Work Order #: 7183598

Client Name: NORTHSTAR ENV.

Project: GENESIS SOLAR GROUNDWATER

Delivered by: Client SunStar Courier GSO FedEx Other

If Courier, Received by: _____

Date/Time Courier Received: _____

Lab Received by: SUNNY

Date/Time Lab Received: 12-5-18 / 10:50

Total number of coolers received: 3

Temperature:	Cooler #1	1.1	°C +/- the CF (1.2°C) =	2.3	°C corrected temperature
Temperature:	Cooler #2	2.4	°C +/- the CF (1.2°C) =	3.6	°C corrected temperature
Temperature:	Cooler #3	1.3	°C +/- the CF (1.2°C) =	2.5	°C corrected temperature

Temperature criteria = ≤ 6°C (no frozen containers) Within criteria? Yes No

IF NO:

Samples received on ice? Yes No → Complete Non-Conformance Sheet

If on ice, samples received same day collected? Yes → Acceptable No → Complete Non-Conformance Sheet

- Custody seals intact on cooler/sample Yes No* N/A
- Sample containers intact Yes No*
- Sample labels match Chain of Custody IDs Yes No*
- Total number of containers received match COC Yes No*
- Proper containers received for analyses requested on COC Yes No*
- Proper preservative indicated on COC/containers for analyses requested Yes No* N/A
- Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times Yes No*

* Complete Non-Conformance Receiving Sheet if checked Cooler/Sample Review - Initials and date: SL 12-5-18

Comments: _____



WORK ORDER

T183598

Client: Northstar Environmental Remediation
Project: Genesis Solar Groundwater

Project Manager: Joann Marroquin
Project Number: 196-004-06

Report To:

Northstar Environmental Remediation
 Arlin Brewster
 26225 Enterprise Court
 Lake Forest, CA 92630

Date Due: 12/12/18 17:00 (5 day TAT)

Received By: Sunny Lounethone

Date Received: 12/05/18 10:50

Logged In By: Sunny Lounethone

Date Logged In: 12/05/18 11:28

Samples Received at: **2.3°C**

Custody Seals No Received On Ice Yes
 Containers Intact Yes
 COC/Labels Agree Yes
 Preservation Confir Yes

Analysis	Due	TAT	Expires	Comments
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T183598-01 OBS-1 [Water] Sampled 12/04/18 10:25 (GMT-08:00) Pacific Time (US &

1664	12/12/18 15:00	5	01/01/19 10:25	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 10:25	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 10:25	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 10:25	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 10:25	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 10:25	
Conductivity	12/12/18 15:00	5	01/01/19 10:25	
pH water 9040	12/12/18 15:00	5	12/05/18 10:25	
TDS-160.1	12/12/18 15:00	5	12/11/18 10:25	

T183598-02 TW-1 [Water] Sampled 12/04/18 11:00 (GMT-08:00) Pacific Time (US &

1664	12/12/18 15:00	5	01/01/19 11:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 11:00	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 11:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 11:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 11:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 11:00	
Conductivity	12/12/18 15:00	5	01/01/19 11:00	
pH water 9040	12/12/18 15:00	5	12/05/18 11:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 11:00	

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
T183598-03 TW-2 [Water] Sampled 12/04/18 09:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 09:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 09:00	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 09:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 09:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 09:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 09:00	
Conductivity	12/12/18 15:00	5	01/01/19 09:00	
pH water 9040	12/12/18 15:00	5	12/05/18 09:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 09:00	

T183598-04 PW-0 [Water] Sampled 12/04/18 08:25 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 08:25	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 08:25	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 08:25	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 08:25	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 08:25	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 08:25	
Conductivity	12/12/18 15:00	5	01/01/19 08:25	
pH water 9040	12/12/18 15:00	5	12/05/18 08:25	
TDS-160.1	12/12/18 15:00	5	12/11/18 08:25	

T183598-05 PW-2 [Water] Sampled 12/04/18 08:35 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 08:35	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 08:35	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 08:35	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 08:35	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 08:35	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 08:35	
Conductivity	12/12/18 15:00	5	01/01/19 08:35	
pH water 9040	12/12/18 15:00	5	12/05/18 08:35	
TDS-160.1	12/12/18 15:00	5	12/11/18 08:35	

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
T183598-06 DM-1 [Water] Sampled 12/04/18 06:30 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 06:30	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 06:30	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 06:30	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 06:30	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 06:30	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 06:30	
Conductivity	12/12/18 15:00	5	01/01/19 06:30	
pH water 9040	12/12/18 15:00	5	12/05/18 06:30	
TDS-160.1	12/12/18 15:00	5	12/11/18 06:30	

T183598-07 DM-2 [Water] Sampled 12/04/18 07:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 07:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 07:00	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 07:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 07:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 07:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 07:00	
Conductivity	12/12/18 15:00	5	01/01/19 07:00	
pH water 9040	12/12/18 15:00	5	12/05/18 07:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 07:00	

