



Colorado River Basin Regional Water Quality Control Board

CERTIFIED MAIL: 9589 0710 5270 0712 3964 05

August 26, 2024

Michael Mailloux
Chevron Environmental Management Company
P.O. Box 1332
San Luis Obispo, California 93406
Email: mmailloux@chevron.com

**SUBJECT: APPROVAL OF REVISED BACKGROUND STUDY WORK PLAN AND
ADDENDUM, PURSUANT TO AMENDED CLEANUP AND ABATEMENT
ORDER, NO. R7-2011-0006**

**SITE: FORMER UNOCAL/GEOTHERMAL ENERGY AND MINERAL
CORPORATION (GEMCOR) FACILITY, 950 WEST LINDSEY ROAD,
CALIPATRIA, IMPERIAL COUNTY
GEOTRACKER GLOBAL I.D. NO. T1000006199**

Dear Mr. Mailloux:

The California Regional Water Quality Control Board, Colorado River Basin Region (Regional Water Board) reviewed the Revised Background Study Work Plan (Revised Work Plan) dated April 25, 2024 and the Background Study Work Plan Addendum (Addendum) dated August 1, 2024, for the former Unocal/Geothermal Energy and Mineral Corporation (GEMCOR) Geothermal Facility, located at 950 West Lindsey Road, in Calipatria, California (Site-Figure 1). The Revised Work Plan was prepared by Arcadis U.S., Inc. (Arcadis) on behalf of Union Oil Company of California (Unocal), a wholly owned subsidiary of Chevron Corporation (Chevron) and was submitted in response to the Regional Water Board letter dated March 25, 2024, which provided comments on the draft version.

The Revised Work Plan details the revised methodology to collect background groundwater data upgradient and cross-gradient of the Site, collection of groundwater samples for a geochemical fingerprinting study to support future site management recommendations related to potential groundwater impacts beneath the Site and proposed an updated background study for arsenic. The Addendum was submitted following the discovery that the revised locations of proposed background study borings

PETER SATIN, CHAIR | PAULA RASMUSSEN, EXECUTIVE OFFICER

(BGS) were in privately-owned roadways instead of the intended Imperial County right-of-way.

The Site currently consists of approximately 80-acres of undeveloped land. The Site previously included administration buildings, a laboratory, a warehouse, and a shop (demolished in 2009) and 65 acres of unlined ponds used for disposal of geothermal brines (from approximately 1964 to 1979). The unlined ponds are believed to have been the primary source of the constituents of concern at the Site. The Regional Water Board issued Cleanup and Abatement Order (CAO) No. R7-2011-0006 to Unocal on January 20, 2011. The CAO identifies lead and arsenic in soil as potential threats to the beneficial uses of groundwater. Six onsite groundwater monitoring wells and four off-site wells are part of the current groundwater monitoring well network for the Site (Figure 2).

The Revised Work Plan outlines a background data study proposing to advance borings at eight off-site locations (Figure 3) to collect electrical conductivity (EC) data and groundwater samples to assess the vertical and spatial distribution of total dissolved solids in groundwater and assess the background water quality. It also includes a response to comments memorandum section detailing Unocal and Arcadis' response to the Regional Water Board's comments in the March 25, 2024 letter and indicates where revisions to the proposed scope have been made within the Revised Work Plan.

The Addendum proposed alternative locations for proposed borings BGS-2 and BGS-8 (Figure 3) after Arcadis discovered that the roadways where these borings were planned are privately owned. Arcadis provided alternative locations for these borings so they could be advanced within the Imperial County right-of-way to avoid work delays and access and permitting issues associated with working on privately-owned land.

REGIONAL WATER BOARD RESPONSE TO COMMENTS

Based on the review of the Revised Work Plan and Addendum, Regional Water Board staff is in concurrence with the submitted documents. Specific responses to Unocal and Arcadis' response to comments are provided in the attached Table 1.

Work Plan and Addendum Approval

The Regional Water Board approves the Revised Work Plan and the proposed boring locations in the Addendum. Prior to implementing the Work Plan, Regional Water Board directs that GEMCOR provide the Regional Water Board staff with a copy of the final fieldwork notice prior to distribution. The Field Work Notice should be provided in both English and Spanish.

