

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 78-97

WASTE DISCHARGE REQUIREMENTS
FOR
REPUBLIC GEOTHERMAL, INC.
EXPLORATORY DEEP-TEST WELLS
West of Calipatria - Imperial County

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

1. Republic Geothermal, Inc. (hereinafter also referred to as the discharger), 11823 East Slauson Avenue, Suite 1, Santa Fe Springs, California 90670, submitted a Report of Waste Discharge dated August 28, 1978.
2. The discharger proposes to drill six exploratory wells west of Calipatria in the Salton Sea area. Two wells would be drilled at each of three sites located as follows:

<u>Wells</u>	<u>Location</u>
Sweetwater Nos. 1 & 2	N $\frac{1}{2}$, NW $\frac{1}{4}$ of Section 11, T12S, R13E, SBB&M.
Sweetwater Nos. 3 & 4	N $\frac{1}{2}$, NE $\frac{1}{4}$ of Section 11, T12S, R13E, SBB&M
Sweetwater Nos. 5 & 6	S $\frac{1}{2}$, NE $\frac{1}{4}$ of Section 11, T12S, R13E, SBB&M.

3. The discharger proposes to discharge into the same mud sump from the two wells at each site a volume of drilling mud and initial well cleanout fluid that would not exceed a total of 10,000 barrels (or about 425,000 gallons). Following some evaporation, the residual mud would be removed from the sump and discharged at a solid waste disposal site approved by the Regional Board to receive this waste.

*Rescinded by
80-51
7/9/80*

4. The drilling mud components which may be used are:

Bentonite, or colloidal clay	Cypan
Wyoming Bentonite plus 0.1% of acrylic acid	Bit lube
Mica	Thread Dope
Lignite or Leonardite brown coal	Pipelax
Tannic acid	Diesel Oil
Caustic soda	Detergent
Cane fiber	Sodium Bicarbonate
Ground nutshells	Sodium Tetraphosphate
Lime	Sodium Carbonate
Barium Sulphate	Sodium Chloride
	Blown Asphalt

5. The discharger proposes to discharge a maximum of 95,000 barrels (or about 4 million gallons) per well of additional cleanout fluid containing sands and/or shales and filtrate, and a maximum of 50,000 barrels (or about 2.1 million gallons) per well of filter backwash fluid into steel tanks and/or into the mud sumps. Final disposal would be by subsurface reinjection, or after some evaporation, the residual mud would be discharged at a solid waste disposal site approved by the Regional Board to receive this waste.
6. The discharger proposes to discharge a maximum of three million barrels (or about 138 million gallons) per well of production (flow) testing fluid into steel tanks and/or into the mud sumps, and then inject this fluid into wells either specifically drilled or converted for disposal purposes.
7. The discharger is hereby informed that there are no solid waste disposal sites in the Colorado River Basin Region at this time that have been approved by the Regional Board to receive geothermal salt and brine wastes.
8. The Water Quality Control Plan for the West Colorado River Basin Region was adopted on April 10, 1975. This Order implements the objectives stated in said Plan.
9. Beneficial uses to be protected by this Order are as follows:
- a. Groundwater
 1. Shallow groundwaters at the discharge location are saline, are not beneficially used, and eventually drain to Salton Sea.
 2. Deep groundwaters are saline and are being investigated for geothermal development.

10. Imperial County Planning Department has prepared an Environmental Impact Report for these wells. Said report states that this project will not have any significant adverse effects on the environment.
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.

IT IS HEREBY ORDERED, Republic Geothermal, Inc., shall comply with the following:

A. Discharge Specifications

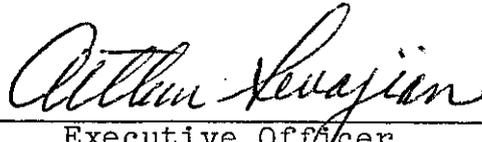
1. Neither the treatment nor the discharge of wastes shall create a pollution or a nuisance as defined in Division 7 of the California Water Code.
2. Geothermal fluids and other wastes shall not enter the Salton Sea or any canals, drainage channels, or drains (including subsurface drainage systems or aquifers) which could provide flow or seepage to Salton Sea.
3. Temporary discharge and/or storage of drilling mud and cleanout and flow test water other than into mud sumps or steel tanks from which there is no seepage or overflow, is prohibited.
4. Mud sumps shall be constructed so that the fluids contained within shall not penetrate through the lining during the containment period.
5. Adequate protective works and maintenance shall be provided to assure that mud sumps will not become eroded or otherwise damaged during the project period, and/or until all well drilling, well cleanout, and flow test materials are removed.
6. A minimum freeboard of at least two (2) feet shall be maintained in mud sumps and steel tanks.
7. 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 quality of the injection water is comparable to that of the receiving water.

8. 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 waste.
9. Drilling muds, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l, and not containing hazardous wastes may be disposed at a Class II-2 disposal site approved by the Regional Board to receive said wastes.
10. Final disposal of residual wastes in accordance with Specifications No. 7,8 and 9 above, and cleanup of all contents, 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.

B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 78-97" and "General Provisions for Monitoring and Reporting", and future revisions thereto, as specified by the Executive Officer.
2. 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 said 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.

I, Arthur Swajian, Executive Officer, do hereby certify that 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 November 15, 1978.



Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 78-97
FOR

REPUBLIC GEOTHERMAL, INC.
EXPLORATORY DEEP-TEST WELLS
West of Calipatria - Imperial County
Location: Section 11, T12S, R13E, SBB&M

MONITORING

Republic Geothermal, Inc. 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 of geothermal wastes discharged to each mud sump	Gallons	Monthly
2. Volume contained in each mud sump	Gallons	Monthly
3. Total dissolved solids content of waste fluid contained in each mud sump	mg/l	Monthly
4. Volume directly reinjected to subsurface strata from each geothermal well	Gallons	Monthly
5. Total dissolved solids concentration of waste fluid injected into each injection well	mg/l	Monthly
6. 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
7. Location and depth of each injection well		At least 10 days prior to commencement of injection

8. Within 10 days after the initial discharge of any geothermal fluids from a well, the discharger shall report said initial discharge to the Board.
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. Estimate of total amount (tons) of saline drilling muds and salt and brine waste hauled to Class I or Class II-1 solid waste disposal site - immediately upon completion of haul.
11. Estimate of total amount (tons) of non-saline drilling muds hauled to a Class II solid waste disposal site - upon completion of operations - reported in final monitoring report.
12. Report of completion of removal of all geothermal wastes from mud sumps - reported within one week following completion of work.
13. At least 10 days prior to destruction of any mud sump, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.

REPORTING

The above monitoring program shall be implemented immediately upon 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 (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:

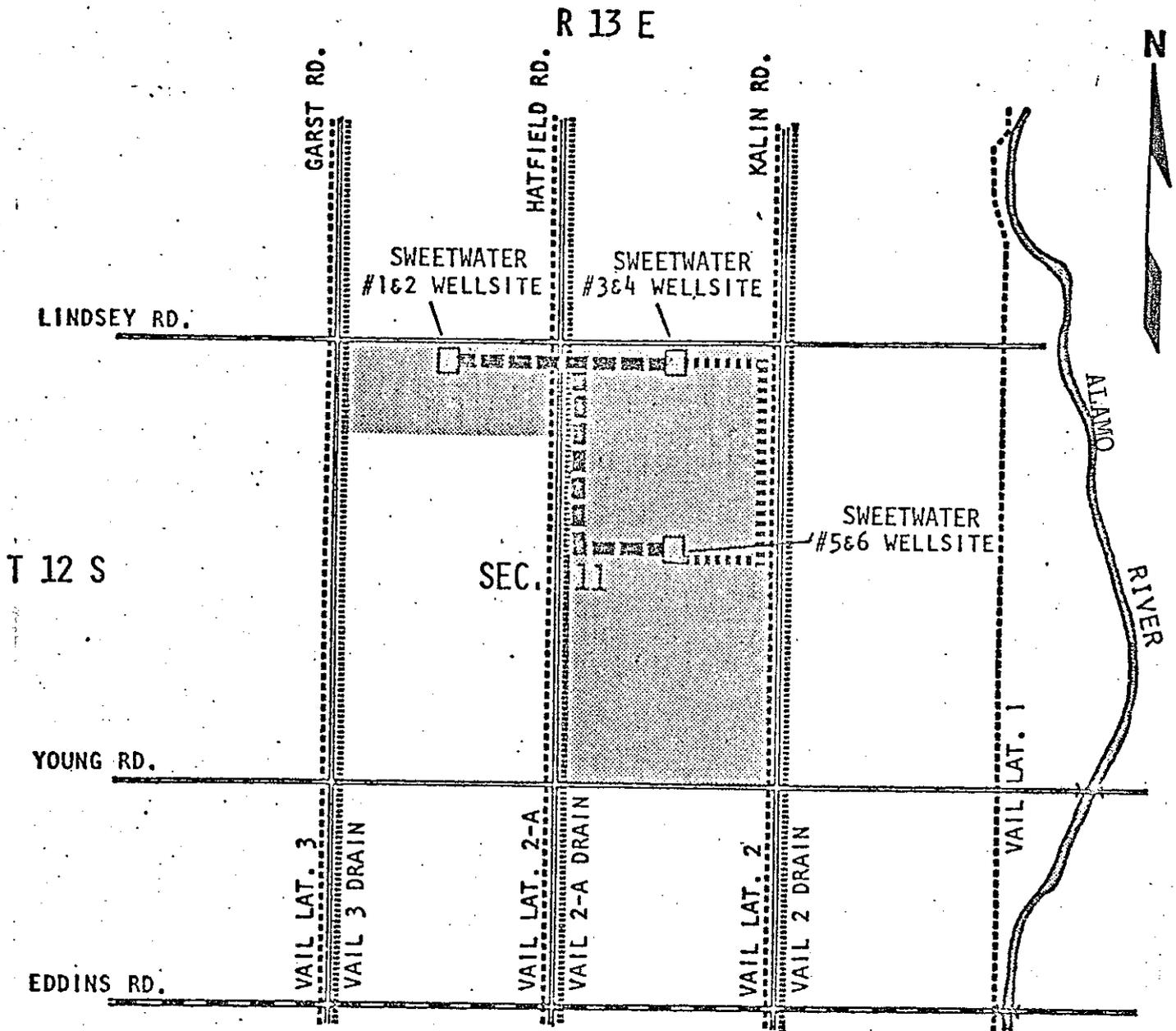
California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

Ordered by

Armen Sujanian
Executive Officer

November 15, 1978

Date



 PROPOSED ROUTE - TEMPORARY DISPOSAL LINE

 PROPOSED ALTERNATE ROUTE TEMPORARY DISPOSAL LINE

LOCATION PLAN

SCALE: 1" = 2,000'

Order No. 78-97

SITE MAP
 REPUBLIC GEOTHERMAL, INC.
 EXPLORATORY DEEP-TEST WELLS
 West of Calipatria - Imperial County
 Discharge Locations: N 1/2, NW 1/4; N 1/2, NE 1/4; and
 S 1/2, NE 1/4 of Section 11,
 T12S, R13E, SBB&M
 USGS Niland 7.5 min. Topographic Map