T183598-08 DM-3 [Water] Sampled 12/04/18 07:30 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 07:30	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 07:30	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 07:30	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 07:30	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 07:30	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 07:30	
Conductivity	12/12/18 15:00	5	01/01/19 07:30	
pH water 9040	12/12/18 15:00	5	12/05/18 07:30	
TDS-160.1	12/12/18 15:00	5	12/11/18 07:30	

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
T183598-09 DUP [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 00:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 00:00	Ca,Cu,Na,K,Fe,Mg
200.8	12/12/18 15:00	5	06/02/19 00:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 00:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 00:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 00:00	
Conductivity	12/12/18 15:00	5	01/01/19 00:00	
pH water 9040	12/12/18 15:00	5	12/05/18 00:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 00:00	

T183598-10 FIELD BLANK [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US & [NO ANALYSES]

T183598-11 TRIP BLANK [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US & [NO ANALYSES]

Isotech Laboratories, Inc.

T183598-01 OBS-1 [Water] Sampled 12/04/18 10:25 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 10:25	Deuterium,Oxygen-18
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T183598-02 TW-1 [Water] Sampled 12/04/18 11:00 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 11:00	Deuterium,Oxygen-18
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T183598-03 TW-2 [Water] Sampled 12/04/18 09:00 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 09:00	Deuterium,Oxygen-18
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T183598-04 PW-0 [Water] Sampled 12/04/18 08:25 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 08:25	Deuterium,Oxygen-18
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T183598-05 PW-2 [Water] Sampled 12/04/18 08:35 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 08:35	Deuterium,Oxygen-18
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WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
Isotech Laboratories, Inc.				
T183598-06 DM-1 [Water] Sampled 12/04/18 06:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 06:30	Deuterium,Oxygen-18
T183598-07 DM-2 [Water] Sampled 12/04/18 07:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 07:00	Deuterium,Oxygen-18
T183598-08 DM-3 [Water] Sampled 12/04/18 07:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 07:30	Deuterium,Oxygen-18
T183598-09 DUP [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 00:00	Deuterium,Oxygen-18
TestAmerica (Irvine) Laboratories				
T183598-01 OBS-1 [Water] Sampled 12/04/18 10:25 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 10:25	8015M- Therminol
T183598-02 TW-1 [Water] Sampled 12/04/18 11:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 11:00	8015M- Therminol
T183598-03 TW-2 [Water] Sampled 12/04/18 09:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 09:00	8015M- Therminol
T183598-04 PW-0 [Water] Sampled 12/04/18 08:25 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 08:25	8015M- Therminol
T183598-05 PW-2 [Water] Sampled 12/04/18 08:35 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 08:35	8015M- Therminol
T183598-06 DM-1 [Water] Sampled 12/04/18 06:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 06:30	8015M- Therminol

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
TestAmerica (Irvine) Laboratories				
T183598-07 DM-2 [Water] Sampled 12/04/18 07:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 07:00	8015M- Therminol
T183598-08 DM-3 [Water] Sampled 12/04/18 07:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 07:30	8015M- Therminol
T183598-09 DUP [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 00:00	8015M- Therminol

Reviewed By _____

Date _____

WORK ORDER

T183598

Client: Northstar Environmental Remediation
Project: Genesis Solar Groundwater

Project Manager: Joann Marroquin
Project Number: 196-004-06

Report To:

Northstar Environmental Remediation
 Arlin Brewster
 26225 Enterprise Court
 Lake Forest, CA 92630

Date Due: 12/12/18 17:00 (5 day TAT)

Received By: Sunny Lounethone

Date Received: 12/05/18 10:50

Logged In By: Sunny Lounethone

Date Logged In: 12/05/18 11:28

Samples Received at: **2.3°C**

Custody Seals No Received On Ice Yes

Containers Intact Yes

COC/Labels Agree Yes

Preservation Confir Yes

Analysis	Due	TAT	Expires	Comments
T183598-01 OBS-1 [Water] Sampled 12/04/18 10:25 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 10:25	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 10:25	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 10:25	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 10:25	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 10:25	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 10:25	
Conductivity	12/12/18 15:00	5	01/01/19 10:25	
pH water 9040	12/12/18 15:00	5	12/05/18 10:25	
TDS-160.1	12/12/18 15:00	5	12/11/18 10:25	

T183598-02 TW-1 [Water] Sampled 12/04/18 11:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 11:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 11:00	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 11:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 11:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 11:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 11:00	
Conductivity	12/12/18 15:00	5	01/01/19 11:00	
pH water 9040	12/12/18 15:00	5	12/05/18 11:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 11:00	

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
T183598-03 TW-2 [Water] Sampled 12/04/18 09:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 09:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 09:00	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 09:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 09:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 09:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 09:00	
Conductivity	12/12/18 15:00	5	01/01/19 09:00	
pH water 9040	12/12/18 15:00	5	12/05/18 09:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 09:00	

