

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 77-46

WASTE DISCHARGE REQUIREMENTS
FOR
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GEOTHERMAL WELL OPERATIONS
East Mesa Area - Imperial County

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

1. The United States Department of the Interior, Bureau of Reclamation, (hereinafter also referred to as the discharger) Lower Colorado Regional Office, P.O. Box 427, Boulder City, Nevada 89005, submitted updated information (orally), on May 9, 1977, concerning their East Mesa area geothermal discharges.
2. The discharger is discharging geothermal production fluids from three geothermal wells located as follows:

<u>Geothermal Wells</u>	<u>Location</u>
Mesa 6-1	NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 6, T16S, R17E, SBB&M
Mesa 6-2	NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 6, T16S, R17E, SBB&M
Mesa 8-1	NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 8, T16S, R17E, SBB&M

3. The discharger is discharging into a storage basin and/or directly reinjecting into an injection well the following approximate volumes of geothermal fluids:

72,000 gallons-per-operating-day from Mesa 6-1,
72,000 gallons-per-operating-day from Mesa 6-2, and
72,000 gallons-per-operating-day from Mesa 8-1.

*Superseded by
89-027*

4. The discharger states that the storage basin is lined with a 10-mil polyvinyl chloride lining that is covered with about six (6) inches of sand. This seven (7) acre basin has a capacity of about 12.4 million gallons and is situated in the W $\frac{1}{2}$ of the SE $\frac{1}{4}$ of Section 6, T16S, R17E, SBB&M.
5. The discharger is reinjecting an average of 15,000 gallons-per-operating day of geothermal fluids from the storage basin and from any of the geothermal wells specified in Finding No. 2 (above) into the injection well, Mesa 5-1. Reinjection occurs at a depth below 4,000 feet. This injection well is located in the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 5, T16S, R17E, SBB&M.
6. The discharger proposes to drill a new injection well depending upon the results of tests for high flow rates on Mesa 5-1. The approximate location of this proposed well would be in the NW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 6, T16S, R17E, SBB&M.
7. The discharger reported for June 1976 that the geothermal fluids removed from Mesa 6-1, Mesa 6-2 and Mesa 8-1 contained a total dissolved solids content of 26,300 mg/l, 5,000 mg/l and 1,600 mg/l, respectively. The discharger reports that a groundwater sample taken while drilling Mesa 5-1 indicated a total dissolved solids content of about 2,400 mg/l at a depth of 4,600 feet.
8. The Water Quality Control Plan for the West Colorado River Basin was adopted by the Board on April 10, 1975. The Basin Plan contains water quality objectives for the Imperial Hydrologic Unit.
9. There are no surface waters in the vicinity of the discharge. Shallow groundwaters are of marginal quality (as shown in Finding No. 10) and are not beneficially used. Deep groundwaters are being tested for the potential of geothermal power productions.

10. The discharger reports the following analyses for shallow wells in the vicinity of the storage basin, the production wells and the injection well:

<u>Shallow Well</u>	<u>Location</u>	<u>Depth</u>	<u>Total Dissolved Solids</u>
M 6-1	SW of	14 feet	4,800 to
M 6-2	the storage	16 feet	7,700 mg/l
M 6-3	basin	16 feet	7,300 to
			7,900 mg/l
			13,400 to
			14,000 mg/l
M 8-1	Near	21 feet	1,100 mg/l
M 8-2	Mesa 8-1	21 feet	1,600 mg/l
M 5-1-N	Near	23 feet	4,600 mg/l
M 5-1-S	Mesa 5-1	23 feet	4,200 mg/l

11. The discharger prepared two environmental statements prior to the development of the present facilities. The first was directed to the geothermal test well site, dated April 28, 1972, while the other was partly devoted to the injection well, dated July 10, 1972. Both of these statements indicated that said geothermal operations would not have any significant adverse impacts on the environment.
12. The discharge of these geothermal well operations has been subject to waste discharge requirements adopted in Board Order No. 72-30.
13. The Board has notified the discharger and interested agencies and persons of its intent to update waste discharge requirements for said discharge.
14. The Board in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, the discharger shall comply with the following:

A. Discharge Specifications

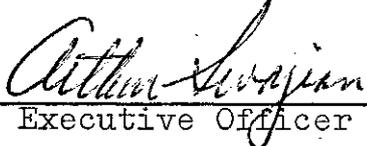
1. Neither the treatment nor the discharge of wastes shall create a pollution or a nuisance as defined in the California Water Code.
2. The discharge of geothermal fluids other than into a lined storage basin from which there is no seepage and/or injection wells is prohibited.
3. There shall be no overflow from the storage basin.
4. Adequate protective works shall be maintained to assure that the storage basin will not become eroded or otherwise damaged until all geothermal materials are removed.
5. A minimum freeboard of at least two (2) feet shall be maintained in the storage basin.
6. Fluids discharged by subsurface injection at this location shall not be discharged into any subsurface zone which has a total dissolved solids concentration of less than 10,000 mg/l, unless the quality of the injection water is comparable to that of the receiving water. The subsurface injection into Mesa 5-1 well (described in Findings No. 5 and 7, above) of fluids having a total dissolved solids concentration greater than that contained in the zone of injection of Mesa 5-1 well is hereby prohibited.
7. Final disposal of residual wastes shall be accomplished upon abandonment of operations. Lack of construction or operational activity on the site for a period of one year shall constitute abandonment for the purposes of this Order.
8. Any geothermal waste that is not injected shall be disposed of at a disposal site approved by the Regional Board to receive said waste.

B. Provisions

1. The discharger shall comply with the "Monitoring and Reporting Program No. 77-46", and "General Provisions for Monitoring and Reporting", and future revisions, thereto, as specified by the Executive Officer.

2. Transport of liquid wastes shall be in accordance with the provisions of Article 2 of Chapter 1 of Division 7.5 of the California Water Code; and in accordance with rules and regulations contained in Subchapter 13 of Chapter 3 of Title 23 of the California Administrative Code.
3. This Order supersedes Board Order No. 72-30.

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 July 13, 1977.


Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 77-46
FOR

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
GEOTHERMAL WELL OPERATIONS
East Mesa Area - Imperial County

Location: Sections 5, 6 and 8, T16S, R17E, SBB&M.

The Bureau of Reclamation shall report monitoring data to the Regional Board in accordance with the following schedule.

<u>Constituents</u>	<u>Units</u>	<u>Reporting Frequency</u>
1. Volume discharged to storage basin	Gallons	Monthly
2. Volume contained in storage basin	Gallons	Monthly
3. Volume injected to subsurface strata from storage basin	Gallons	Monthly
4. Total dissolved solids content of waste fluid in storage basin*	mg/l	Monthly
5. Total dissolved solids concentration of ground water contained in strata receiving waste fluid injection*	mg/l	At least 10 days prior to commencement of injection
6. Location and depth of injection wells		At least 10 days prior to commencement of injection

*Total dissolved solids as determined by chemical analysis.

7. Immediate reporting of any accidental spillage or release of waste material, and also, plan for immediate measures being taken to correct same and to limit detrimental effects.
8. At least ten (10) days prior to destruction of the storage basin the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.
9. Report of completion of removal of all geothermal waste from the storage basin and cleanup of premises - Reported within one week following completion of work.

REPORTING

The above monitoring program shall be implemented immediately upon commencement of well discharge at each site.

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports for Item 7 (above) shall be forwarded immediately, and if at all possible shall be preceded by phone communication to the Regional Board's office. Phone No. (714) 346-7491. Copies of the reports submitted to the Board pursuant to this Monitoring and Reporting Program shall be maintained at the operations site, and shall also be made available to 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

