

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. R7-2008-0032

WASTE DISCHARGE REQUIREMENTS
FOR
ORNI 17, LLC OWNER,
ORMAT NEVADA INC., OPERATOR
SURFACE LANDOWNERS: RUTHERFORD TRUST, HANNON RANCHES, JOHN VEYSEY,
DONBEE FARMS, DEL RIO COUNTRY CLUB
BRAWLEY 2 GEOTHERMAL EXPLORATION PROJECT
WELLFIELD MUD SUMPS/CONTAINMENT BASINS
North Brawley Known Geothermal Resource Area (KGRA) - Imperial County

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. Ormat Nevada Inc. proposes to drill geothermal exploration wells on private land within the North Brawley Known Geothermal Resource Area (KGRA). The site is located north of the town of Brawley in Imperial County. The address for Ormat Nevada Inc. is 6225 Neil Road, Suite 300, Reno, Nevada, 89511.
2. This Board Order regulates the handling and disposal of drilling wastes generated by Ormat Nevada Inc. during geothermal exploration well drilling, testing, and maintenance within the North Brawley KGRA.
3. The Discharger reports that the exploration program consists of six (6) geothermal wells. Locations proposed for exploration wells are shown on Attachment A. Ormat Nevada Inc. reports that if the geothermal exploration project is successful, more wells may be drilled. All geothermal wells drilled by Ormat Nevada within the North Brawley KGRA will be regulated under this Order.
4. Ormat Nevada Inc. submitted a Report of Waste Discharge dated February 6, 2008 for the Brawley 2 Geothermal Exploration Project.
5. The project will consist of well pad construction, geothermal exploration drilling, and waste handling and disposal. A typical well pad configuration is shown on Attachment B.
6. Exploration wells are drilled to determine the power generation potential of the area, and to gather scientific information about the geothermal resource. If the exploration project is successful, Ormat Nevada Inc. intends to build a power plant in the area.
7. Definition of terms used in this Board Order:
 - a. **Facility** – The entire parcel of property where Ormat Nevada Inc. or related geothermal industrial and drilling activities are conducted.
 - b. **Waste Management Unit (WMUs)** – Mud sumps/containment basins are WMUs.

- c. **Discharger** – The term “Discharger” means any person who discharges waste that could affect the quality of the waters of the State, and includes any person who owns the land or waste management unit, or is responsible for the operation of a waste management unit.

Geothermal Drilling Wastes

8. The following wastes are generated during construction, operation, and maintenance of geothermal exploration wells:
 - a. **Geothermal brine** - The Discharger reports geothermal brines in the area of the North Brawley KGRA are hot saline solutions with levels of Total Dissolved Solids (TDS) ranging from 16,000 to 56,000 parts per million (ppm). Based on nearby geothermal projects, major constituents of the brine are expected to be the following:
 1. Sodium (Na)
 2. Chloride (Cl)
 3. Calcium (Ca)
 4. Potassium (K)
 5. Sulfate (SO₄)
 6. Lithium (Li)
 7. Lead (Pb)
 8. Arsenic (As)
 - b. **Drilling muds with additives** – Drilling mud is inert mineral clay such as bentonite clay. Drilling mud additives may include sodium bicarbonate, soda ash, organic and synthetic polymers, cottonseed hulls, and sawdust. Drilling mud additives do not render the drilling mud hazardous when used according to manufacturer’s specifications.
 - c. **Drill cuttings (rock)** – small rock fragments pulverized during drilling and forced to the surface by drilling mud, aerated mud, and/or air.

Drilling Waste Containment (WMUs)

9. The Discharger proposes to contain geothermal brine generated during drilling, testing, or maintenance by discharging into large portable tanks. Geothermal brine will be returned to the geothermal resource via injection, or discharged offsite into permanent Class II surface impoundments constructed pursuant to Title 27 of the California Code of Regulations (CCR) (hereinafter, Title 27).
10. Drilling muds and rock cuttings generated during well drilling, testing, or maintenance will be discharged to mud sumps/containment basins designed to temporarily (less than one (1) year) contain the material while drying. Mud sumps/containment basins will be built with a minimum of twelve (12) inches of compacted clay with permeability of approximately 1×10^{-6} cm/sec, or with a synthetic liner(s) providing equivalent protection. Each mud sump/containment basin will be approximately 100 feet by 250 feet by 5 feet deep, and will be operated to maintain a minimum of two (2) feet of freeboard. All mud sumps shall be constructed outside the 100-year floodplain.