T183598-04 PW-0 [Water] Sampled 12/04/18 08:25 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 08:25	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 08:25	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 08:25	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 08:25	Chloride,Sulfate,Fluoride only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 08:25	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 08:25	
Conductivity	12/12/18 15:00	5	01/01/19 08:25	
pH water 9040	12/12/18 15:00	5	12/05/18 08:25	
TDS-160.1	12/12/18 15:00	5	12/11/18 08:25	

T183598-05 PW-2 [Water] Sampled 12/04/18 08:35 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 08:35	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 08:35	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 08:35	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 08:35	Chloride,Sulfate,Fluoride only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 08:35	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 08:35	
Conductivity	12/12/18 15:00	5	01/01/19 08:35	
pH water 9040	12/12/18 15:00	5	12/05/18 08:35	
TDS-160.1	12/12/18 15:00	5	12/11/18 08:35	

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
T183598-06 DM-1 [Water] Sampled 12/04/18 06:30 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 06:30	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 06:30	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 06:30	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 06:30	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 06:30	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 06:30	
Conductivity	12/12/18 15:00	5	01/01/19 06:30	
pH water 9040	12/12/18 15:00	5	12/05/18 06:30	
TDS-160.1	12/12/18 15:00	5	12/11/18 06:30	

T183598-07 DM-2 [Water] Sampled 12/04/18 07:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 07:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 07:00	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 07:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 07:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 07:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 07:00	
Conductivity	12/12/18 15:00	5	01/01/19 07:00	
pH water 9040	12/12/18 15:00	5	12/05/18 07:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 07:00	

T183598-08 DM-3 [Water] Sampled 12/04/18 07:30 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 07:30	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 07:30	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 07:30	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 07:30	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 07:30	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 07:30	
Conductivity	12/12/18 15:00	5	01/01/19 07:30	
pH water 9040	12/12/18 15:00	5	12/05/18 07:30	
TDS-160.1	12/12/18 15:00	5	12/11/18 07:30	

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
T183598-09 DUP [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US &				
1664	12/12/18 15:00	5	01/01/19 00:00	Oil & Grease
200.7	12/12/18 15:00	5	06/02/19 00:00	Ca,Cu,Na,K,Fe,Mg (Field Filtered, Report as Dissolved)
200.8	12/12/18 15:00	5	06/02/19 00:00	Sb,As,Ba,Cd,Cr,Co,Pb,Ni,Se,Zn (Field Filtered, Report as Dissolved)
300.0 - F, Cl, Br, SO4	12/12/18 15:00	5	01/01/19 00:00	Chloride,Sulfate only
300.0 - NO2, NO3, PO4	12/12/18 15:00	5	12/06/18 00:00	Nitrate
7470/71 Hg	12/12/18 15:00	5	03/04/19 00:00	
Conductivity	12/12/18 15:00	5	01/01/19 00:00	
pH water 9040	12/12/18 15:00	5	12/05/18 00:00	
TDS-160.1	12/12/18 15:00	5	12/11/18 00:00	

T183598-10 FIELD BLANK [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US & [NO ANALYSES]

T183598-11 TRIP BLANK [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US & [NO ANALYSES]

Isotech Laboratories, Inc.

T183598-01 OBS-1 [Water] Sampled 12/04/18 10:25 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 10:25	Deuterium,Oxygen-18
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T183598-02 TW-1 [Water] Sampled 12/04/18 11:00 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 11:00	Deuterium,Oxygen-18
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T183598-03 TW-2 [Water] Sampled 12/04/18 09:00 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 09:00	Deuterium,Oxygen-18
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T183598-04 PW-0 [Water] Sampled 12/04/18 08:25 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 08:25	Deuterium,Oxygen-18
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T183598-05 PW-2 [Water] Sampled 12/04/18 08:35 (GMT-08:00) Pacific Time (US &

Misc Water Testing #2	12/12/18 15:00	5	06/02/19 08:35	Deuterium,Oxygen-18
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WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
Isotech Laboratories, Inc.				
T183598-06 DM-1 [Water] Sampled 12/04/18 06:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 06:30	Deuterium,Oxygen-18
T183598-07 DM-2 [Water] Sampled 12/04/18 07:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 07:00	Deuterium,Oxygen-18
T183598-08 DM-3 [Water] Sampled 12/04/18 07:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 07:30	Deuterium,Oxygen-18
T183598-09 DUP [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #2	12/12/18 15:00	5	06/02/19 00:00	Deuterium,Oxygen-18
TestAmerica (Irvine) Laboratories				
T183598-01 OBS-1 [Water] Sampled 12/04/18 10:25 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 10:25	8015M- Therminol
T183598-02 TW-1 [Water] Sampled 12/04/18 11:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 11:00	8015M- Therminol
T183598-03 TW-2 [Water] Sampled 12/04/18 09:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 09:00	8015M- Therminol
T183598-04 PW-0 [Water] Sampled 12/04/18 08:25 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 08:25	8015M- Therminol
T183598-05 PW-2 [Water] Sampled 12/04/18 08:35 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 08:35	8015M- Therminol
T183598-06 DM-1 [Water] Sampled 12/04/18 06:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 06:30	8015M- Therminol

