

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 84-37

WASTE DISCHARGE REQUIREMENTS
FOR
IMPERIAL ENERGY CORPORATION - IMPERIAL BRANDT UNIT
GEOTHERMAL EXPLORATION WELLS
Northwest of Brawley - Imperial County

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

1. Imperial Energy Corporation (hereinafter also referred to as the discharger), 2049 Century Park East, Suite 1100, Los Angeles, CA 90067, submitted a Report of Waste Discharge, dated January 6, 1984.
2. The discharger proposes to drill two exploratory geothermal wells northwest of Brawley at the following locations:

Site No. 1: SW $\frac{1}{4}$, SE $\frac{1}{4}$ of Section 35, T12S, R13E, SBB&M

Site No. 2: NW $\frac{1}{4}$, SW $\frac{1}{4}$ of Section 6, T13S, R14E, SBB&M

3. An impermeable mud sump, 120 feet by 80 feet by 6 feet deep with an approximate capacity of 575,000 gallons would be installed at each well site, which would utilize about 2.0 acres of surface area.
4. The discharger proposes to discharge into each mud sump a maximum of 374,000 gallons of drilling mud and drilling cuttings. Following some evaporation, the residual mud would be removed from each sump and discharged at a solid waste disposal site approved by the Regional Board to receive this waste.
5. The drilling mud components which may be used are:

Bentonite	Barite	Soda phosphate
Lignite	Sepiolite	Sodium polyacrylate
Caustic soda	Soda ash	Drilling detergent
Bicarbonate of soda		

6. The discharger proposes to discharge approximately 165,000 gallons of cleanout fluid and a maximum of 410,000 gallons of flow testing fluid into each mud sump. Following some evaporation, the residual fluids would be discharged at a Class I or Class II-1 waste disposal site approved by the Regional Board to receive this waste.
7. Geothermal brines in portions of Imperial County are known to contain certain constituents which are classified as hazardous by the Department of Health Services, Hazardous Material Management Section in accordance with California Administrative Code, Title 22, Chapter 30, Article 9, Section 66680.

Rescinded
9/17/86
by 86-66

8. The Water Quality Control Plan for the West Colorado River Basin was adopted on April 10, 1975. The Basin Plan contains water quality objectives for Imperial Hydrologic Unit.
9. Beneficial uses to be protected by this Order are as follows:
 - a. Ground Water
 1. Shallow ground waters at the discharge location are saline and are not beneficially used.
 2. Deep ground waters are brine and are being investigated for geothermal development.
 - b. New and Alamo Rivers and Imperial Valley Irrigation Drains
 1. Transport of dissolved solids to Salton Sea for agricultural soil salinity control.
 2. Freshwater replenishment for Salton Sea.
 3. Freshwater habitat for fish and wildlife.
 4. Recreation - non-water contact.
10. Imperial County Planning Department certified on February 22, 1984. Mitigated Negative Declaration SCH#84011801 for these well sites. The Regional Board has reviewed this Negative Declaration. The below waste discharge requirements are designed to assure against any significant adverse effects on water quality.
11. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.
12. The Board in a public meeting heard and considered all comments pertaining to the discharge.
13. Imperial County Planning Department has required that the discharger file a blanket bond in the sum of \$50,000 to "indemnify the County for any costs incurred by the County in repairing any drill, test or production facility site, to as near as possible to its original state, and abating any public nuisance caused by the principal's exploratory testing or producing operations".

IT IS HEREBY ORDERED, Imperial Energy Corporation, shall comply with the following:

A. Discharge Specifications

1. Neither the treatment nor the discharge of wastes shall create a pollution or a nuisance as defined in Division 7 of the California Water Code.