11. Geothermal wells are drilled to minimize mixing of drilling mud and cuttings with geothermal brine. Only a small amount of brine may commingle with drilling mud, primarily brines in that part of the formation displaced by the drill bit. Geothermal brine will not be discharged into mud sumps/containment basins.
12. Clay liner compaction must be certified by a Civil Engineer or Certified Engineering Geologist registered by the State of California. Synthetic liner placement and welding must be certified by the installer to verify factory requirements are satisfied, and that no damage occurred during placement. Both types of certification shall be submitted, in writing, to the Regional Board prior to use of the temporary mud sump/containment basin. After cleanout of discharged geothermal solids, the integrity of the liner must be re-certified before reuse.

Drilling Waste Disposal

13. Liquid wastes produced from drilling, testing, and maintenance of geothermal wells, will be contained in portable tanks and returned to the geothermal resource, or discharged off-site to Class II surface impoundments built to construction standards of Title 27.
14. Solids discharged to mud sumps/containment basins will be removed offsite, or closed in place provided representative samples of solids are shown not to be hazardous waste (section 2521, Chapter 15 of Title 23 CCR) or designated waste (California Water Code (CWC) Section 13173).

Surface Water

15. Surface water in the area of the North Brawley KGRA consists of the New River, canals and agricultural drains operated and maintained by Imperial Irrigation District.
16. Five exploration wells and associated mud sumps are located outside the New River 100-year floodplain.
17. Well OB-205 is located in the New River 100-year flood plain. Liquid and solid geothermal waste generated from drilling, testing and maintenance of Well OB-205 will be 100 percent contained. But surface mud sumps/containment basins will not be allowed in the 100-year floodplain.

Regional Groundwater

18. Regional groundwater flow within the Imperial Valley is toward the Salton Sea, a closed basin with a surface elevation of approximately 225 feet below mean sea level (MSL). The North Brawley KGRA is located approximately 120 feet below MSL; groundwater in this area generally flows to the northwest.

Local Groundwater

19. The Discharger reports that shallow groundwater in the area of the North Brawley KGRA occurs about ten (10) feet below ground surface, flows generally to the northwest, and has 10,000 to 20,000 mg/L TDS.

20. Groundwater depth, gradient, and quality in the area of North Brawley KGRA may be influenced at times by irrigation of adjacent agricultural fields and recharge from nearby canals.

Regional Geology

21. The North Brawley Geothermal Exploration site is located within the Salton Trough, a tectonically active zone in southeast California characterized by numerous faults associated with the San Andreas Fault Zone. The exploration site is located on the north-central portion of the trough, and is underlain by deltaic and lacustrine formations associated with the Colorado River delta. Bedrock in this part of the Salton Trough is approximately three (3) miles below ground surface.

Climate

22. Climate in the region is arid. Climatological data obtained from 1951 to 1980 indicate an average seasonal precipitation of 2.5 inches, and an average annual pan evaporation rate greater than 100 inches.
23. The wind direction follows two general patterns:
 - a. Seasonally from fall through spring, prevailing winds are from the west and northwest. Most winds originate in the Los Angeles Basin. Humidity is lowest under these conditions.
 - b. Summer weather patterns are dominated by intense heat induced low-pressure areas that form over the interior desert, drawing air south of the Facility. Humidity is highest under these conditions.

Basin Plan

24. The Water Quality Control Plan (Basin Plan) for the Colorado River Basin Regional Water Board, as amended to date, designates the beneficial uses of ground and surface waters in this region.
25. The beneficial uses of groundwater in the Imperial Hydrological Unit are:
 - a. Municipal Supply (MUN)*
 - b. Industrial Supply (IND)

*With respect to the MUN designation, the Basin Plan states: "At such time as the need arises to know whether a particular aquifer which has no known existing MUN use should be considered as a source of drinking water, the Regional Board will make such a determination based on the criteria listed in the 'Sources of Drinking Water Policy' in Chapter 2 of the Basin Plan. An indication of MUN for a particular hydrologic unit indicates only that at least one of the aquifers in that unit currently supports a MUN beneficial use. For example, the actual MUN usage of the Imperial Hydrologic Unit is limited only to a small portion of that ground water unit."