WORK ORDER

T183598

Client: Northstar Environmental Remediation	Project Manager: Joann Marroquin
Project: Genesis Solar Groundwater	Project Number: 196-004-06

Analysis	Due	TAT	Expires	Comments
TestAmerica (Irvine) Laboratories				
T183598-07 DM-2 [Water] Sampled 12/04/18 07:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 07:00	8015M- Therminol
T183598-08 DM-3 [Water] Sampled 12/04/18 07:30 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 07:30	8015M- Therminol
T183598-09 DUP [Water] Sampled 12/04/18 00:00 (GMT-08:00) Pacific Time (US &				
Misc Water Testing #1	12/12/18 15:00	5	06/02/19 00:00	8015M- Therminol



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Irvine

17461 Derian Ave

Suite 100

Irvine, CA 92614-5817

Tel: (949)261-1022

TestAmerica Job ID: 440-226404-1

Client Project/Site: T183598

For:

SunStar Laboratories Inc

25712 Commercentre Drive

Lake Forest, California 92630

Attn: Joann Marroquin



Authorized for release by:

12/14/2018 3:46:49 PM

Danielle Roberts, Senior Project Manager

(949)261-1022

danielle.roberts@testamericainc.com

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Have a Question?



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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-226404-1	T183598-01	Water	12/04/18 10:25	12/05/18 14:50
440-226404-2	T183598-02	Water	12/04/18 11:00	12/05/18 14:50
440-226404-3	T183598-03	Water	12/04/18 09:00	12/05/18 14:50
440-226404-4	T183598-04	Water	12/04/18 08:25	12/05/18 14:50
440-226404-5	T183598-05	Water	12/04/18 08:35	12/05/18 14:50
440-226404-6	T183598-06	Water	12/04/18 06:30	12/05/18 14:50
440-226404-7	T183598-07	Water	12/04/18 07:00	12/05/18 14:50
440-226404-8	T183598-08	Water	12/04/18 07:30	12/05/18 14:50
440-226404-9	T183598-09	Water	12/04/18 00:00	12/05/18 14:50



Case Narrative

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Job ID: 440-226404-1

Laboratory: TestAmerica Irvine

Narrative

**Job Narrative
440-226404-1**

Comments

No additional comments.

Receipt

The samples were received on 12/5/2018 2:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.5° C.

GC Semi VOA

Method(s) 8015B: Insufficient 8015-DRO sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with batch preparation batch 440-515342 and analytical batch 440-515553. The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch: (LCS 440-515342/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method(s) 3510C: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 3510C 8015B TH preparation batch 440-515342.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Client Sample ID: T183598-01

Lab Sample ID: 440-226404-1

No Detections.

Client Sample ID: T183598-02

Lab Sample ID: 440-226404-2

No Detections.

Client Sample ID: T183598-03

Lab Sample ID: 440-226404-3

No Detections.

Client Sample ID: T183598-04

Lab Sample ID: 440-226404-4

No Detections.

Client Sample ID: T183598-05

Lab Sample ID: 440-226404-5

No Detections.

Client Sample ID: T183598-06

Lab Sample ID: 440-226404-6

No Detections.

Client Sample ID: T183598-07

Lab Sample ID: 440-226404-7

No Detections.

Client Sample ID: T183598-08

Lab Sample ID: 440-226404-8

No Detections.

Client Sample ID: T183598-09

Lab Sample ID: 440-226404-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Irvine



Client Sample Results

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Client Sample ID: T183598-01

Date Collected: 12/04/18 10:25

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-1

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 13:54	1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 13:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	59		45 - 120				12/06/18 09:50	12/07/18 13:54	1

Client Sample ID: T183598-02

Date Collected: 12/04/18 11:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-2

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.099	0.020	mg/L		12/06/18 09:50	12/07/18 14:15	1
1,1'-Biphenyl	ND		0.099	0.020	mg/L		12/06/18 09:50	12/07/18 14:15	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	62		45 - 120				12/06/18 09:50	12/07/18 14:15	1

Client Sample ID: T183598-03

Date Collected: 12/04/18 09:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-3

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 14:36	1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 14:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	59		45 - 120				12/06/18 09:50	12/07/18 14:36	1

Client Sample ID: T183598-04

Date Collected: 12/04/18 08:25

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-4

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 14:57	1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 14:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	62		45 - 120				12/06/18 09:50	12/07/18 14:57	1

Client Sample ID: T183598-05

Date Collected: 12/04/18 08:35

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-5

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.11	0.021	mg/L		12/06/18 09:50	12/07/18 15:18	1
1,1'-Biphenyl	ND		0.11	0.021	mg/L		12/06/18 09:50	12/07/18 15:18	1