2. Geothermal fluids and other wastes shall not enter any rivers, canals, drainage channels, or drains (including subsurface drainage systems) which could provide flow or seepage to Salton Sea.
3. Permanent disposal of drilling mud or any wastes is prohibited at the well sites.
4. Temporary discharge and/or temporary storage of drilling mud, and cleanout and flow test fluids other than in containers that have a lining coefficient of permeability of 1×10^{-6} cm/sec, or less, is prohibited, and the fluids contained within shall not penetrate through the lining during the containment period.
5. Long term storage and/or discharge of geothermal wastes for longer than one year, other than in containers having a lining coefficient of permeability of 1×10^{-8} cm/sec, or less, is prohibited, and the fluids contained within shall not penetrate through the lining during the containment period.
6. Adequate protective works and maintenance shall be provided to assure that the sumps will not become eroded or otherwise damaged during the project period, and/or until all well drilling materials are removed.
7. A minimum freeboard of at least two (2) feet shall be maintained in the sumps and other containers.
8. Fluids discharged by subsurface injection shall not be discharged into any subsurface zone which has a total dissolved solids concentration of less than 10,000 mg/l, unless the total dissolved solids concentration of the injection water is less than or equal to that of the receiving water.
9. The volume of fluids stored in the mud sump at each site shall not exceed 575,000 gallons.
10. Saline drilling muds with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l, and brine and salt wastes, shall be discharged at a Class I or Class II-1 disposal site approved by the Regional Board to receive said wastes.
11. Non-saline drilling muds, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l, and not containing hazardous wastes¹ may be disposed at a Class II-2 disposal site approved by the Regional Board to receive said wastes.
12. Final disposal of residual wastes in accordance with Specifications No. 8, 10, and 11 (above), and cleanup of all contents, shall be accomplished upon abandonment of operations. Lack of construction or operational activity on each site for a period of one year shall constitute abandonment for the purposes of this Order.

B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 84-37" and future revisions thereto, as specified by the Executive Officer.
2. At least 5 days prior to the discharge of any materials into a mud sump, the discharger shall submit to the Regional Board a technical report showing the construction of the sump, and a certificate signed by a California Registered Civil Engineer stating that the sump and attendant facilities are constructed to meet the requirements of this Order.
3. The discharger shall submit to the Board, at least 30 days prior to commencement of operation of each well, a written report on the proposed method and estimated costs of cleanup and closure of each well site in a manner that will not adversely effect water quality.

I, Arthur Swajian, 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 March 21, 1984.



Executive Officer

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

**ATTACHMENT A
to Board Order No. 84-37**

**Threshold Limit Concentrations
for
Bioaccumulative Toxic Substances**

Drilling mud, cuttings, and other geothermal wastes containing the following substances having concentrations equal to or greater than those listed below are designated as hazardous by the State of California Department of Health Services.

	Soluble Threshold Limit wet weight mg/kg	Total Threshold Limit wet weight mg/kg
1. Arsenic and compounds	5	50
2. Barium (excluding barite) and compounds	100	1,000
3. Lead compounds, inorganic	5	50
4. Lead compounds, organic	—	13
5. Zinc compounds	20	200

- A. The waste is designated hazardous if the wet weight analysis of any of the above constituents exceed the Total Threshold Limits as listed. The waste would therefore not be acceptable for disposal in a Class II-2 waste disposal site. No further analyses are necessary.
- B. The waste is considered to contain non-hazardous levels of the above substances if all of the weight analyses of the above constituents do not exceed the Soluble Threshold Limits as listed. The waste would therefore be acceptable for disposal in a Class II-2 waste disposal site provided the waste also complies with the other Discharge Specifications and Provisions in this Order. No further analyses of the metal constituents are necessary.
- C. If the analyses of the waste do not conform to the conditions described under A and B above, extractions of the soluble waste constituents must be made in accordance with a procedure approved by the Executive Officer and analyzed for those constituents in which the wet weight concentrations exceeded the Soluble Threshold Limits as listed.

- (1) If the wet weight analysis of any of the soluble constituents exceeds the Soluble Threshold Limits as listed, the waste is designated hazardous and is not acceptable for disposal in a Class II-2 waste disposal site.
- (2) If the wet weight analyses of all of the soluble constituents do not exceed the Soluble Threshold Limits as listed, the waste is considered to contain non-hazardous concentrations of these constituents. The waste would therefore be acceptable for disposal in a Class II-2 waste disposal site provided the waste also complies with the other Discharge Specifications and Provisions in this Order.

