

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 90-005

WASTE DISCHARGE REQUIREMENTS
FOR
GEMLP, dba MISSION OPERATION & MANAGEMENT, INC.
GEOTHERMAL DEVELOPMENT WELLS
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
Imperial County

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

1. GEMLP (hereinafter referred to as the discharger), owner of the GEM II and GEM III facilities located at 3300 East Evan Hewes Highway, Holtville, CA 92250, dba Mission Operation and Management Inc. (18872 MacArthur Blvd, Suite 400, Irvine, CA 92715-1448) submitted an Application for Waste Discharge Requirements with the appropriate filing fee on October 27, 1989. The Application was deemed complete on October 31, 1989.
2. The discharger has drilled four exploratory geothermal wells in accordance with Waste Discharge Requirements (Board Orders No. 88-013 and 88-018) adopted by the Regional Board on January 27, 1988. Information about these wells has been reported by the discharger as follows:

| <u>Well</u> | <u>Location</u> | <u>Total Depth</u> | <u>Order No.</u> |
|-------------|--|--------------------|------------------|
| 44-9 | SE $\frac{1}{4}$, NW $\frac{1}{4}$, Section 9 | 8,694' | 88-018 |
| 42-16 | NE $\frac{1}{4}$, NW $\frac{1}{4}$, Section 16 | 8,001' | 88-018 |
| 27-8 | SW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 8 | 10,714' | 88-013 |
| 53-17 | SW $\frac{1}{4}$, NE $\frac{1}{4}$, Section 17 | 11,639' | 88-013 |

(All well locations are in T16S, R17E, SBB&M)

3. The discharger began drilling two geothermal wells in June 1988 in accordance with Waste Discharge Requirements (Board Order No. 85-098) adopted by the Regional Board on November 20, 1985. Regional Board staff verified the locations of these two wells during an inspection on June 28, 1988 as follows:

| <u>Well</u> | <u>Location</u> |
|-------------|--|
| 24-8 | NW $\frac{1}{4}$, NW $\frac{1}{4}$, Section 8, T16S, R17E, SBB&M |
| 41-7 | NW $\frac{1}{4}$, NE $\frac{1}{4}$, Section 7, T16S, R17E, SBB&M |

4. The discharger proposes to drill twelve additional geothermal wells for production and injection of geothermal fluids in the East Mesa KGRA. These wells and those listed above will supply geothermal fluid to operate a 37 megawatt (net) power plant to be constructed by the discharger in the SW $\frac{1}{4}$, NW $\frac{1}{4}$, Section 7, T16S, R17E, SBB&M.

SUPERSEDED BY
BOARD ORDER NO. 00-101

The twelve additional wells will be directionally drilled from eight well pads as described below:

| <u>Well Pad</u> | <u>Locations</u> (within T16S, R17E, SBB&M, except as noted) |
|-----------------|---|
| 7A | NW $\frac{1}{4}$, Section 7 |
| 7B | SW $\frac{1}{4}$, Section 7 |
| 7C | NE $\frac{1}{4}$, Section 7 |
| 7D | SE $\frac{1}{4}$, Section 7 |
| 8-1A | NW $\frac{1}{4}$, Section 8 |
| 12A | NE $\frac{1}{4}$, Section 12, T16S, R16E, SBB&M |
| 12B | SE $\frac{1}{4}$, Section 12, T16S, R16E, SBB&M |
| 18A | NE $\frac{1}{4}$, Section 18 |