26. The beneficial uses of surface waters in the area of the Brawley 2 Geothermal Exploration Project are as follows:

a. New River

- i. Freshwater Replenishment (FRSH)
- ii. Water Contact Recreation (RECI)
- iii. Non-contact Water Recreation (RECII)
- iv. Warm Freshwater Habitat (WARM)
- v. Wildlife Habitat (WILD)
- vi. Preservation of Rare, Threatened, or Endangered Species (RARE)

b. Imperial Valley Drains

- i. Freshwater Replenishment (FRSH)
- ii. Water Contact Recreation (RECI)
- iii. Non-contact Water Recreation (RECII)
- iv. Warm Freshwater Habitat (WARM)
- v. Wildlife Habitat (WILD)
- vi. Preservation of Rare, Threatened, or Endangered Species (RARE)

c. All American Canal System

- i. Municipal (MUN)
- ii. Agricultural (AGR)
- iii. Aquaculture Supply (AQUA)
- iv. Freshwater Replenishment (FRSH)
- v. Industrial (IND)
- vi. Groundwater Recharge (GWR)
- vii. Water Contact Recreation (RECI)
- viii. Non-Contact Water Recreation (RECII)
- ix. Warm Freshwater Habitat (WARM)
- x. Wildlife Habitat (WILD)
- xi. Hydropower Generation (POW)
- xii. Preservation of Rare, Threatened, or Endangered Species (RARE)

Storm Water

27. Federal regulations for storm water discharges promulgated by the U.S. Environmental Protection Agency (40 CFR Parts 122, 123, and 124) require specific categories of facilities that discharge storm water associated with industrial activity to obtain a National Pollutant Discharge Elimination System (NPDES) permit, and to implement Best Conventional Pollutant Technology (BCPT) to reduce or eliminate industrial storm water pollution.

Anti-Degradation Policy

28. State Water Resources Control Board (State Water Board) Resolution No. 68-16 (“Policy with Respect to Maintaining High Quality Waters of the State”; hereafter Resolution No. 68-16) requires a Regional Water Board in regulating the discharge of waste to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in plans and policies (e.g., violation of any water quality objective). The discharge is required to meet waste discharge requirements that result in the best practicable treatment or control (BPTC) of the discharge necessary to assure pollution or nuisance will not occur, and the highest water quality consistent with maximum benefit to the people will be maintained.
29. Some degradation of groundwater from the discharge to the mud sumps/containment basins is consistent with Resolution No. 68-16, provided degradation:
 - a. Is confined to a reasonable area;
 - b. Is minimized by means of full implementation, regular maintenance, and optimal operation of BPTC measures;
 - c. Does not result in water quality less than that prescribed in the applicable basin plan, including violation of any water quality objective.
30. The discharge of geothermal drilling muds and rock cuttings to mud sumps/containment basins, as permitted herein, reflects best practicable treatment and control. The controls assure the discharge does not create a condition of pollution or nuisance, and that the highest water quality defined by the physical and chemical nature of the local groundwater will be maintained, which is consistent with the anti-degradation provisions of Resolution No. 68-16. The mud sumps/containment facilities require:
 - a. Temporary storage of geothermal drilling muds and rock cuttings (less than one (1) year);
 - b. No discharge of geothermal brine, except for the small amount in that part of the formation displaced by the drill bit that may commingle with drilling mud
 - c. Lining with a minimum of twelve (12) inches of compacted clay with 1×10^{-6} cm/sec permeability, or synthetic liner with equivalent permeability;
 - d. Operation and maintenance with a minimum of two (2) feet of freeboard;
 - e. Construction outside the 100-year floodplain; and
 - f. 100 percent containment of rock cuttings, drilling muds or geothermal brine generated from geothermal wells drilled within a 100-year floodplain (e.g. use of Baker Tanks).
31. Constituents in rock cuttings and drilling muds that present the greatest risk to groundwater quality are Title 22 metals and dissolved salts (TDS) due to the discharge of muds commingled with minor amounts of geothermal brine during drilling, and drilling mud additives. The proposed facilities provide specific containment requirements for all discharged materials and therefore, degradation to groundwater, if any, should be limited to the area underlying the mud sumps/containment basins.

32. The WDRs contained in this Order minimize the risk of degradation to areal groundwater. The proposed project contributes to economic development in the area, and will likely result in development of new geothermal power generation facilities. These factors are consistent with maximum benefit to the people of the State. Accordingly, the discharge as authorized is consistent with the anti-degradation provisions of Resolution 68-16.

CEQA

33. The Imperial County Planning Department (Department) is the Lead Agency, as that term is defined in the California Environmental Quality Act (CEQA) (Cal. Pub. Resources Code § 21000 et seq.), for conducting the environmental review required under CEQA for the North Brawley Geothermal Exploration Project (Project). As Lead Agency, the Department concluded, based on the Initial Study it conducted, that no significant environmental impacts would occur in connection with the proposed Project. Accordingly, the Department prepared a draft Negative Declaration for the Project. The Imperial County Planning Commission certified the Negative Declaration during a meeting held on March 26, 2008. The Regional Water Board has reviewed the Negative Declaration, Initial Study, and relevant Project documents distributed for public review and comment. Based on its review, the Regional Board has concluded that compliance with these WDRs should prevent or mitigate to a less than significant level any potential water quality impacts associated with the project.