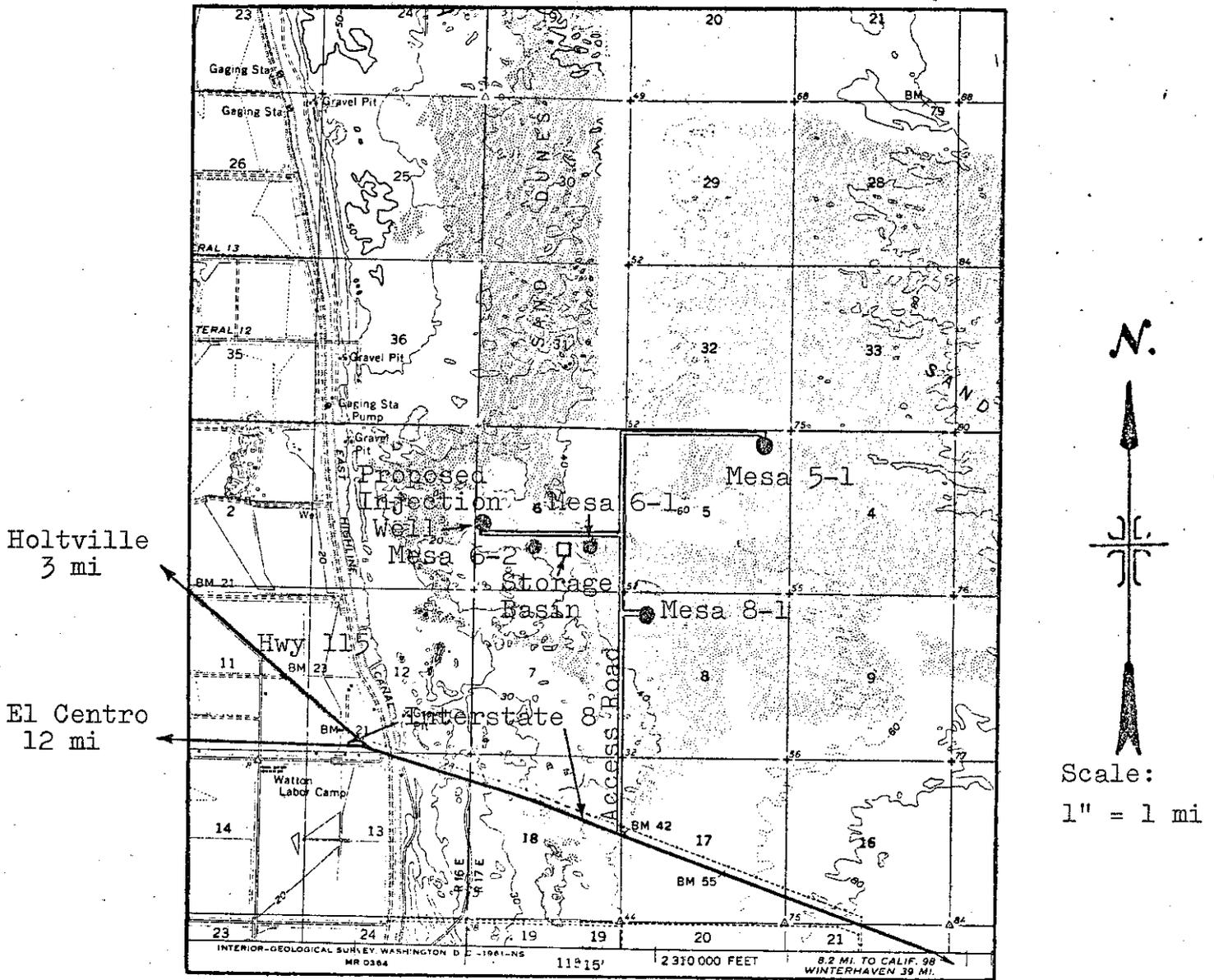
ORDERED BY

Arthur Swajan
Executive Officer

July 13, 1977

Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD-7



SITE MAP

UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
 GEOTHERMAL WELL OPERATIONS
 East Mesa Area - Imperial County

Sections 5, 6 and 8, T16S, R17E, SBB&M

Glamis and Holtville 15 min. Topographic Maps

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

GENERAL MONITORING AND REPORTING PROVISIONS

DATE: July 13, 1977

GENERAL PROVISIONS FOR SAMPLING AND ANALYSIS

Water quality analysis shall be performed in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants", promulgated by the United States Environmental Protection Agency, or as approved by the Executive Officer.

Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health. In the event a certified laboratory is not available to the discharger, the executive officer may accept analyses performed by a noncertified laboratory until June 22, 1977, provided that the laboratory has applied for certification.

Effluent samples shall be taken downstream of any addition to the treatment works and prior to mixing with the receiving waters.

The discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to insure accuracy of measurements, or shall insure that both activities will be conducted.

A grab sample is defined as an individual sample collected in fewer than 15 minutes.

A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period. The volume of each individual sample is proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.

GENERAL PROVISIONS FOR REPORTING

For every item where the requirements are not met, the discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.

By January 30 of each year, the discharger shall submit an annual report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the discharger shall discuss the compliance record

new source as defined in Section 306 of the Federal Water Pollution Control Act, or amendments thereto, if such source were discharging pollutants to the waters of the United States, (b) new introductions of pollutants into such works from a source which would be subject to Section 301 of the Federal Water Pollution Control Act, or amendments thereto, if it were discharging such pollutants to the waters of the United States, (c) a substantial change in the volume or character of pollutants being introduced into such works by a source introducing pollutants into such works at the time the waste discharge requirements were adopted. Notice shall include a description of the quantity and quality of pollutants and the impact of such change on the quantity and quality of effluent from such publicly owned treatment works. A substantial change in volume is considered an increase of ten percent in the mean dry-weather flow rate. The discharger shall forward a copy of such notice directly to the Regional Administrator.