In addition, the Regional Water Board directs the submittal of the investigation report documenting the completion of the field activities and results of the background study investigation within 60 days after completion of fieldwork activities. Submit the background study investigation report in electronic format to the State Water Board's

GeoTracker database (California Code of Regulations Title 23, section 3890 et. seq.). This requirement includes all analytical data, monitoring well latitudes, longitudes, and elevations, soil vapor probe latitude and longitudes, water depth(s), site maps, and boring logs. Guidance for electronic information submittal is available at:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/

Enforcement

The submittal of the Revised Work Plan and Addendum constitute an amendment to the requirements of CAO No. R7-2011-0006 originally dated January 20, 2011. All other aspects of Order No. R7-2011-0006 originally dated January 20, 2011, and amendments thereto, remain in full force and effect.

Pursuant to section 13350 of the California Water Code, failure to comply with the requirements of Order No. R7-2011-0006 by the specified due date, including dates in this amendment, may result in civil liability administratively imposed by the Regional Board in an amount up to five thousand dollars (\$5,000) for each day of failure to comply.

Should you have any questions regarding this correspondence, need additional clarification, or would like to have a meeting, please contact Monica Aragon Guzman by phone at (760) 776-8940 or via email at monica.aragon-guzman@waterboards.ca.gov or Angela Garcia at (760) 674-8613 or by email at angela.garcia@waterboards.ca.gov.

Sincerely,



Paula Rasmussen
Executive Officer
Colorado River Basin
Regional Water Quality Control Board

MA/AG

Table 1: Concurrence and Response to Unocal and Arcadis' Comments.

Figure 1: Site Location Map
Figure 2: Groundwater Analytical Results May 17 and 18, 2023
Figure 3: Sample Locations

cc: Via Email

Jeff Lamoure, REHS, Deputy Director of Environmental Health, Imperial County
Division of Environmental Health, jefflamoure@co.imperial.ca.us

Steve Charlton, Program Mgr. Sr., Water Quality, Imperial Irrigation District,
slcharlton@iid.com

Laura Gutierrez, City Manager, City of Calipatria, l_gutierrez@calipatria.com

Audrina Lehman, Certified Project Manager, Arcadis U.S., Inc.,
Audrina.Lehman@arcadis.com.

Table 1: Concurrence and Response to Unocal and Arcadis' Comments

Table 1 - Regional Water Board's Concurrence or Additional Comments to Unocal and Arcadis Response to Comments

Water Board Comments March 25, 2024	Unocal /Arcadis Response to Comments	Regional Water Board Response
General Comments		
<p>1. Geochemical Fingerprinting Analysis</p> <p>Regional Water Board staff recommend total alkalinity analysis including bicarbonate (HCO₃) data concentrations to identify whether this anion is present in regional groundwater near the Site.</p>	<p>The text has been revised in Sections 3.4.2 to specify bicarbonate will be included with the total alkalinity analysis and report.</p>	<p>Regional Water Board staff concurs with the revision.</p>
<p>2. CAO Requirements for Technical Documentation</p> <p>In accordance with the requirements of CAO No. R7-2011-0006, each technical report submitted shall contain a statement of qualifications of the responsible licensed professional(s), as well as the professional's signature and/or stamp of the seal. All technical reports are also required to include a statement by the Discharger, or an authorized representative of the Discharger, certifying under penalty of perjury under the laws of the State of California, that the report is true, complete, and accurate. Latest submittals have not included the required statement of qualifications and the statement by the Discharger.</p>	<p>A statement of qualifications of the licensed professional reviewing and approving the Background Study Work Plan is included and will be for future technical reports. Additionally, a statement by the Discharger, or an authorized representative of the Discharger, certifying under penalty of perjury under the laws of the State of California, that the report is true, complete, and accurate is included.</p>	<p>Regional Water Board staff concurs with the addition of the Statement of Qualifications provided as well as the Discharger statement and recommends that for future submittals the Discharger statement letter be included as an attachment of the submittal instead of a cover letter as to have the submittal be a standalone document. No modifications to the Revised Work Plan are required at this time.</p>
<p>3. Chemical Analysis Method Applicability to Elevated TDS Conditions</p> <p>Regional Water Board staff recommend that the proposed chemical analysis methods for geochemical fingerprinting are applicable for elevated TDS conditions in groundwater, as this condition applies to the Site.</p>	<p>Arcadis has confirmed with the laboratory that the chemical analysis methods for geochemical fingerprinting are applicable for elevated TDS conditions in groundwater.</p>	<p>Regional Water Board Staff has no additional comments regarding this topic.</p>
<p>4. Work Notice:</p> <p>The Regional Water Board requests that a Site-Specific Work Notice (Work Notice) be prepared in English and translated into Spanish for distribution to surrounding properties and nearby field workers. An example of the Work Notice is included in Attachment A. The Work Notice should include a summary of activities to be conducted, their purpose and the appropriate dates for fieldwork. Please provide the Regional Water Board staff with a copy of the work notices in both languages prior to distribution for final review and approval with the revised Work Plan. Once approved, the Work Notices will need to be distributed a minimum of 7 days prior to the start of field activities.</p>	<p>On the behalf of Unocal/GEMCOR, Arcadis will provide a Site-Specific Work Notice in English and translated into Spanish and will be distributed at least 7 days prior to the start of field activities.</p>	<p>Regional Water Board staff directs that the Work Notice be submitted for approval at least two months ahead of the start of the field activities to allow sufficient time for review of the Notice by the Regional Water Board and other applicable State agencies. With the final version of the Work notice to be submitted to the Regional Water Board along with the required notification of field activities at least 15 working days before the start of the field activities. No modifications to the Revised Work Plan are required at this time.</p>