Notification

34. The Regional Board has notified the Discharger and all known interested agencies and persons of its intent to adopt (WDRs) for said discharge, and has provided them with an opportunity for a public meeting and to submit comments.
35. The Regional Board, in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, that in order to meet the provision contained in Division 7 of the California Water Code and regulations adopted there under, the Discharger shall comply with the following:

A. Specifications

1. Treatment or disposal of wastes at this Facility shall not cause pollution or nuisance as defined in Section 13050 of Division 7 of the California Water Code.
2. Waste material generated at this Facility must be contained at all times.
3. Wastes generated during drilling, testing, and maintenance of exploration wells located within the New River 100-year floodplain must be 100 percent contained (e.g., by using Baker Tanks), removed offsite when (or before) well drilling is complete, and discharged to a facility permitted to receive geothermal wastes.

Ormat Nevada, Inc.
Brawley 2 Geothermal Exploration Project
Waste Discharge Requirements Order No. R7-2008-0032

4. Containment of waste shall be limited to areas designated for such activity. Any revision or modification of the waste containment area, or change in operation that alters the nature and constituents of the waste produced, must be submitted in writing to the Regional Water Board Executive Officer (Executive Officer) for review and approval before the change in operation or modification of the designated area is implemented.
5. Prior to drilling a new well at the Facility, the Discharger shall notify the Executive Officer of the proposed change in writing.
6. Any substantial increase or change in volume of material to be discharged under this Order must be submitted in writing to the Executive Officer for review and approval.
7. Liquid or solid geothermal waste discharged to tanks shall be contained at all times.
8. A minimum freeboard of two (2) feet shall be maintained in mud sumps/containment basins at all times.
9. Following well completion, residual solids and semisolids contained in tanks shall be tested for constituents listed in Monitoring and Reporting Program No. R7-2008-0032, and for additional constituents requested by the Executive Officer (if any). Disposal of this material shall be in accordance with applicable laws and regulations based on analytical results of sampling and analysis.
10. Prior to removing solid material discharged to mud sumps/containment basins, the material shall be tested for constituents listed in Monitoring and Reporting Program No. R7-2008-0032, and for additional constituents requested by the Executive Officer (if any). Disposal of this material shall be in accordance with applicable laws and regulations based on analytical results of sampling and analysis.
11. Public contact with material containing geothermal wastes shall be prevented through fences, signs, or other appropriate alternatives.
12. Mud sumps/containment basins shall be constructed, operated and maintained to ensure their effectiveness to contain wastes. In particular:
 - a. Erosion control measures shall be implemented;
 - b. Liners shall be maintained to ensure proper function, and
 - c. Solid material shall be removed in a manner that minimizes the likelihood of damage to mud sump/containment basin liner.
13. Upon ceasing operation at the Facility, all waste, natural geologic materials contaminated by waste, and surplus or unprocessed material shall be removed from the site and disposed of in accordance with applicable laws and regulations.
14. Surface drainage from tributary areas or subsurface sources shall not contact or percolate through waste discharged at this site.

15. The Discharger shall use constituents listed in Monitoring and Reporting Program No. R7-2008-0032 and revisions thereto as "Monitoring Parameters".
16. The Discharger shall implement the attached Monitoring and Reporting Program No. R7-2008-0032 and revisions thereto to detect at the earliest opportunity any unauthorized discharge of waste constituents from the Facility, or any impairment of beneficial uses associated with or caused by discharges of waste to the mud sumps/containment basins.
17. Water used for on-site maintenance shall be limited to the amount necessary for dust control and for cleanup and maintenance.
18. The Discharger shall not cause or permit the release of pollutants, or waste constituents in a manner that could cause or contribute to a condition of contamination, nuisance, or pollution.