TestAmerica Irvine

Client Sample Results

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Client Sample ID: T183598-05

Date Collected: 12/04/18 08:35

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-5

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	61		45 - 120	12/06/18 09:50	12/07/18 15:18	1

Client Sample ID: T183598-06

Date Collected: 12/04/18 06:30

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-6

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 15:38	1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 15:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	56		45 - 120	12/06/18 09:50	12/07/18 15:38	1

Client Sample ID: T183598-07

Date Collected: 12/04/18 07:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-7

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 15:59	1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 15:59	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	62		45 - 120	12/06/18 09:50	12/07/18 15:59	1

Client Sample ID: T183598-08

Date Collected: 12/04/18 07:30

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-8

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 16:20	1
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 16:20	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	60		45 - 120	12/06/18 09:50	12/07/18 16:20	1

Client Sample ID: T183598-09

Date Collected: 12/04/18 00:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-9

Matrix: Water

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene, 1,1'-oxybis-	ND		0.10	0.021	mg/L		12/06/18 09:50	12/07/18 16:41	1
1,1'-Biphenyl	ND		0.10	0.021	mg/L		12/06/18 09:50	12/07/18 16:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>n</i> -Octacosane	67		45 - 120	12/06/18 09:50	12/07/18 16:41	1

TestAmerica Irvine

Surrogate Summary

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	OTCN1 (45-120)
440-226404-1	T183598-01	59
440-226404-2	T183598-02	62
440-226404-3	T183598-03	59
440-226404-4	T183598-04	62
440-226404-5	T183598-05	61
440-226404-6	T183598-06	56
440-226404-7	T183598-07	62
440-226404-8	T183598-08	60
440-226404-9	T183598-09	67
LCS 440-515342/2-A	Lab Control Sample	59
LCSD 440-515342/3-A	Lab Control Sample Dup	61
MB 440-515342/1-A	Method Blank	62

Surrogate Legend

OTCN = n-Octacosane

Method Summary

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Method	Method Description	Protocol	Laboratory
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL IRV
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Lab Chronicle

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Client Sample ID: T183598-01

Date Collected: 12/04/18 10:25

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			985 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 13:54	LMB	TAL IRV

Client Sample ID: T183598-02

Date Collected: 12/04/18 11:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			1010 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 14:15	LMB	TAL IRV

Client Sample ID: T183598-03

Date Collected: 12/04/18 09:00

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			980 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 14:36	LMB	TAL IRV

Client Sample ID: T183598-04

Date Collected: 12/04/18 08:25

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			990 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 14:57	LMB	TAL IRV

Client Sample ID: T183598-05

Date Collected: 12/04/18 08:35

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			945 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 15:18	LMB	TAL IRV

Client Sample ID: T183598-06

Date Collected: 12/04/18 06:30

Date Received: 12/05/18 14:50

Lab Sample ID: 440-226404-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			995 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 15:38	LMB	TAL IRV

TestAmerica Irvine

Lab Chronicle

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Client Sample ID: T183598-07

Lab Sample ID: 440-226404-7

Date Collected: 12/04/18 07:00

Matrix: Water

Date Received: 12/05/18 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			985 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 15:59	LMB	TAL IRV

Client Sample ID: T183598-08

Lab Sample ID: 440-226404-8

Date Collected: 12/04/18 07:30

Matrix: Water

Date Received: 12/05/18 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			1000 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 16:20	LMB	TAL IRV

Client Sample ID: T183598-09

Lab Sample ID: 440-226404-9

Date Collected: 12/04/18 00:00

Matrix: Water

Date Received: 12/05/18 14:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3510C			960 mL	1 mL	515342	12/06/18 09:50	HCK	TAL IRV
Total/NA	Analysis	8015B		1			515553	12/07/18 16:41	LMB	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

QC Sample Results

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 440-515342/1-A
Matrix: Water
Analysis Batch: 515553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 515342

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil	Fac
	Result	Qualifier								
Benzene, 1,1'-oxybis-	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 11:08	1	
1,1'-Biphenyl	ND		0.10	0.020	mg/L		12/06/18 09:50	12/07/18 11:08	1	
Surrogate	MB	MB	Limits			D	Prepared	Analyzed	Dil	Fac
%Recovery	Result	Qualifier								
<i>n</i> -Octacosane	62		45 - 120				12/06/18 09:50	12/07/18 11:08	1	

Lab Sample ID: LCS 440-515342/2-A
Matrix: Water
Analysis Batch: 515553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 515342

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits			
		Result	Qualifier							
Benzene, 1,1'-oxybis-	0.100	0.0624	J	mg/L		62	50 - 115			
1,1'-Biphenyl	0.100	0.0515	J	mg/L		51	50 - 115			
Surrogate	LCS	LCS	Limits			D	Prepared	Analyzed	Dil	Fac
%Recovery	Result	Qualifier								
<i>n</i> -Octacosane	59		45 - 120							