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

**MONITORING AND REPORTING PROGRAM NO. 84-37
FOR
IMPERIAL ENERGY CORPORATION - IMPERIAL BRANDT UNIT
GEOTHERMAL EXPLORATION WELLS
Northwest of Brawley - Imperial County**

Location of Discharge: SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 35, T12S, R13E, SBB&M, and NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 6, T13S, R14E, SBB&M.

MONITORING

Imperial Energy Corporation shall report monitoring data to the Regional Board in accordance with the following schedule:

1. The discharger shall submit to the Board, at least 30 days prior to commencement of operation of each well, a written report on the proposed method and estimated costs of cleanup and closure of each well site in a manner which would not adversely effect water quality.
2. At least 5 days prior to the discharge of any drilling mud or geothermal materials into a mud sump or other container, the discharger shall submit to the Regional Board a technical report on the construction of said container, and a certificate signed by a California Registered Civil Engineer stating that the container and attendant facilities are constructed to meet the requirements contained in Board Order No. 84-37.
3. At least 10 days before the initial discharge of any geothermal fluids from each well, the discharger shall report said plan to discharge to the Board.

<u>Constituents</u>	<u>Units</u>	<u>Reporting Frequency</u>
4. Volume of geothermal wastes contained in each sump.	Gallons	Monthly
5. Volume of saline drilling mud and salt and brine waste hauled to a Class I or Class II-1 waste disposal site, and name of site.	Gallons	Monthly
6. Volume and total dissolved solids concentration of non-saline drilling mud hauled to a Class II-2 waste disposal site, and name of site.	Gallons and mg/l	Monthly

- | Constituents | Units | Reporting Frequency |
|--|--------------|---|
| 7. Calibrated electrical conductivity of flow from tile drain system underlying the area of each sump. | micromhos/cm | Daily ¹
Monday through Friday |
| 8. The following information shall be reported to the Regional Board five (5) days prior to the discharge of drilling mud, cuttings or geothermal fluid to a Class II-2 waste disposal site: | | |
| a. Representative samples of drilling mud, cuttings, and geothermal fluid to be discharged at a Class II-2 waste disposal site shall be analyzed for the following constituents: | | |

<u>Constituents</u>	<u>Units</u>
Arsenic and compounds	mg As/kg wet sample weight
Barium (excluding barite) and compounds	mg Ba/kg wet sample weight
Lead compounds, inorganic	mg/Pb/kg wet sample weight
Lead compounds, organic	mg Pb/kg wet sample weight
Zinc compounds	mg Zn/kg wet sample weight

9. Immediate reporting of any accidental spillage or release of waste material, and plan for immediate measures being taken to correct same and to limit detrimental effects.
10. Report of completion of removal of all geothermal wastes from each mud sump - reported within one week following completion of work.
11. At least 10 days prior to destruction of each sump, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.

1. Tile drain monitoring shall commence one (1) week prior to the initial discharge of geothermal fluids into each sump, and shall continue until wastes are removed from each sump.

REPORTING

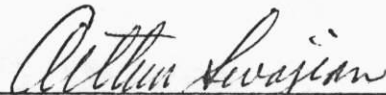
The above monitoring program shall be implemented 30 days prior to commencement of discharge at each site.

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports for Item 9 (above) shall be forwarded immediately, and if at all possible, shall be preceded by phone communication to the Regional Board's office (619) 346-7491. Copies of the reports submitted to the Board pursuant to this Monitoring and Reporting Program shall be maintained at each operations site, and shall also be made available to the staff of the Regional Board upon request.