B. Prohibitions

1. Geothermal wells shall be drilled in a manner that minimizes mixing of drilling mud and cuttings with geothermal brine. Only a small amount of brine may commingle with drilling mud, primarily brines in that part of the formation displaced by the drill bit. Geothermal brine will not be discharged into mud sumps/containment basins.
2. The discharge of geothermal waste to mud sumps/containment basins as a final means of disposal is prohibited without authorization by the Executive Officer.
3. The Discharger shall not degrade any groundwater aquifer or supply water.
4. The discharge of waste to land not owned or controlled by the Discharger is prohibited.
5. Use of geothermal brine or drilling muds for dust control on access roads, well pads, or within the plant area is prohibited.
6. The discharge of hazardous waste (Section 2521, Chapter 15 of Title 23 CCR) or designated waste (Section 13173 CWC) to areas other than a waste management unit authorized to receive such waste is prohibited.
7. Permanent (i.e., longer than one (1) year) disposal or storage of drilling waste to mud sumps/containment basins is prohibited, unless authorized by the Executive Officer.
8. All mud sumps/containment basins must be lined. Drilling waste shall not penetrate the lining during the containment period.
9. Direct or indirect discharge of geothermal drilling wastes in mud sumps/containment basins or tanks to surface water or surface drainage courses (canals, drains, subsurface drainage systems, etc.) is prohibited, except as allowed under an appropriate NPDES permit.
10. The Discharger shall neither cause nor contribute to the contamination or pollution of groundwater via the release of waste constituents.

C. Provisions

1. The Discharger shall comply with Monitoring and Reporting Program No. R7-2008-0032 and future revisions thereto, as specified by the Executive Officer.
2. Unless otherwise approved by the Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the California Department of Public Health. All analyses shall be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" promulgated by the U.S. Environmental Protection Agency.
3. Prior to any change in ownership of this Facility, the Discharger shall transmit a copy of this Board Order to the succeeding owner/operator, and forward a copy of the transmittal letter to the Regional Water Board.
4. Prior to any modification that results in a material change in the quality or quantity of waste discharge, or material change in the location of waste discharge, the Discharger shall report all pertinent information in writing to the Executive Officer, and obtain revised requirements.
5. All mud sumps/containment basins shall be certified by a California Registered Civil Engineer or Certified Engineering Geologist to contain a continuous, 12-inch-thick, clay liner with a hydraulic conductivity of less than or equal to 1×10^{-6} cm/sec, or an equivalent system approved by the Executive Officer.
6. The Discharger shall ensure that all site-operating personnel are familiar with the content of this Board Order, and shall maintain a copy of this Board Order at the site.
7. This Board Order does not authorize violation of any federal, state, or local laws or regulations.
8. The Discharger shall allow the Regional Water Board, or an authorized representative upon presentation of credentials or other documents, as may be required by law, to:
 - a. Enter the premises regulated by this Board Order, or the place where records are kept under the conditions of this Board Order;
 - b. Have access to and copy, at reasonable times, all records required by this Board Order;
 - c. Inspect at reasonable times: facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required by this Board Order, and
 - d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Board Order, or as otherwise authorized by the California Water Code, any substances or parameters at this location.

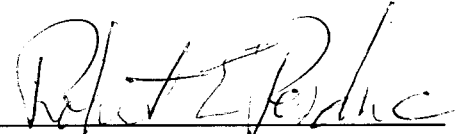
9. The Discharger shall comply with all conditions of this Board Order. Noncompliance with this Board Order is a violation of the Porter-Cologne Water Quality Act, and grounds for enforcement action.
10. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control, and related appurtenances, that are installed or used by the Discharger to achieve compliance with this Board Order. Proper operation and maintenance also includes adequate laboratory controls, and appropriate quality assurance procedures.
11. The Discharger shall comply with the following:
 - a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity;
 - b. The Discharger shall retain records of all monitoring information, copies of all reports required by the Board Order, and records of all data used to complete the application of the Board Order, for a period of at least five (5) years from the date of the sample, measurement, report or application. This period may be extended by the Executive Officer at any time;
 - c. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurement.
 - ii. The individual who performed the sampling or measurement.
 - iii. The date analysis was performed.
 - iv. The individual responsible for reviewing the analysis.
 - v. The result of such analysis.
 - d. Monitoring must be conducted according to test procedures described in the Monitoring and Reporting Program, unless other test procedures have been specified in this Board Order or approved by the Executive Officer.
12. The Discharger is the responsible party for the WDRs, and the monitoring and reporting program for this Facility. ORNI 17 LLC and Ormat Nevada Inc. shall comply with all conditions of these WDRs. Violations may result in enforcement action, including Regional Water Board orders or court orders that require corrective action or impose civil monetary liability; or modification or revocation of these WDRs by the Regional Water Board.
13. The Discharger shall furnish, under penalty of perjury, technical monitoring program reports submitted pursuant to the specifications provided by the Executive Officer. Specifications are subject to periodic revision as warranted.
14. Monitoring reports shall be certified to be true and correct, and signed, under penalty of perjury, by an authorized official of the company.
15. This Board Order does not convey property rights of any sort, or any exclusive privileges, nor does it authorize injury to private property, invasion of personal rights, or infringement of federal, state, or local laws and regulations.