Lab Sample ID: LCSD 440-515342/3-A
Matrix: Water
Analysis Batch: 515553

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 515342

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	Limits	RPD	Limit	
		Result	Qualifier							
Benzene, 1,1'-oxybis-	0.100	0.0627	J	mg/L		63	50 - 115	1	30	
1,1'-Biphenyl	0.100	0.0522	J	mg/L		52	50 - 115	1	30	
Surrogate	LCSD	LCSD	Limits			D	Prepared	Analyzed	Dil	Fac
%Recovery	Result	Qualifier								
<i>n</i> -Octacosane	61		45 - 120							

QC Association Summary

Client: SunStar Laboratories Inc
 Project/Site: T183598

TestAmerica Job ID: 440-226404-1

GC Semi VOA

Prep Batch: 515342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226404-1	T183598-01	Total/NA	Water	3510C	
440-226404-2	T183598-02	Total/NA	Water	3510C	
440-226404-3	T183598-03	Total/NA	Water	3510C	
440-226404-4	T183598-04	Total/NA	Water	3510C	
440-226404-5	T183598-05	Total/NA	Water	3510C	
440-226404-6	T183598-06	Total/NA	Water	3510C	
440-226404-7	T183598-07	Total/NA	Water	3510C	
440-226404-8	T183598-08	Total/NA	Water	3510C	
440-226404-9	T183598-09	Total/NA	Water	3510C	
MB 440-515342/1-A	Method Blank	Total/NA	Water	3510C	
LCS 440-515342/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 440-515342/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 515553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-226404-1	T183598-01	Total/NA	Water	8015B	515342
440-226404-2	T183598-02	Total/NA	Water	8015B	515342
440-226404-3	T183598-03	Total/NA	Water	8015B	515342
440-226404-4	T183598-04	Total/NA	Water	8015B	515342
440-226404-5	T183598-05	Total/NA	Water	8015B	515342
440-226404-6	T183598-06	Total/NA	Water	8015B	515342
440-226404-7	T183598-07	Total/NA	Water	8015B	515342
440-226404-8	T183598-08	Total/NA	Water	8015B	515342
440-226404-9	T183598-09	Total/NA	Water	8015B	515342
MB 440-515342/1-A	Method Blank	Total/NA	Water	8015B	515342
LCS 440-515342/2-A	Lab Control Sample	Total/NA	Water	8015B	515342
LCSD 440-515342/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	515342

Definitions/Glossary

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: SunStar Laboratories Inc
Project/Site: T183598

TestAmerica Job ID: 440-226404-1

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015B	3510C	Water	1,1'-Biphenyl
8015B	3510C	Water	Benzene, 1,1'-oxybis-

Mouton, Alain

From: Joann Marroquin <joann@sunstarlabs.com>
Sent: Thursday, December 06, 2018 8:15 PM
To: Mouton, Alain
Cc: Roberts, Danielle C.
Subject: RE: TestAmerica Sample Login Confirmation files from 440-226404 T183598

-External Email-

Alain,

Please set these to your std TAT, no rush.

Thank you,
Joann

Joann Marroquin
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From: Mouton, Alain [<mailto:alain.mouton@testamericainc.com>]
Sent: Thursday, December 06, 2018 5:10 PM
To: Joann Marroquin; Rose Fasheh
Cc: Danielle C. Roberts
Subject: TestAmerica Sample Login Confirmation files from 440-226404 T183598

Hello,

Attached, please find the Sample Confirmation files for job 440-226404; T183598

Please feel free to contact me or your PM, Danielle Roberts, if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from

TestAmerica on this project by visiting our website at: [Project Feedback](#)

ALAIN MOUTON
Project Manager Assistant

TestAmerica Irvine
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 949.261,1022

Reference: [486753]
Attachments: 2

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SUBCONTRACT ORDER

SunStar Laboratories, Inc.

T183598

SENDING LABORATORY:

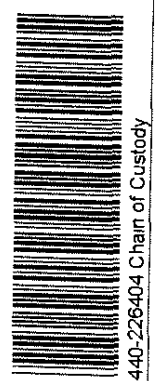
SunStar Laboratories, Inc.
25712 Commercentre Drive
Lake Forest, CA 92630
Phone: (949) 297-5020
Fax: (949) 297-5027
Project Manager: Joann Marroquin

RECEIVING LABORATORY:

TestAmerica (Irvine) Laboratories
17461 Derian Ave, #100
Irvine, CA 92614
Phone : (949) 261-1022
Fax: N/A