Table 1 - Regional Water Board's Concurrence or Additional Comments to Unocal and Arcadis Response to Comments (Continued)

Water Board Comments March 25, 2024	Unocal /Arcadis Response to Comments	Regional Water Board Response
<p>Specific Comments</p> <p>1. Section 3.3 Drilling Activities Page 6 and Work Plan Figure 2. "Background study boring locations were identified in locations estimated to be upgradient (BGS-4 through BGS-8) of the Site to estimate conditions in the vicinity of the Site vertically and spatially. Three additional locations BGS-1 through BGS-3 were selected to assess groundwater conditions cross-gradient of the Site toward the Salton Sea to evaluate conditions further from the Site. Shallow Site groundwater ultimately discharges into the Salton Sea; therefore, these cross-gradient data will reveal the likely groundwater conditions downgradient of the Site to understand how groundwater conditions may naturally change downgradient of the Site in route toward the Salton Sea".</p> <p>Regional Water Board staff believe that some of the proposed upgradient boring clusters have been placed too close to the Site to obtain viable background data. As such, the Regional Water Board requests that boring cluster BGS-5 be moved approximately 3,000 feet southwest of the currently proposed location and placed along Gentry Road.</p> <p>To evaluate how groundwater conditions may change downgradient from the Site, it would be advisable to advance the proposed boring clusters directly downgradient of the Site. Therefore, the Regional Water Board requests that boring clusters BGS-1 and BGS-2 be moved in this direction as follows:</p> <ul style="list-style-type: none"> • BGS-2 to be moved approximately 3,746 feet northeast of its current proposed location along Severe Road. • BGS-1 to be moved approximately 1.41 miles northeast of its current proposed location along Severe Road. <p>These new locations are more likely to provide representative data of the groundwater downgradient conditions of the Site and any potential influence from nearby power plants.</p>	<p>As requested, the proposed location for BGS-5 has been moved approximately 3,000 feet southeast of the currently proposed location. Arcadis recommends keeping the originally proposed location for BGS-1 in order to assess background groundwater conditions and trends between the site and the Salton Sea without a potential influence of the GEMCOR site nor the geothermal energy production facilities located to the North and West of the site. Arcadis also recommends not moving BGS-2 downgradient of the site as proposed in the RWQCB comment for the same reasons described for BGS-1 above. However, the proposed location for BGS-2 has been moved approximately 1,400 feet south of the previously proposed location to reduce any potential influence from the Cal Energy Facility Unit 5. Figure 2 displaying proposed investigation locations has been updated accordingly. The text has been revised in Section 3.3 to better clarify the objective of proposed locations BGS-1 and BGS-2.</p> <p>Addendum Comment: Upon review of the parcel information associated with the proposed background study locations in preparation for permit submittals, Arcadis discovered the roadways where BGS-2 and BGS-8 were planned to be located are privately owned. Arcadis has revised the placement of these two drilling locations, BGS-2 and BGS-8, from privately owned property into the Imperial County right-of-way. This revision is being made to avoid any potential field work delays from access and permitting issues that may arise from conducting work on privately owned land.</p>	<p>Regional Water Board Staff concur with the revised locations for the proposed BGS-1, BGS-2, BGS-5 and BGS-8, as shown in Figure 3.</p>

Table 1 - Regional Water Board's Concurrence or Additional Comments to Unocal and Arcadis Response to Comments (Continued)