Ormat Nevada, Inc.
Brawley 2 Geothermal Exploration Project
Waste Discharge Requirements Order No. R7-2008-0032

16. This Board Order may be modified, rescinded, or reissued for cause. Such a request by the Discharger, or notification of planned changes or anticipated noncompliance, does not stay any Board Order condition.

I, Robert Perdue, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on May 21, 2008.

Ordered by:



ROBERT PERDUE
Executive Officer

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

MONITORING AND REPORTING PROGRAM NO. R7-2008-0032
FOR

ORNI 17 LLC, OWNER, ORMAT NEVADA INC., OPERATOR
SURFACE LANDOWNERS: RUTHERFORD TRUST, HANNON RANCHES, JOHN VEYSEY,
DONBEE FARMS, DEL RIO COUNTRY CLUB, DONBEE FARMS
BRAWLEY 2 GEOTHERMAL EXPLORATION PROJECT
WELLFIELD MUD SUMPS/CONTAINMENT BASINS
North Brawley Known Geothermal Resource Area (KGRA) - Imperial County

Location of Discharge: Well field associated with North Brawley KGRA

A. GENERAL MONITORING

1. The reporting responsibilities of the Discharger are specified in the California Water Code. This self-monitoring program is issued in accordance with Provision No. 1 of Regional Board Order R7-2008-0032. The principal purpose of this Monitoring Program is to:
 - a. Document compliance with Waste Discharge Requirements (WDRs) adopted by the California Regional Water Quality Control Board.
 - b. Facilitate self-policing by the Discharger in the prevention and abatement of pollution arising from the discharge.
 - c. 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. Analyses shall be conducted by a laboratory certified by the California Department of Public Health to perform the required analyses, unless a field analysis is specified.
3. The Executive Officer may alter the monitoring parameters and/or 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 WDRs.
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. Authorization is made in writing by the person described above;
 - b. Authorization specifies an individual or person responsible for the overall operation of the regulated disposal system; and
 - c. Written authorization is submitted to the 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 also be submitted to the Regional 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 REGIONAL WATER BOARD

Written Quarterly Reports shall be submitted four (4) 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 requirement violation found since the last such report was submitted, and shall describe actions taken or planned for correcting said violations. If the Discharger previously submitted a detailed time schedule for correcting violations, a reference to the correspondence transmitting the schedule will suffice. 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.

Ormat Nevada, Inc.
 Brawley 2 Geothermal Exploration Project
 Monitoring and Reporting Program

2. For all spills/leaks of reportable quantities that occur 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/leak occurring during the reporting period. The reportable quantity for liquid is 150 gallons (or more) of geothermal brine, and cooling tower condensate. Any other type of spill, regardless of type or size, is to be reported within 48 hours.

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 each mud sump/containment basin 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:

<u>Constituent</u>	<u>Unit</u>	<u>Sample Type</u>
Heavy Metals (Title 22 CCR)	mg/kg	Grab
Total Petroleum Hydrocarbons (TPH)	mg/kg	Grab

5. Description of general conditions of each mud sump/containment basin including any observed erosion or plant growth.
6. Description of construction or maintenance done to each mud sump/containment basin.

2. Annual Summary Report

The Discharger shall submit an annual report by March 15th of the following year to the Regional 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 (4) quarters.
- b. A comprehensive discussion of compliance, and the result of any corrective action taken or planned to bring the discharge into compliance with WDRs.
- c. A written summary of solid waste analyses.

3. Contingency Reporting

- a. The Discharger shall report by telephone any spill/leak of reportable quantity within 48 hours after discovery. The reportable quantity for geothermal brine and cooling tower condensate at this facility is 150 gallons. Any other type of spill, regardless of type or size, is to be reported within 48 hours.

After verbally reporting a spill, a written report shall be filed with the Regional Water Board within seven (7) days, which provides the following information at a minimum:

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 Regional Water Board determines that there is significant physical evidence of a release, the Discharger shall immediately notify the Regional Water Board (or acknowledge the Regional 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 proposing an Evaluation Monitoring Program.
 2. The Discharger shall, within 180 days of discovering the release, submit a Preliminary Engineering Feasibility Study detailing proposed corrective action measures.
 - d. Any time the Discharger (or the 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 done within seven (7) days of making this determination, and shall describe 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 (7) days of concluding that there has been a 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 (5) years. The period of retention shall be extended during the course of unresolved litigation regarding this discharge, or when requested by the Regional Water Board. Such records shall provide the following for each sample.

