

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

ORDER NO. 85-98

**WASTE DISCHARGE REQUIREMENTS
FOR
MAGMA POWER COMPANY
THREE 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. Magma Power Company, (hereinafter also referred to as the discharger), P.O. Box 17760, Los Angeles, CA 90017, submitted a Report of Waste Discharge, dated August 5, 1985.
2. The discharger proposes to drill three (3) development geothermal wells in the East Mesa KGRA on Federal Leases CA-964 and CA-6219 at the following locations:

<u>Injection Well</u>	<u>Location</u>
66-7	SE 1/4, NW 1/4, SE 1/4 of Section 7, T16S, R17E, SBB&M
<u>Production Well</u>	<u>Location</u>
11-8	NW 1/4, NW 1/4, NW 1/4 of Section 8, R16S, R17E, SBB&M
14-8	SW 1/4, SW 1/4, NW 1/4 of Section 8, T16S, R17E, SBB&M.

A site plan is shown in Attachment "A" appended hereto as a part of this Order.

3. A sump, 125 feet by 50 feet by 5 feet deep, with an approximate capacity of 234,000 gallons is proposed to be constructed at each well site. Each site would utilize about one (1) acre of surface area.
4. The discharger proposes to discharge into each sump a maximum of 96,000 gallons of drilling mud and drill cuttings. Following some evaporation, the residual mud would be removed from the sumps and discharged at an approved waste management unit.

*Cancelled
9/29/88*

*Replaced
9/2/88*

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

Bentonite	Sodium Polyacrylate
Lignite	Mica
Caustic Soda (NaOH)	Sawdust
Detergent	Sodium Hexametaphosphate
Sodium Bicarbonate	Barite

6. The discharger proposes to discharge into each sump 21,000 gallons of cleanout fluid. Final disposal of this fluid would be by subsurface reinjection, or after some evaporation, the residual fluid would be discharged at an approved waste management unit.
7. Production flow testing fluids would be injected subsurface.
8. Geothermal fluids in this portion of the East Mesa KGRA are known to have a Total Dissolved Solids concentration of 9,000 mg/l to 15,000 mg/l. The fluid does 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 California Administrative Code, Title 22, Chapter 30, Article 11, Section 66699.

Reference:

1. Report titled, "A Study to Determine the Environmental Effects of an Accidental Release of Hydrothermal Fluids on the East Mesa Ecosystem", Bureau of Reclamation, dated April 10, 1978.
2. Other numerous sources, copies of which are available for review in the Office of the Regional Board.
9. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted on November 14, 1984. The Basin Plan contains water quality objectives for the Imperial Hydrologic Unit.
10. There are no surface waters in the vicinity of the discharge. Shallow ground waters are of marginal quality and presently are not beneficially used. Deep ground waters are being tested for potential geothermal power production.
11. The Regional Board approved on November 20, 1985, Negative Declaration SCH # 85100213 for these wells in accordance with California Environmental Quality Act and State Guidelines. The Board determined that there will be no substantial adverse effect on the environment as a result of this project.
12. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.
13. The Board in a public meeting heard and considered all comments pertaining to the discharge.

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

Sodium Hexametaphosphate	Sodium Bicarbonate
Sodium Hydroxide	Detergent
Sodium Chloride	Caustic Soda (NaOH)
Sodium Polyacrylate	Lignite
	Bentonite
 6. The discharger proposes to discharge into each sump 21,000 gallons of cleanout fluid. Final disposal of this fluid would be by subsurface reinjection, or after some evaporation, the residual fluid would be discharged at an approved waste management unit.
 7. Production flow testing fluids would be injected subsurface.
 8. Geothermal fluids in this portion of the East Mesa KGRA are known to have a Total Dissolved Solids concentration of 2,000 mg/L to 15,000 mg/L. The fluid does 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 California Administrative Code, Title 22, Chapter 30, Article 11, Section 28820.
- Reference:
1. Report titled, "A Study to Determine the Environmental Effects of an Accidental Release of Hydrothermal Fluids on the East Mesa Ecosystem", Bureau of Reclamation, dated April 10, 1973.
 2. Other numerous sources, copies of which are available for review in the Office of the Regional Board.
 3. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted on November 14, 1984. The Basin Plan contains water quality objectives for the Imperial Hydrologic Unit.
 4. There are no surface waters in the vicinity of the discharge. Shallow ground waters are of marginal quality and presently are not beneficially used. Deep ground waters are being tested for potential geothermal power production.
 5. The Regional Board approved on November 20, 1985, Negative Declaration SCH # 85100213 for these wells in accordance with California Environmental Quality Act and State Guidelines. The Board determined that there will be no substantial adverse effect on the environment as a result of this project.
 6. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.
 7. The Board in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, Magma Power Company 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. Discharges shall be confined to the sumps.
3. Each sump shall be protected and maintained to ensure its effectiveness.
4. A minimum freeboard of at least two (2) feet shall be maintained in each sump.
5. Fluids discharged by subsurface injection shall be injected below the fracture pressure of the receiving aquifer or of the confining layer immediately above the receiving aquifer.
6. Upon abandonment or closure of operations, the residual wastes contained in the sump(s) shall be removed and disposed at a waste management unit in accordance with Discharge Specification No. 7 below. If the sump has appropriate containment features, it may be reused. Lack of construction or operational activity for a period of one (1) year shall constitute abandonment for the purposes of this Order.
7. Drilling muds with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l shall be discharged at a Class I or Class II Waste Management Unit.