5. The discharger reports that other wells may need to be drilled from the pads described above during the 30-year life of the project to replace any original wells that are no longer productive as either disposal or production wells.
6. A mud pit, capable of containing the expected discharge of drilling mud and cuttings, has been constructed at each well site. Additional mud pits would be constructed at any newly drilled well sites.
7. Once the wells at each newly drilled well site described in Findings No. 4 and 5, above, have been completed, their respective mud pits shall have all of the drilling muds and cuttings removed and disposed of in a manner acceptable to the Regional Board's Executive Officer. The final disposal of these wastes and the final closure of the respective mud pits shall be completed within 60 days of the completion of the drilling of the respective wells.
8. The discharger proposes to construct at each well pad a temporary brine containment basin to hold brine from flow tests of the wells at the pad. These basins would have capacities of 250,000 gallons each with the exception of well pad 7A, which would have a capacity of 500,000 gallons and would service both the 7A and 7C well pads. No brine basin is proposed for the 7C well pad due to the shallow depth of ground water in this location. Liquids discharged to these basins would be evaporated or disposed of through injection.
9. Geothermal fluids in this portion of the East Mesa KGRA are known to have Total Dissolved Solids concentrations of 1,600 mg/l to 15,000 mg/l. The fluids do not contain any constituents at levels either in the fluid or in concentrated salt cake, which are classified as hazardous by the Department of Health Services, Toxic Substances Control Division, in accordance with the California Code of Regulations, Title 22, Chapter 30, Article 11, Section 66699.
10. Two shallow ponds, each approximately five (5) acres in size, are located within the SE $\frac{1}{4}$ of Section 6, T16S, R17E, SBB&M. The Imperial Irrigation District's East Highline Canal is located approximately 1 mile west of the power plant site.

11. This discharge of geothermal drilling muds, drill cuttings, production, test, and cleanout fluids is subject to Section 2511(g), Subchapter 15, Chapter 3, Title 23 of the California Code of Regulations and Section 25143, Chapter 6.5, Division 20 of the Health and Safety Code.
12. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted by the Regional Board on November 14, 1984.
13. The beneficial uses of ground waters in the Imperial Hydrologic Unit are:
 - a. Municipal supply (MUN)
 - b. Industrial supply (IND)
14. Within the Imperial Hydrologic Subunit, much of the ground water is too saline for municipal use. The existing municipal use in this subunit is practically inconsequential.
15. The primary purpose of drains in the Imperial Valley is for conveyance of drainage in support of agriculture.
16. The beneficial uses of waters in the Imperial Valley Drains are:
 - a. Fresh Water Replenishment of Salton Sea (FRSH)
 - b. Noncontact Water Recreation (REC II)
 - c. Warm Water Habitat (WARM)
 - d. Wildlife Habitat (WILD)
17. In accordance with Section 15301, Chapter 3, Title 14, of the California Code of Regulations, the issuance of these waste discharge requirements, which govern the operation of an existing facility involving negligible or no expansion of use beyond that previously existing, is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000 et seq.).
18. Geothermal projects are also regulated by the California Division of Oil and Gas. However, the Regional Board and the local District of the Division of Oil and Gas (located in El Centro) have worked together to review this project in accordance with the Memorandum of Agreement between the State Water Resources Control Board and the Division of Oil and Gas as originally approved in August 1982, with subsequent amendment approved on May 19, 1988.
19. The Board has notified the discharger and interested agencies and persons of its intent to update waste discharge requirements for the discharge.
20. The Board in a public meeting heard and considered all comments pertaining to the existing discharge.

IT IS HEREBY ORDERED, GEMLP shall comply with the following specifications:

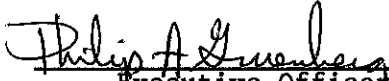
1. Neither the treatment nor the discharge of wastewater shall create pollution or nuisance as defined in Division 7 of the California Water Code.
2. Once the wells at each newly drilled well site described in Findings No.4 and 5, above, have been completed, their respective mud pits shall have all of the drilling muds and cuttings removed and disposed of to the satisfaction of the Regional Board's Executive Officer. The final disposal of these wastes and the final closure of the respective mud pits shall be completed within 60 days of the completion of the drilling of the respective wells.