Water Board Comments March 25, 2024	Unocal /Arcadis Response to Comments	Regional Water Board Response
<p>2. Section 3.4.2, Geochemical Fingerprinting Analysis, Page 8, "To compare site conditions to background conditions, the following samples will also be collected from the following wells, the Vail 4A Canal, and the Vail 4 A Drain, during one of the planned 2024 groundwater monitoring events".</p> <p>Regional Water Board staff have identified the presence of the Vail Main Canal running along Vail Road 3 miles south of the Site, as shown below:</p> <p>Additionally, the surface water features running adjacent to the Site are named Vail Lateral 4A and Vail 4A Drain (as shown below adjacent to the Site and under close-up at the southwest corner of the Site). As such, it is unclear what surface water features are proposed for sampling in the Work Plan.</p> <p>Please refer to the Imperial Irrigation District Public Water Map for additional information on these water features at the link below:</p> <p>https://mygis.iid.com/portal/apps/webappviewer/index.html?id=a33cfeb3714f4eb8a1c85320613a2d1b</p> <p>The Regional Water Board recommends that surface water samples be collected at various locations along Vail Lateral 4A channel and the Vail 4A Drain due to the potential variability of ion concentrations within these surface water bodies as the water flows adjacent to the Site. The Regional Water Board recommends that surface water samples be collected as follows:</p> <ul style="list-style-type: none"> - One sample adjacent to proposed BGS-4. - One sample adjacent to MW-4A. - One sample adjacent to well MW-6 and the MW-2 well cluster. - One sample adjacent to MW-8. <p>Please modify the Work Plan accordingly.</p>	<p>The text, tables, and Figure 2 have been updated to reflect the two surface water features running adjacent to the Site are the Vail Lateral 4A and Vail 4A Drain. Arcadis has verified with the Imperial Irrigation District (IID) that Vail 4A Drain contains minimal water throughout the majority of the year and may be dry. However, the water flow in Vail 4A Lateral is contingent upon scheduled irrigation events, which are planned only 24 – 48 hours in advance. Arcadis intends to conduct sample collection based on prevailing climate conditions and the hydrological status of both Vail Lateral 4A and Vail 4A Drain. The text in Section 3.4.2 has been modified to propose collecting surface water samples from the Vail Lateral 4A and Vail 4A Drain adjacent to the following locations assuming they are accessible for sampling and water is present:</p> <ul style="list-style-type: none"> - BGS-4 - MW-4A - MW-6 and MW-2 well clusters. - MW-8 	<p>Regional Water Board Staff concur with the revisions to the text, tables and Figure 2.</p>

Table 1 - Regional Water Board's Concurrence or Additional Comments to Unocal and Arcadis Response to Comments (Continued)

Water Board Comments March 25, 2024	Unocal /Arcadis Response to Comments	Regional Water Board Response
<p>3. Section 3.4.2, Geochemical Fingerprinting Analysis, Page 9, Bullet 2, "Additionally, samples will be collected for geochemical fingerprinting analysis at existing monitoring wells: MW-2, MW-2A, MW2B ad MW-8."</p> <p>Regional Water Board staff requests that geochemical fingerprinting analysis be added to well MW-4A for comparison purposes and data collection in the west-central portion of the Site.</p> <p>Please modify the Work Plan accordingly.</p>	<p>The text in Section 3.4.2 and Table 2 have been revised to include MW-4A in the list of proposed monitoring wells to be sampled for geochemical fingerprinting analysis.</p>	<p>Regional Water Board Staff concur with the revisions to the text in Section 3.4.2 and Table 2.</p>
<p>4. Table 1, Data Collection Objectives, Page 2, "Assess the likelihood for arsenic detected at the Site monitoring well MW-08 to be associated with agricultural activities and unrelated to the site."</p> <p>Regional Water Board staff recommends adding nitrate and nitrite analyses by EPA Method 300.1 or by EPA Method 9056A be added to MW-08 and MW-4A and to propose samples adjacent to this well.</p> <p>Please modify the Work Plan accordingly.</p>	<p>Arcadis recommends deuterium and oxygen isotope analysis of selected water samples be collected in lieu of nitrate and nitrite analyses as a line of evidence to assess the degree that mixing of imported Colorado River water applied to agricultural fields surrounding the site and groundwater beneath the fields is occurring. The text and tables have been revised accordingly.</p>	<p>Regional Water Board Staff concur with and approve the proposed isotope analysis for deuterium and oxygen, as well as the proposed analytical method, and recommend that a site visit be conducted prior to the scheduled sampling activities to confirm the presence of water in the Vail 4A lateral and drain channels to ensure consistency and ensure collection of surface water samples for the comparative evaluation of the isotopes and source definition.</p>
<p>5. Table 2, Sampling and Analysis Summary, BGS-1, Analysis, Dissolved Potassium (Method 6020) and Dissolved Sodium Method 6020."</p> <p>Regional Water Board does not recommend using EPA Method 6020 for the analysis of potassium and sodium per the description of the EPA Method. The Regional Water Board recommends that EPA Method 200.7 be used to analyze these constituents.</p> <p>Please modify the Work Plan accordingly.</p>	<p>Arcadis has confirmed with the laboratory that the chemical analysis EPA Method 200.7 is typical for wastewater discharge and drinking water facilities, while EPA Method 6020 is typical for groundwater and surface water samples. Arcadis recommends analyzing groundwater and surface water samples collected for the background study to be analyzed for dissolved potassium and sodium using EPA Method 6020.</p>	<p>Following the confirmation of the analytical methods, Regional Water Board staff approve the proposed analytical method for dissolved potassium and sodium.</p>