1. Identity of (a) sample, (b) monitoring point from which sample was taken, and (c) individual who collected the sample.
2. Date and time of sampling.
3. Date and time sample analyses were started and completed, and identity of individual who performed each analysis.
4. Complete sample collection and analysis procedure used, including method used to preserve the sample, and the identity and volume of reagent used.
5. Results of analyses (including calculations), and the Maximum Detection Limit 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 WDRs.

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. Authorization is made in writing by the person described above;
 - b. Authorization specifies an individual or person having responsibility for the overall operation of the regulated disposal system; and
 - c. Written authorization is submitted to the Executive Officer.

4. Quarterly Monitoring Reports

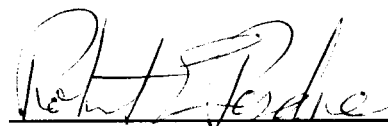
	<u>Unit</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
a. General Information (C.1.a)			
1. Letter of Transmittal	----	-----	Quarterly
2. Summary of spills	----	-----	Quarterly
b. Monitoring of Mud Sumps/Containment Basins (C.1.b)			
1. Estimate volume of solids discharged to each mud sump/containment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

Ormat Nevada, Inc.
Brawley 2 Geothermal Exploration Project
Monitoring and Reporting Program

- c. Sample solids discharged to basins receiving wastes during reporting period (C.1.b.5)
- | | | | |
|---|-------|-----------|-----------|
| 1. Analyze for Heavy Metals (Title 22 metals) | mg/kg | Quarterly | Quarterly |
| 2. Analyze for Total Petroleum Hydrocarbons (TPH) | mg/kg | Quarterly | Quarterly |
5. Annual Summary Reports (C.2) shall be submitted to the Regional Water Board by March 15th of each year, covering the Reporting Period from January 1st through December 31st 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. Submit Monitoring Reports to:

California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

Ordered by:

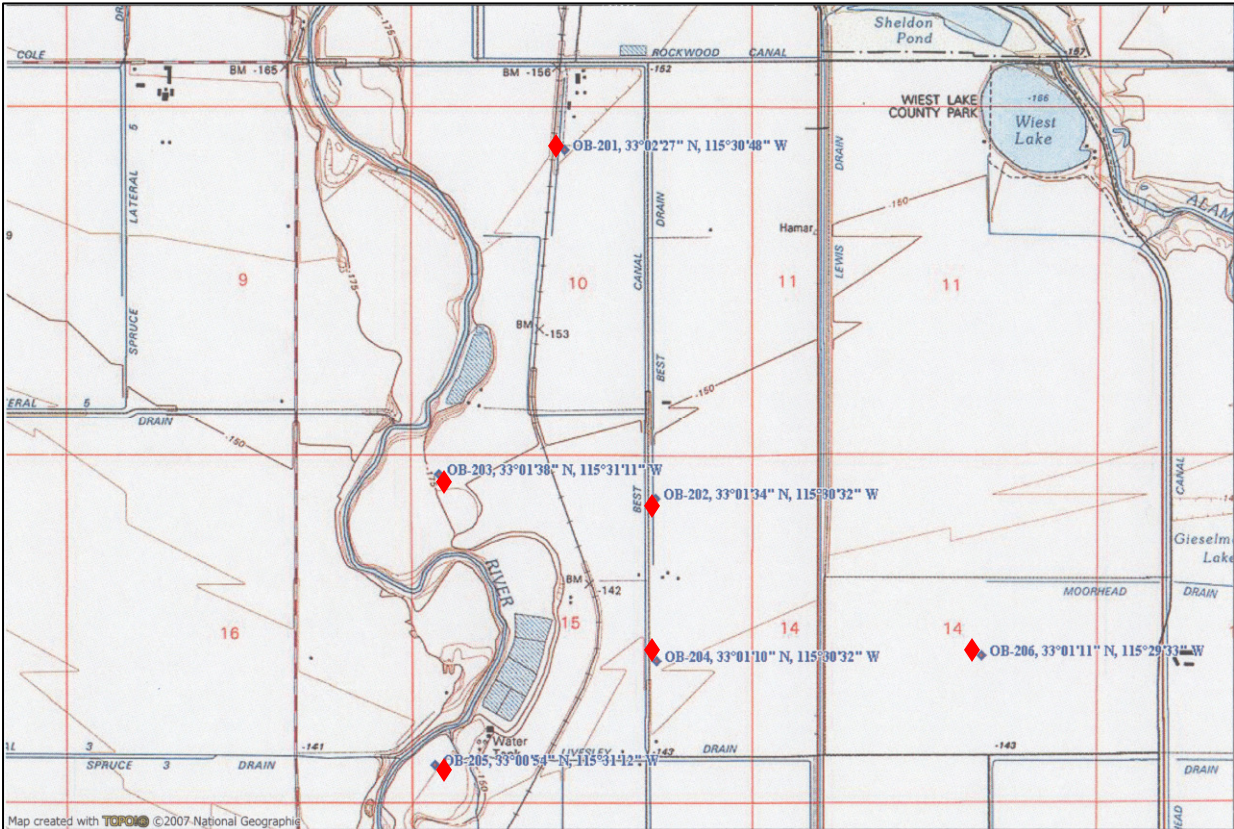


ROBERT PERDUE
Executive Officer

May 21, 2008

Date

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



ATTACHMENT A

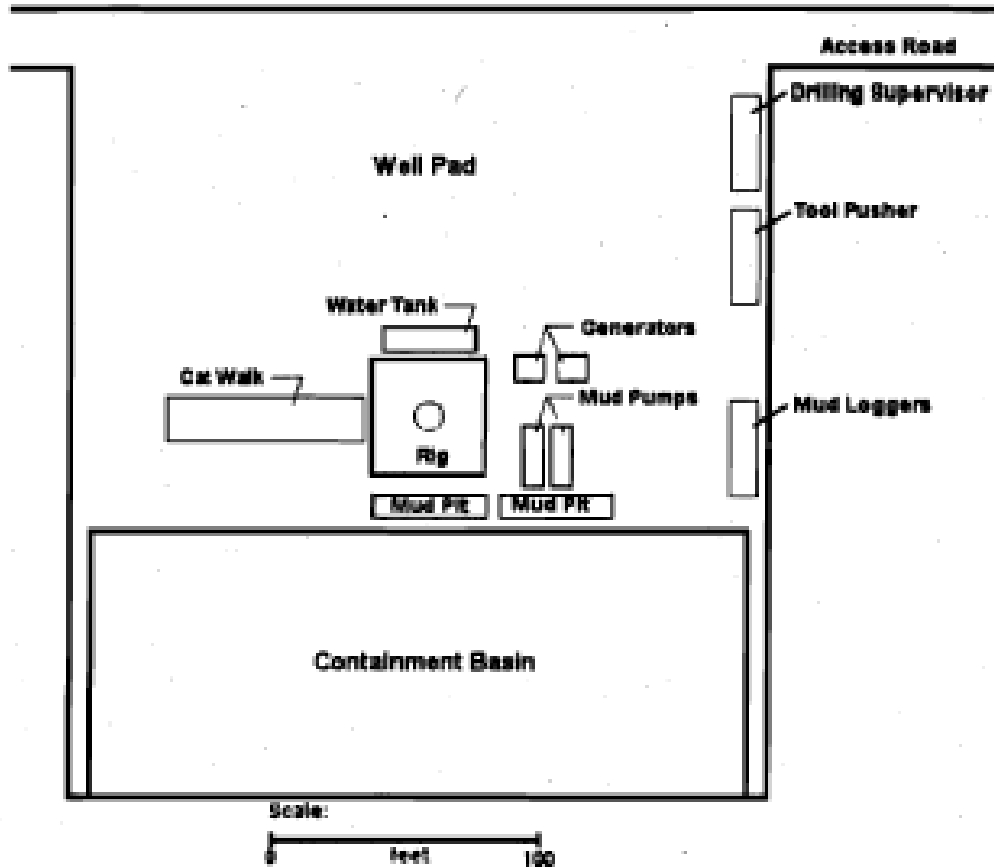
ORNI 17 LLC, OWNER, ORMAT NEVADA INC, OPERATOR
BRAWLEY 2 GEOTHERMAL EXPLORATION PROJECT
WELLFIELD MUD SUMPS/CONTAINMENT BASINS

North Brawley Known Geothermal Resource Area (KGRA) - Imperial County

BOARD ORDER NO. R7-2008-0032

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

TYPICAL WELL PAD LAYOUT DIAGRAM
NORTH BRAWLEY GEOTHERMAL EXPLORATION PROJECT



ATTACHMENT B

ORNI 17 LLC. OWNER, ORMAT NEVADA INC OPERATOR
BRAWLEY 2 GEOTHERMAL EXPLORATION PROJECT

BOARD ORDER NO. R7-2008-0032