

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

MONITORING AND REPORTING PROGRAM R7-2016-0039

**SOUTH HEBER GEOTHERMAL EXPLORATION AREA
HEBER FIELD COMPANY, OWNER, ORMAT NEVADA, INC, OPERATOR
WELLFIELD MUD SUMPS/CONTAINMENT BASINS
947 Dogwood Road, Heber, Imperial County**

Heber Known Geothermal Resource Area (KGRA)

**Location of Discharge: South Heber Geothermal Exploration Area Well Field associated
with Heber Geothermal Complex, Heber KGRA**

A. GENERAL MONITORING

1. The reporting responsibilities of Ormat Nevada, Inc. (the Discharger) are specified in the California Water Code. This self-monitoring program is issued in accordance with Discharge Specification A.15 of Board Order R7-2016-0039 of the Colorado River Basin Regional Water Quality Control Board (Colorado River Basin Water Board). The principal purpose of this Monitoring Program is:
 - a. To document compliance with the Waste Discharge Requirements adopted by the Colorado River Basin Water Board.
 - b. To facilitate self-policing by the Discharger in the prevention and abatement of pollution arising from the discharge.
 - c. To conduct soil analyses.
2. All sampling methods not specified below or in the Monitoring and Reporting Program shall be conducted in accordance with United States Environmental Protection Agency approved procedures. Water and waste analysis shall be performed by a laboratory approved for these analyses by the State Water Resources Control Board Division of Drinking Water
3. The Colorado River Basin Water Board's Executive Officer may alter the monitoring parameters and/or the monitoring frequency during the course of this monitoring program.
4. The Discharger shall arrange the data in tabular form so that the specified information is readily discernible. The data shall be summarized in such a manner as to clearly illustrate whether the Facility is operating in compliance with Waste Discharge Requirements.

5. Each report shall contain this 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."
6. A duly authorized representative of the Discharger may sign the documents if:
 - a. The authorization is made in writing by the Discharger;
 - b. The authorization specifies an individual or person responsible for the overall operation of the regulated disposal system; and
 - c. The written authorization is submitted to the Colorado River Basin Water Board's Executive Officer.

B. MONITORING REPORTS AND OBSERVATION SCHEDULE

"Reporting Period" means the duration separating the submittal of a given type of monitoring report from the time the next iteration of that report is scheduled for submittal. The reporting period is quarterly. An annual report, which is a summary of all monitoring collected during the previous year, shall be submitted to the Region Water Board. The submittal dates for each reporting period shall be as follows:

1. Quarterly Monitoring Reports

- a. 1st Quarter (January 1 through March 31)..... report due April 15
- b. 2nd Quarter (April 1 through June 30)..... report due July 15
- c. 3rd Quarter (July 1 through September 30)..... report due October 15
- d. 4th Quarter (October 1 through December 31)..... report due January 15

2. Annual Summary Report

January 1 through December 31 – report due March 15 of the following year.

C. REPORTS TO BE FILED WITH THE BOARD

Written Quarterly Reports shall be submitted four times per year, in addition to an Annual Summary Report. The reports shall be submitted by the above-specified dates. The following information/data shall be included in each report:

1. Quarterly Report Requirements

- a. General Information

1. Letter of Transmittal – A letter transmitting the essential points shall accompany each report. Such a letter shall include a discussion of any violation found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations. If the discharger has previously submitted a detailed time schedule for correcting violations, a reference to the correspondence transmitting the schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer, at the level of vice-president or above, or by his/her duly authorized representative, if such representative is responsible for the overall operation of the Facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.
2. For all occurrences of spills/leaks of reportable quantities during the reporting period, a summary of each incident detailing the essential points of the cause of the spill/leak shall be transmitted in the Quarterly report. The summary shall include estimated volumes of liquid or solids that have spilled outside containment, and a description of the management practices addressing each spill or leak occurring during the reporting period. The reportable quantity for liquid is 1000 gallons, or more, of geothermal brine.

b. Monitoring of Mud Sumps/Containment Basins

1. Volume of solids discharged into each mud sump/containment basin during reporting period.
2. Volume of waste from all mud sumps/containment basins shipped to an offsite waste management facility during reporting period. Name and location of waste management facility.
3. Description of sampling equipment and methods implemented during monitoring.
4. For each mud sump/containment basin receiving solids during reporting period, collect one discrete sample of discharged solids, and analyze for:

Constituent	Unit	Sample Type
Heavy Metals (Title 22)	mg/kg	Grab
Total Petroleum Hydrocarbons (TPH)	mg/kg	Grab
Inorganic Salts	mg/kg	Grab

5. Description of general conditions of mud sumps/containment basins including any observation of erosion or plant growth.
6. Description of any construction or maintenance done to mud sumps/containment basins.

2. Annual Summary Report

The Discharger shall submit an annual report by March 15th of the following year to the Colorado River Basin Water Board covering the previous monitoring year. The reporting period ends December 31st of each year. This report shall contain:

- a. All monitoring data, presented in tabular form, obtained during the previous four Quarters.
- b. A comprehensive discussion of compliance, and the result of any corrective actions taken or planned, which may be needed to bring the discharge into full compliance with Waste Discharge Requirements.
- c. A written summary of solid waste analyses.