5. The discharger shall file with the Board a report on waste discharge at least 120 days before making any material change or proposed change in the character, location or volume of the discharge.

**6. This Board requires the discharger to file with the Board within 90 days after the effective date of this Order, a technical report on his preventive (fail-safe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. The technical report should:

Identify the possible sources of accidental loss, untreated waste bypass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

Evaluate the effectiveness of present facilities and procedures and state when they become operational.

Describe facilities and procedures needed for effective preventive and contingency plans.

Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational. (Reference: Sections 13267(b) and 13268, California Water Code.)

**For nonpublic facilities only.

This Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions may be incorporated as part of this Order, upon notice to the discharger.

- **7. The discharger shall submit to the Board, by January 30 of each year, an annual summary of the quantities of all chemicals, listed by both trade and chemical names, which are used for cooling and/or boiling water treatment and which are discharged.

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

DATE: July 13, 1977

STANDARD PROVISIONS

1. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, nor protect the discharger from his liabilities under federal, state, or local laws, nor guarantee the discharger a capacity right in the receiving waters.
2. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.
- *3. The discharger shall require any industrial user of the treatment works to comply with applicable service charges and toxic and pretreatment standards promulgated in accordance with Sections 204(b) 307, and 308 of the Federal Water Pollution Control Act or amendments thereto. The discharger shall require each individual user to submit periodic notice (over intervals not to exceed nine months) of progress toward compliance with applicable toxic and pretreatment standards developed pursuant to the Federal Water Pollution Control Act or amendments thereto. The discharger shall forward a copy of such notice to the Board and the Regional Administrator.
4. The discharger shall permit the Regional Board:
 - a. Entry upon premises in which an effluent source is located or in which any required records are kept;
 - b. Access to copy any records required to be kept under terms and conditions of this Order;
 - c. Inspection of monitoring equipment or records, and
 - d. Sampling of any discharge.
5. All discharges authorized by this Order shall be consistent with the terms and conditions of this Order. The discharge of any pollutant more frequently than or at a level in excess of that identified and authorized by this Order shall constitute a violation of the terms and conditions of this Order.

*Publicly owned facilities only.

6. The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed by the discharger to achieve compliance with the waste discharge requirements.
7. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of at a legal point of disposal, and in accordance with the provisions of Division 7.5 of the California Water Code. For the purpose of this requirement, a legal point of disposal is defined as one for which waste discharge requirements have been prescribed by a regional water quality control board and which is in full compliance therewith.
8. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
9. If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Water Pollution Control Act, or amendments thereto, for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition and so notify the discharger.
10. There shall be no discharge of harmful quantities of oil or hazardous substances, as specified by regulation adopted pursuant to Section 311 of the Federal Water Pollution Control Act, or amendments thereto.
11. In the event the discharger is unable to comply with any of the conditions of this Order, due to:
 - a. breakdown of waste treatment equipment;
 - b. accidents caused by human error or negligence; or
 - c. other causes such as acts of nature,

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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DATE: July 13, 1977

REPORTING REQUIREMENTS

1. The discharger shall file with the Board technical reports on self-monitoring work performed according to the detailed specifications contained in any Monitoring and Reporting Program as directed by the Executive Officer.
- *2. The discharger shall file a written report with the Board within 90 days after the average dry-weather waste flow for any month equals or exceeds 75 percent of the design capacity of his waste treatment and/or disposal facilities. The discharger's senior administrative officer shall sign a letter which transmits that report and certifies that the policy-making body is adequately informed about it. The report shall include:

Average daily flow for the month, the date on which the instantaneous peak flow occurred, the rate of that peak flow, and the total flow for that day.

The discharger's best estimate of when the average daily dry-weather flow rate will equal or exceed the design capacity of his facilities.

The discharger's intended schedule for studies, design, and other steps needed to provide additional capacity for his waste treatment and/or disposal facilities before the waste flow rate equals the capacity of present units. (Reference: Sections 13260, 13267(b), and 13268, California Water Code.)
- **3. The discharger shall notify the Board not later than 180 days in advance of implementation of any plans to alter production capacity of the product line of the manufacturing, producing or processing facility by more than ten percent. Such notification shall include estimates of proposed production rate, the type of process, and projected effects on effluent quality. Notification shall include submittal of a new report of waste discharge and appropriate filing fee.
- *4. The discharger shall notify the Board of (a) new introduction into such works of pollutants from a source which would be a

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