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: T183598-01	Water	Sampled: 12/04/18 10:25		
Misc Water Testing #1	12/12/18 15:00	06/02/19 10:25		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-02	Water	Sampled: 12/04/18 11:00		
Misc Water Testing #1	12/12/18 15:00	06/02/19 11:00		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-03	Water	Sampled: 12/04/18 09:00		
Misc Water Testing #1	12/12/18 15:00	06/02/19 09:00		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-04	Water	Sampled: 12/04/18 08:25		
Misc Water Testing #1	12/12/18 15:00	06/02/19 08:25		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-05	Water	Sampled: 12/04/18 08:35		
Misc Water Testing #1	12/12/18 15:00	06/02/19 08:35		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-06	Water	Sampled: 12/04/18 06:30		
Misc Water Testing #1	12/12/18 15:00	06/02/19 06:30		8015M- Therminol
<i>Containers Supplied:</i>				

LAB
12/15/18



Released By: Date: 12-5-18 1450 Received By: Date: 12/5/18 1450

Released By: _____ Date: _____ Received By: _____ Date: _____

SUBCONTRACT ORDER

SunStar Laboratories, Inc.

T183598

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: T183598-07	Water	Sampled:12/04/18 07:00		
Misc Water Testing #1	12/12/18 15:00	06/02/19 07:00		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-08	Water	Sampled:12/04/18 07:30		
Misc Water Testing #1	12/12/18 15:00	06/02/19 07:30		8015M- Therminol
<i>Containers Supplied:</i>				
Sample ID: T183598-09	Water	Sampled:12/04/18 00:00		
Misc Water Testing #1	12/12/18 15:00	06/02/19 00:00		8015M- Therminol
<i>Containers Supplied:</i>				

Released By  Date 12-5-18 1450 Received By  TAIRI Date 12/5/18 1450

Released By _____ Date _____ Received By _____ Date _____

4.0/3.5 1293 Page 4 of 4 DM
12/14/2018

Login Sample Receipt Checklist

Client: SunStar Laboratories Inc

Job Number: 440-226404-1

Login Number: 226404

List Number: 1

Creator: Bonta, Lucia F

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Lab #: 694813 Job #: 40280 IS-101168 Co. Job#:
Sample Name: T183598-01 Co. Lab#:
Company: SunStar Laboratories, Inc
API/Well:
Container: 250ml Plastic Bottle
Field/Site Name: T183598
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 12/04/2018 10:25 Date Received: 12/07/2018 Date Reported: 12/20/2018

δ D of water ----- -61.4 ‰ relative to VSMOW

δ ¹⁸O of water ----- -6.79 ‰ relative to VSMOW

Tritium content of water ----- na

δ ¹³C of DIC ----- na

¹⁴C content of DIC ----- na

δ ¹⁵N of nitrate ----- na

δ ¹⁸O of nitrate ----- na

δ ³⁴S of sulfate ----- na

δ ¹⁸O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694814 Job #: 40280 IS-101168 Co. Job#:
Sample Name: T183598-02 Co. Lab#:
Company: SunStar Laboratories, Inc
API/Well:
Container: 250ml Plastic Bottle
Field/Site Name: T183598
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 12/04/2018 11:00 Date Received: 12/07/2018 Date Reported: 12/20/2018

δ D of water ----- -63.5 ‰ relative to VSMOW

δ ¹⁸O of water ----- -7.97 ‰ relative to VSMOW

Tritium content of water ----- na

δ ¹³C of DIC ----- na

¹⁴C content of DIC ----- na

δ ¹⁵N of nitrate ----- na

δ ¹⁸O of nitrate ----- na

δ ³⁴S of sulfate ----- na

δ ¹⁸O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694815 Job #: 40280 IS-101168 Co. Job#: _____
 Sample Name: T183598-03 Co. Lab#: _____
 Company: SunStar Laboratories, Inc
 API/Well: _____
 Container: 250ml Plastic Bottle
 Field/Site Name: T183598
 Location: _____
 Formation/Depth: _____
 Sampling Point: _____
 Date Sampled: 12/04/2018 9:00 Date Received: 12/07/2018 Date Reported: 12/20/2018

δD of water	-----	-75.9 ‰ relative to VSMOW
δ ¹⁸ O of water	-----	-10.05 ‰ relative to VSMOW
Tritium content of water	-----	na
δ ¹³ C of DIC	-----	na
¹⁴ C content of DIC	-----	na
δ ¹⁵ N of nitrate	-----	na
δ ¹⁸ O of nitrate	-----	na
δ ³⁴ S of sulfate	-----	na
δ ¹⁸ O of sulfate	-----	na
Vacuum Distilled? *	-----	No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694816 Job #: 40280 IS-101168 Co. Job#:
Sample Name: T183598-04 Co. Lab#:
Company: SunStar Laboratories, Inc
API/Well:
Container: 250ml Plastic Bottle
Field/Site Name: T183598
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 12/04/2018 8:25 Date Received: 12/07/2018 Date Reported: 12/20/2018