3. Contingency Reporting

- a. The Discharger shall report to the Colorado River Basin Water Board by telephone any spill of reportable quantity within 48 hours after it is discovered. The reportable quantity for geothermal brine at this Facility is 1000 gallons. Any other type of spill, regardless of type or size, is to be reported within 48 hours.

After reporting a spill, a written report shall be filed with the Colorado River Basin Water Board within seven days containing at least the following information:

1. A map showing the location(s) of the discharge.
 2. A description of the nature of the discharge (all pertinent observations and analyses including quantity, duration, etc.).
- b. If either the Discharger or the Colorado River Basin Water Board determines that there is significant physical evidence of a release, the discharger shall immediately notify the Colorado River Basin Water Board (or acknowledge the Colorado River Basin Water Board's determination) and shall carry out the requirements of 3.c. below.
 - c. If the Discharger concludes that a release has been discovered:

1. The Discharger shall, within 90 days of discovering the release, submit a Revised Report of Waste Discharge to the Colorado River Basin Water Board proposing an Evaluation Monitoring Program.
 2. The Discharger shall, within 180 days of discovering the release, submit a Preliminary Engineering Feasibility Study to the Colorado River Basin Water Board detailing the emergency response taken and planned corrective action measures.
- d. Any time the Discharger concludes (or the Colorado River Basin Water Board's Executive Officer concludes) that a solid and/or liquid release has proceeded beyond the Facility boundary, the Discharger shall so notify all affected persons who either own or reside upon the land impacted.
1. Initial notification to affected persons shall be accomplished within seven days of making this conclusion and shall include a description of the Discharger's current knowledge of the lateral and vertical extent of the release.
 2. Subsequent to initial notification, the Discharger shall provide updates to all affected persons within seven days of concluding there has been any material change in the lateral or vertical extent of the release.

D. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the Discharger or laboratory, and shall be retained for a minimum of five years. The period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Colorado River Basin Water Board. Such records shall show the following for each sample.

1. Identity of sample and of the monitoring point from which it was taken, along with the identity of the individual who obtained the sample.
2. Date and time of sampling.
3. Date and time that analyses were started and completed, and the name of the personnel performing each analysis.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagent used.
5. Result of analysis (including calculations), and the Maximum Detection Limit (MDL) for each analysis.

SUMMARY OF MONITORING AND REPORTING REQUIREMENTS

1. The Discharger shall arrange data in tabular form so that the specified information is readily discernible. The data shall be summarized in such a manner as to clearly illustrate whether the Facility is operating in compliance with Waste Discharge Requirements.
2. Each report shall contain the following 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."

3. A duly authorized representative of the Discharger may sign the documents if:
 - a. The authorization is made in writing by the person described above;
 - b. The authorization specified an individual or person having responsibility for the overall operation of the regulated disposal system; and
 - c. The written authorization is submitted to the Colorado River Basin Water Board Executive Officer.

4. Quarterly Monitoring Reports

	<u>Unit</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
a. General Information (C.1.a)			
1. Letter of Transmittal	----	-----	Quarterly
2. Summary of spills	----	-----	Quarterly
b. Monitoring of Mud Sumps/Containment Basins (C.1.b)			
1. Estimate Volume of solids discharged to each mud sump/containment basin during quarter	tons	Quarterly	Quarterly
2. Volume of material removed and shipped to waste facility during quarter	tons	Quarterly	Quarterly
3. Estimate volume of geothermal brine (commingled with drilling mud) discharged in tanks	gallons	Quarterly	Quarterly

c. Sample solids discharged to basins receiving wastes during reporting period (C.1.b.4)

- | | | | |
|---|-------|-----------|-----------|
| 1. Analyze for Heavy Metals (Title 22 metals) | mg/kg | Quarterly | Quarterly |
| 2. Analyze Total Petroleum Hydrocarbons (TPH) | mg/kg | Quarterly | Quarterly |

5. Annual Summary Reports (C.2) shall be submitted to the Colorado River Basin Water Board by March 15th of each year, covering the Reporting Period from January 1 through December 31 of the previous year.

6. Contingency Reports: Notify immediately by telephone, and submit a written report pursuant to Part C.3.a of this Monitoring and Reporting Program.

7. Monitoring Reports

The Discharger shall submit all documents including information requested by the Executive Officer, correspondence and self-monitoring and other reports electronically over the Internet into the State Water Resource Control Board's GeoTracker database. Groundwater monitoring raw data must be uploaded into GeoTracker in the correct data format and assigned to each monitoring well correlated by the monitoring well's geospatially surveyed location. Electronic submission of reports containing soil, vapor or groundwater data are required for subsurface investigation and remediation at sites in the leaking Underground Storage Tank; Spills, Leaks, Investigation and Cleanup; Department of Defense; and Land Disposal Programs, according to Chapter 30, Division 3, Title 23 of the California Code of Regulations.

Ordered by: Original signed by
JOSE L. ANGEL, P.E.
Executive Officer

November 17, 2016
Date