B. Prohibitions

1. Temporary discharge and/or storage of drilling mud, drill cuttings, and cleanout fluid other than in sumps having 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.
2. On-site storage of drilling muds, cuttings, and cleanout fluids for longer than one (1) year is prohibited.
3. No geothermal production fluid shall be discharged to the sumps.
4. Fluids discharged by subsurface injection shall not be injected into any subsurface aquifer 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 and that the discharger demonstrates to the satisfaction of the Regional Board that injection into said zone will not pose a threat to water quality.

IT IS HEREBY ORDERED, Nagma Power Company 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. Discharges shall be confined to the sumps.
3. Each sump shall be protected and maintained to ensure its effectiveness.
4. A minimum freeboard of at least two (2) feet shall be maintained in each sump.
5. Fluids discharged by subsurface injection shall be injected below the fracture pressure of the receiving aquifer or of the confining layer immediately above the receiving aquifer.
6. Upon abandonment or closure of operations, the residual wastes contained in the sump(s) shall be removed and disposed at a waste management unit in accordance with Discharge Specification No. 7 below. If the sump has appropriate containment features, it may be reused. Lack of construction or operational activity for a period of one (1) year shall constitute abandonment for the purposes of this Order.
7. Drilling muds with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/L shall be discharged at a Class I or Class II Waste Management Unit.

B. Prohibitions

1. Temporary discharge and/or storage of drilling mud, drill cuttings, and cleanout fluid other than in sumps having 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.
2. On-site storage of drilling muds, cuttings, and cleanout fluids for longer than one (1) year is prohibited.
3. No geothermal production fluid shall be discharged to the sumps.
4. Fluids discharged by subsurface injection shall not be injected into any subsurface aquifer 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 and that the discharger demonstrates to the satisfaction of the Regional Board that injection into said zone will not pose a threat to water quality.

C. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 85-98", and future revisions thereto, as specified by the Executive Officer.
2. At least ten (10) days prior to the discharge of any materials into a sump, the discharger shall submit to the Regional Board a technical report showing the construction of each sump, and a certificate signed by a California Registered Civil Engineer or a certified Engineering Geologist 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 at each well, a written report on the proposed method and estimated costs of cleanup and closure of each well site in accordance with the requirements of this Order.
4. 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.
5. This Order does not authorize violation of any federal, state, or local laws or regulations.

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 November 20, 1985.



Executive Officer

C. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 85-98", and future revisions thereto, as specified by the Executive Officer.

2. At least ten (10) days prior to the discharge of any materials into a sump, the discharger shall submit to the Regional Board a technical report showing the construction of each sump, and a certificate signed by a California Registered Civil Engineer or a certified Engineering Geologist 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 at each well, a written report on the proposed method and estimated costs of cleanup and closure of each well site in accordance with the requirements of this Order.

4. 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.