Figure 1: Site Location Map

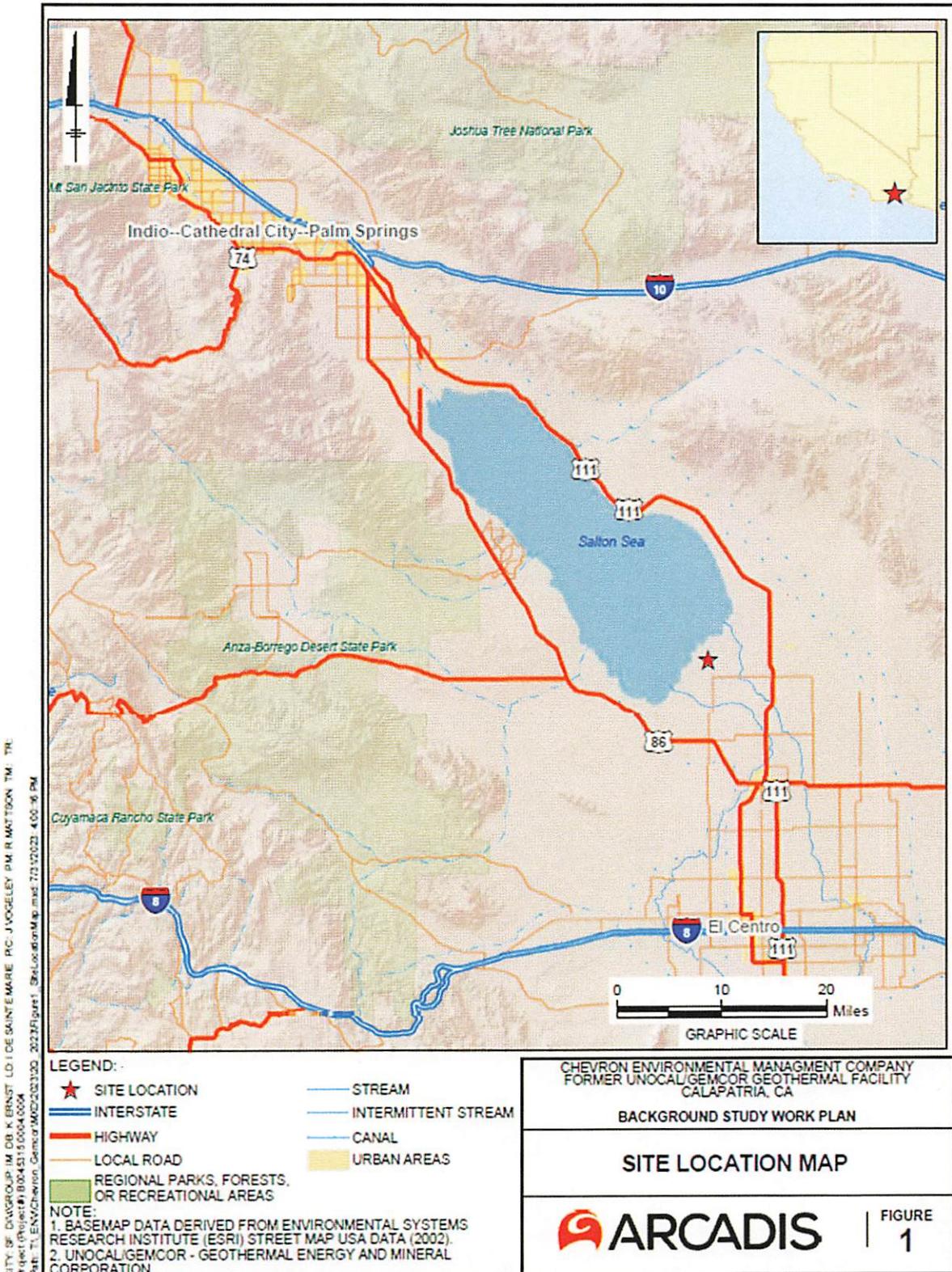


Figure 3: Sample Locations