δ D of water ----- -76.3 ‰ relative to VSMOW
 δ ¹⁸O of water ----- -10.01 ‰ relative to VSMOW
Tritium content of water ----- na
 δ ¹³C of DIC ----- na
¹⁴C content of DIC ----- na
 δ ¹⁵N of nitrate ----- na
 δ ¹⁸O of nitrate ----- na
 δ ³⁴S of sulfate ----- na
 δ ¹⁸O of sulfate ----- na
Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694817 Job #: 40280 IS-101168 Co. Job#:
 Sample Name: T183598-05 Co. Lab#:
 Company: SunStar Laboratories, Inc
 API/Well:
 Container: 250ml Plastic Bottle
 Field/Site Name: T183598
 Location:
 Formation/Depth:
 Sampling Point:
 Date Sampled: 12/04/2018 8:35 Date Received: 12/07/2018 Date Reported: 12/20/2018

δD of water	-----	-77.9 ‰ relative to VSMOW
δ ¹⁸ O of water	-----	-10.24 ‰ relative to VSMOW
Tritium content of water	-----	na
δ ¹³ C of DIC	-----	na
¹⁴ C content of DIC	-----	na
δ ¹⁵ N of nitrate	-----	na
δ ¹⁸ O of nitrate	-----	na
δ ³⁴ S of sulfate	-----	na
δ ¹⁸ O of sulfate	-----	na
Vacuum Distilled? *	-----	No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694818 Job #: 40280 IS-101168 Co. Job#: _____
 Sample Name: T183598-06 Co. Lab#: _____
 Company: SunStar Laboratories, Inc
 API/Well: _____
 Container: 250ml Plastic Bottle
 Field/Site Name: T183598
 Location: _____
 Formation/Depth: _____
 Sampling Point: _____
 Date Sampled: 12/04/2018 6:30 Date Received: 12/07/2018 Date Reported: 12/20/2018

δD of water ----- -70.1 ‰ relative to VSMOW

δ¹⁸O of water ----- -8.55 ‰ relative to VSMOW

Tritium content of water ----- na

δ¹³C of DIC ----- na

¹⁴C content of DIC ----- na

δ¹⁵N of nitrate ----- na

δ¹⁸O of nitrate ----- na

δ³⁴S of sulfate ----- na

δ¹⁸O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694819 Job #: 40280 IS-101168 Co. Job#: _____
 Sample Name: T183598-07 Co. Lab#: _____
 Company: SunStar Laboratories, Inc
 API/Well: _____
 Container: 250ml Plastic Bottle
 Field/Site Name: T183598
 Location: _____
 Formation/Depth: _____
 Sampling Point: _____
 Date Sampled: 12/04/2018 7:00 Date Received: 12/07/2018 Date Reported: 12/20/2018

δD of water ----- -72.3 ‰ relative to VSMOW

δ¹⁸O of water ----- -8.98 ‰ relative to VSMOW

Tritium content of water ----- na

δ¹³C of DIC ----- na

¹⁴C content of DIC ----- na

δ¹⁵N of nitrate ----- na

δ¹⁸O of nitrate ----- na

δ³⁴S of sulfate ----- na

δ¹⁸O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694820 Job #: 40280 IS-101168 Co. Job#:
Sample Name: T183598-08 Co. Lab#:
Company: SunStar Laboratories, Inc
API/Well:
Container: 250ml Plastic Bottle
Field/Site Name: T183598
Location:
Formation/Depth:
Sampling Point:
Date Sampled: 12/04/2018 7:30 Date Received: 12/07/2018 Date Reported: 12/20/2018

δ D of water ----- -70.6 ‰ relative to VSMOW

δ ¹⁸O of water ----- -8.67 ‰ relative to VSMOW

Tritium content of water ----- na

δ ¹³C of DIC ----- na

¹⁴C content of DIC ----- na

δ ¹⁵N of nitrate ----- na

δ ¹⁸O of nitrate ----- na

δ ³⁴S of sulfate ----- na

δ ¹⁸O of sulfate ----- na

Vacuum Distilled? * ----- No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water

Lab #: 694821 Job #: 40280 IS-101168 Co. Job#:
 Sample Name: T183598-09 Co. Lab#:
 Company: SunStar Laboratories, Inc
 API/Well:
 Container: 250ml Plastic Bottle
 Field/Site Name: T183598
 Location:
 Formation/Depth:
 Sampling Point:
 Date Sampled: 12/04/2018 0:00 Date Received: 12/07/2018 Date Reported: 12/20/2018

δD of water	-----	-77.8 ‰ relative to VSMOW
δ ¹⁸ O of water	-----	-10.24 ‰ relative to VSMOW
Tritium content of water	-----	na
δ ¹³ C of DIC	-----	na
¹⁴ C content of DIC	-----	na
δ ¹⁵ N of nitrate	-----	na
δ ¹⁸ O of nitrate	-----	na
δ ³⁴ S of sulfate	-----	na
δ ¹⁸ O of sulfate	-----	na
Vacuum Distilled? *	-----	No

Remarks:

nd = not detected. na = not analyzed.

*Indicates if vacuum distillation was utilized for hydrogen and oxygen isotopic analysis of water