3. Geothermal cleanout, test, and production fluids shall be discharged into either:
 - a. Earthen basins with a minimum six inch compacted clay lining having a liner permeability of 1×10^{-6} cm/sec or less. Clay lining shall be defined as at least 40 percent of the material, by weight, passing a No. 200 U. S. Standard Sieve; or
 - b. Earthen basins lined with a synthetic liner of not less than 40 mil thickness approved by the Executive Officer; or
 - c. Metal or other type containers approved by the Executive Officer.All basins and containers shall be constructed, protected, and maintained to ensure their effectiveness.
4. A minimum freeboard of two feet shall be maintained in all containment basins at all times.
5. Fluids discharged by subsurface injection shall be reinjected into the same aquifer from which the geothermal fluids are produced. Fluids discharged by subsurface injection shall be injected below the fracture pressure of the receiving aquifer and of the confining layer immediately above the receiving aquifer.
6. 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, or the discharger can demonstrate to the satisfaction of the Executive Officer that injection in said zone will not pose a threat to water quality.
7. Final disposal of residual waste and cleanup of containment facilities shall be accomplished to the satisfaction of the Executive Officer upon abandonment or closure of operations. Lack of construction or operational activity on site for a period of one year shall constitute abandonment for the purpose of this Order.
8. All containment basins shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period.
9. Geothermal fluids and other wastes shall not enter any canals, natural or man-made drainage channels, or drains (including subsurface drainage systems) except as allowed under an appropriate National Pollutant Discharge Elimination System (NPDES) permit.
10. Solids which may accumulate in the concrete cooling tower basin shall not be spread on the surrounding property until an analysis has been performed to ensure that there are no constituents in hazardous concentrations and written approval for such a disposal is granted to the discharger by the Regional Board's Executive Officer.
11. None of the geothermal fluids or cooling tower waters may be used on access roads, well pads, or other developed locations for dust control purposes.
12. The discharger shall comply with "Monitoring and Reporting Program No. 90-005" and future revisions thereto, as specified by the Executive Officer.

13. At least 10 days prior to the discharge of any material into a containment basin, the discharger shall submit to the Regional Board a report signed by a California Registered Civil Engineer or California Certified Engineering Geologist, advising the Executive Officer that the containment basin and attendant facilities are constructed to meet the requirements of this Order.
14. The discharger shall submit to the Regional Board at least 30 days prior to commencement of operation at each new well site, a written report on the proposed method and estimated costs of cleanup and closure in accordance with the requirements of this Order.
15. The discharger shall submit to the Regional Board, at least 30 days prior to the discharge to any newly constructed containment basin, written adequate assurance that money is committed in the amount of \$100,000 to ensure that all containment basins are cleaned up and closed in accordance with the specifications and provisions of this Board Order No. 90-005.
16. Prior to any change of ownership of these operations, the discharger shall transmit a copy of this Order to the succeeding owner/operator, and forward a copy of the transmittal letter to this Board.
17. This Order does not authorize violation of any federal, state, or local laws or regulations.

IT IS FURTHER ORDERED that Board Order No. 88-088 be superseded by this Order.

I, Philip A. Gruenberg, 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 January 17, 1990.



Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 90-005
FOR
GEMLP, dba MISSION OPERATION & MANAGEMENT, INC.
GEOHERMAL DEVELOPMENT WELLS
EAST MESA KNOWN GEOHERMAL RESOURCE AREA (KGRA)
Imperial County

Location of Discharge: Section 7, 8, 9, 16, 17, and 18, T16S, R17E, and Section 12, T16S, R16E, SBB&M

MONITORING

GEMLP, dba Mission Operation & Management, Inc., 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 at each well, a written report on the proposed method and estimated costs of cleanup and closure in accordance with the requirements of this Order.
2. At least 10 days prior to the discharge of any material into a temporary containment basin, the discharger shall submit to the Regional Board a report signed by a California Registered Civil Engineer or a California Certified Engineering Geologist, advising the Executive Officer that the temporary containment basin and attendant facilities are constructed to meet the requirements of this Order.
3. The discharger shall submit the following information:

| <u>Constituent</u> | <u>Unit</u> | <u>Reporting Frequency</u> |
|---|------------------|---|
| a. Volume of discharge contained in each temporary containment basin | Gallons | Monthly |
| b. Volume of geothermal waste discharged at a waste management facility, and name of facility | Gallons | Monthly |
| c. Total Dissolved Solids concentration and volume of fluid injected into each injection well | mg/l, Gallons | Monthly |
| d. Total Dissolved Solids concentration of ground water contained in strata proposed to receive fluid waste injection | mg/l | At least 10 days prior to commencement of injection |

4. Immediate reporting of any accidental spillage or release of waste material, and immediate measures being taken to correct same and to limit detrimental effects.