Mail reports to:

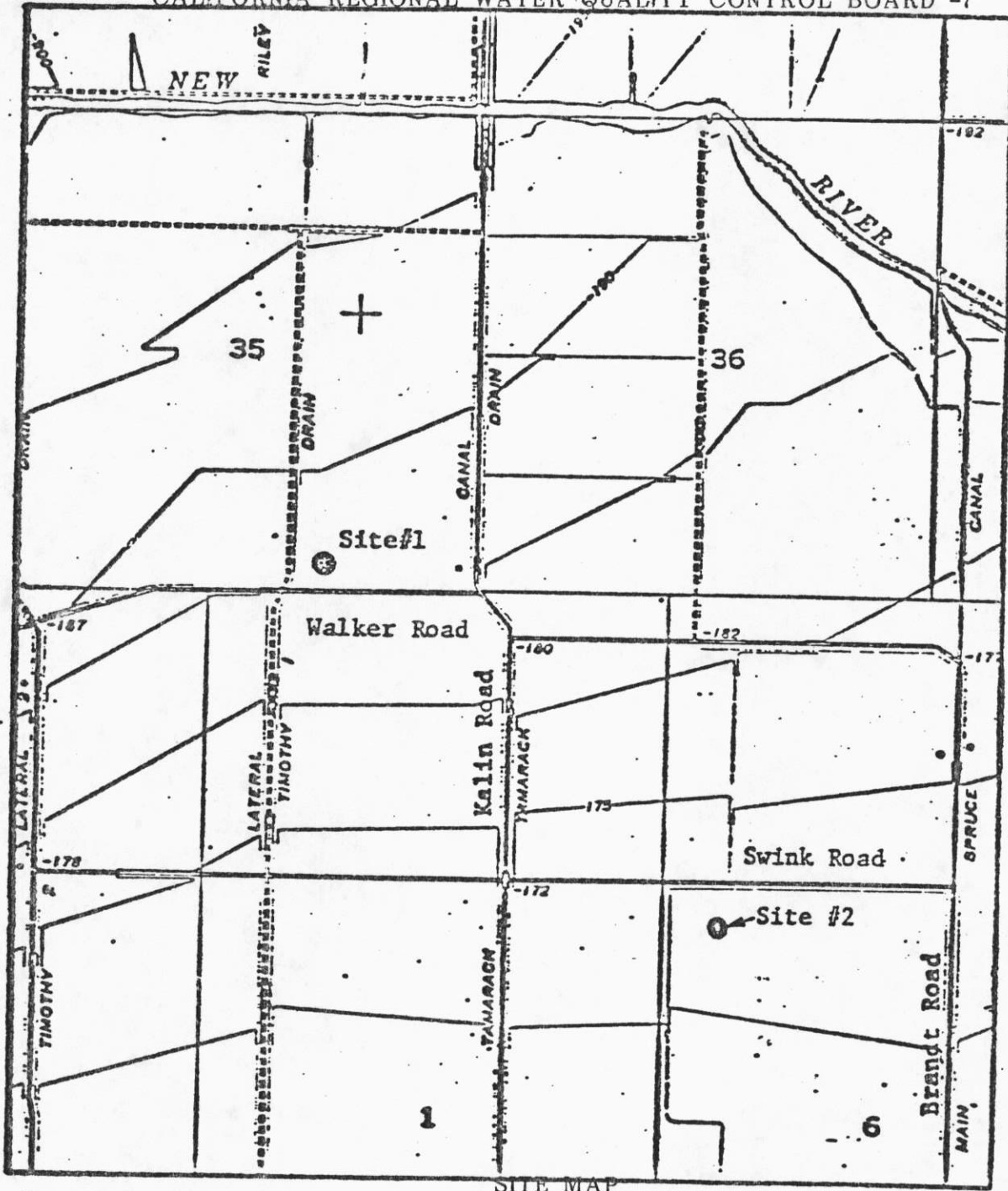
California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

ORDERED BY:


Executive Officer

March 21, 1984

DATE



IMPERIAL ENERGY CORPORATION - IMPERIAL BRANDT UNIT
GEOTHERMAL EXPLORATION WELLS

Northwest of Brawley - Imperial County

Site No.1: SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 35, T12S, R13E, SBB&M

Site No.2: NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 6, T13S, R14E, SBB&M

USGS Westmorland 7.5 min. Topographic Map