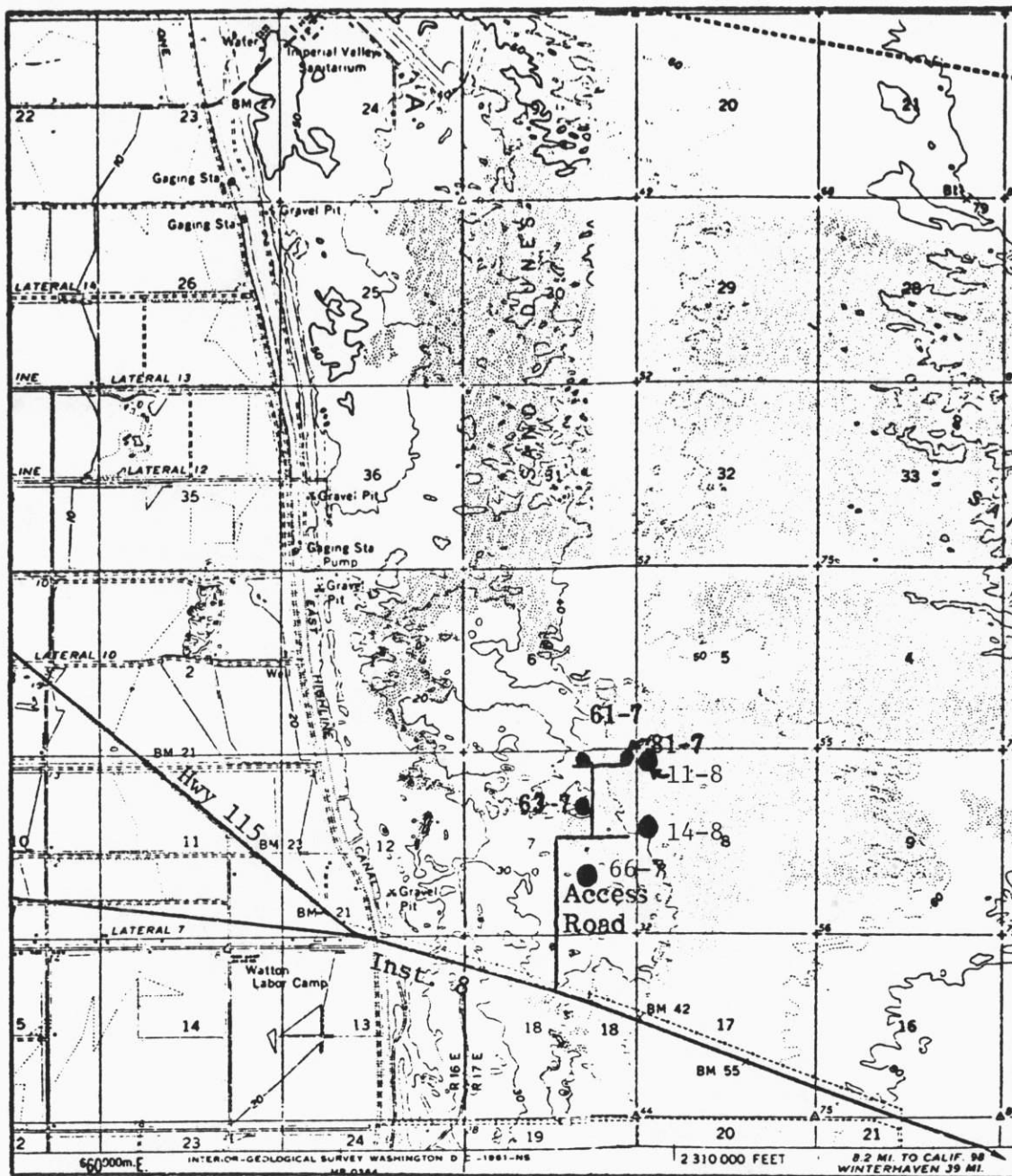
5. This Order does not authorize violation of any federal, state, or local laws or regulations.

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 _____.

Executive Officer

ATTACHMENT "A"

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - 7



SITE MAP

MAGMA POWER COMPANY
GEOTHERMAL WELLS

East Mesa Area - Imperial County
Portions of the N $\frac{1}{2}$ of Section 7, T16S, R17E, SBB&M
USGS Holtville and Glamis 15 min. Topographic Maps

Order No. 85-98

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

**MONITORING AND REPORTING PROGRAM NO. 85-98
FOR
MAGMA POWER COMPANY
THREE GEOTHERMAL DEVELOPMENT WELLS
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
Imperial County**

Location of Discharge: Sections 7 and 8, T16S, R17E, SBB&M

MONITORING

Magma Power Company 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 of each well site in accordance with requirements of Order No. 85-98.
2. At least ten (10) days prior to the discharge of any materials into a 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 or a certified Engineering Geologist stating that the sump and attendant facilities are constructed to meet the requirements contained in Board Order No. 85-98.

<u>Constituents</u>	<u>Unit</u>	<u>Reporting Frequency</u>
3. Volume of discharges contained in each sump.	Gallons	Monthly
4. Volume of drilling muds containing greater than 6,000 mg/l TDS concentration discharged at a Class I or Class II waste management unit, and name of unit.	Gallons	Monthly
5. Volume and total dissolved solids concentration of drilling mud containing less than 6,000 mg/l TDS discharged at a Class III waste management unit and the name of unit.	Gallons and mg/l	Monthly

<u>Constituents</u>	<u>Units</u>	<u>Reporting Frequency</u>
6. Total dissolved solids concentration of waste fluid injected into each injection well.	mg/l	Monthly
7. Total dissolved solids concentration of ground water contained in strata proposed to receive waste fluid injection.	mg/l	At least 10 days prior to commencement of injection.
8. Immediate reporting of any accidental spillage or release of waste material, and immediate measures being taken to correct same and to limit detrimental effects.		
9. Report of completion of removal of all geothermal waste from mud sumps - reported within one (1) week following completion of work.		
10. At least ten (10) days prior to destruction of each 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 8 (above) shall be forwarded immediately and shall be preceded by phone communication to the Regional Board's office. Phone No. (619) 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 S. Lujan
Executive Officer

November 20, 1985
Date

Reporting Frequency	Units	Constituents
Monthly	mg/l	8. Total dissolved solids concentration of waste fluid injected into each injection well.
At least 10 days prior to commencement of injection.	mg/l	7. Total dissolved solids concentration of ground water contained in strata proposed to receive waste fluid injection.
		6. Immediate reporting of any accidental spillage or release of waste material, and immediate measures being taken to correct same and to limit detrimental effects.
		5. Report of completion of removal of all geothermal waste from mud sumps - reported within one (1) week following completion of work.
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