REPORTING

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports of Item 4 (above) shall be forwarded immediately and shall be preceded by telephone communication to the Regional Board's office, (619)346-7491). Copies of 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:

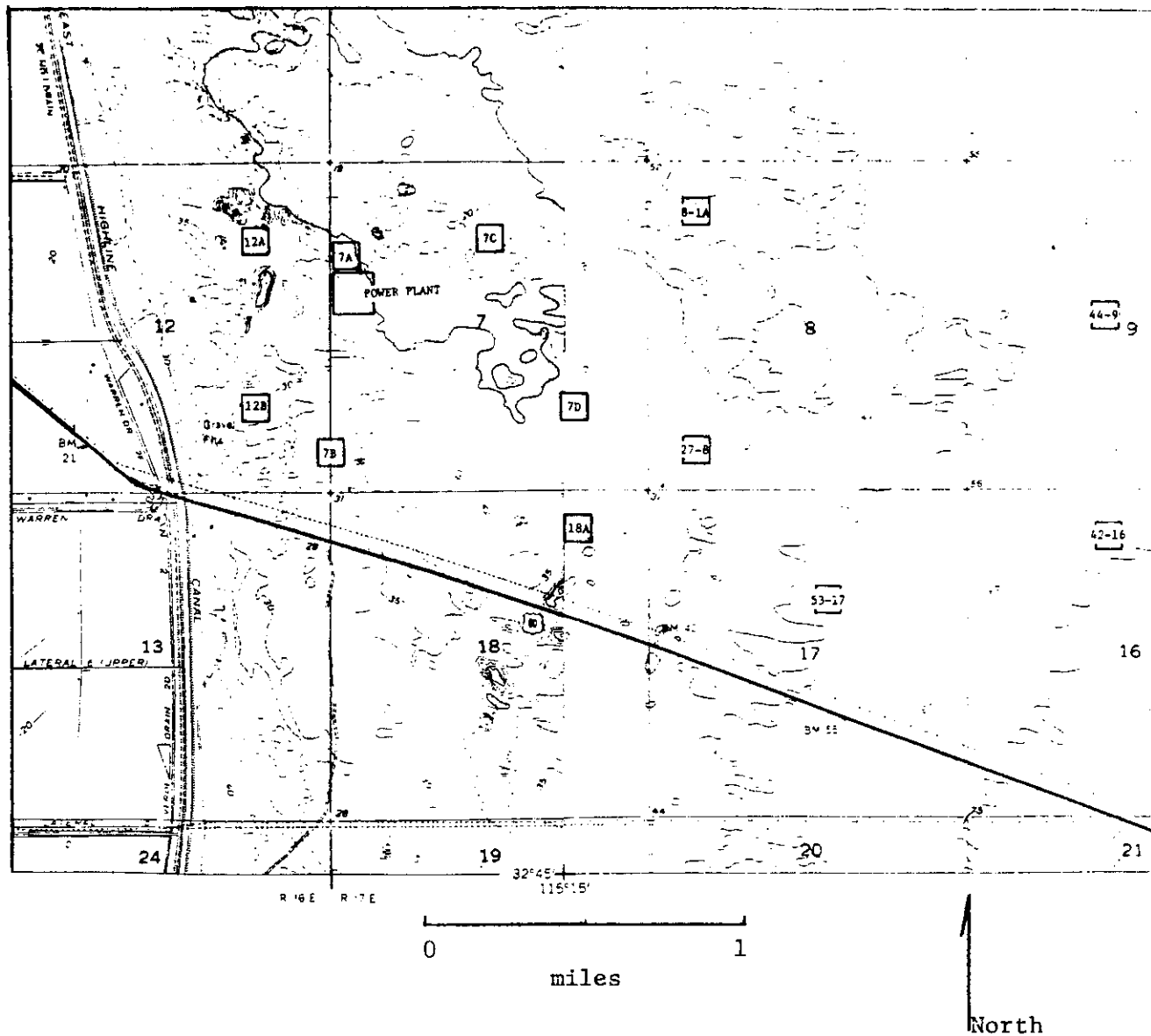
California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

ORDERED BY:

Philip A. Greenberg
Executive Officer

January 17, 1990
Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - 7



GEMPL, dba MISSION OPERATION & MANAGEMENT, INC.
GEOTHERMAL DEVELOPMENT WELLS
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
Imperial County

Sections 7, 8, 9, 16, 17, 18, T16S, R17E,
and Section 12, T16S, R16E, SBB&M
USGS Glamis SW and Holtville East 7.5 min. Topographic Map

Order No. 90-005