

California Regional Water Quality Control Board
North Coast Region

ORDER NO. R1-2009-0103
WDID NO. 1B86002RSON

WASTE DISCHARGE REQUIREMENTS

FOR

GEYSERS POWER COMPANY, LLC

CALPINE CORPORATION

AT

THE GEYSERS

Sonoma County

The California Regional Water Quality Control Board, North Coast Region, (hereinafter Regional Water Board), finds that:

1. The Geysers Power Company, LLC (Discharger), a subsidiary of the Calpine Corporation, operates several geothermal power plants on an approximately 30 square mile area at the Geysers Known Geothermal Resource Area (the Geysers) located on a ridge top between Sonoma and Lake Counties, east of Geyserville (refer to Site Location Map, Attachment A and Site Plan, the Geysers Project SRGRP/IRWP Expansion, Attachment B). The Geysers is located within the Big Sulphur Creek and Squaw Creek Watersheds, which are tributaries to the Russian River.
2. Geothermal operations at the site include extracting steam from numerous geothermal wells; transporting the steam, via large, insulated pipes, to power plants to generate electricity; and injecting a combination of spent geothermal fluids, an insignificant amount of power plant black water (septic tank supernatant), treated wastewater from Lake and Sonoma Counties, surface water, and collected storm water runoff (collectively referred to as injectate) back into the geothermal reservoir. The project is located partially within the Central Valley Region (Region 5) and partially within the North Coast Region (Region 1). The North Coast Regional Water Board presently regulates the Discharger's geothermal operations and activities occurring within Region 1 under Waste Discharge Requirements (WDR) Order No. R1-2008-0025, which will be replaced by Order No. R1-2009-0103.
3. Under WDR Order No. R1-2008-0025, the Discharger is permitted to inject approximately 3.0 million gallons per day (mgd) of disinfected, secondary treated

effluent from the Lake County Special Districts, Southeast Regional Wastewater System (Lake County treated wastewater) and an annual average of 19.8 mgd of tertiary treated effluent from the City of Santa Rosa Laguna Subregional Wastewater Reclamation Facility (Santa Rosa treated wastewater) into the geothermal reservoir via injection wells to produce geothermal steam. This treated wastewater would have otherwise been discharged onto land or into surface waters.

4. The Discharger is proposing to expand its operations into a new area known as the Buckeye Development Project and a previously developed and abandoned geothermal area known as the Wildhorse Development Project. The Buckeye and Wildhorse Development Projects (collectively referred to as the Projects) are located in The Geysers between the Aidlin Power Plant to the west and the Discharger's developed steamfields and power plants to the east. The proposed Projects will supply steam to the Discharger's existing power plants or could be used for steamfield recharge.
5. Activities associated with the proposed Buckeye Development Project include: constructing up to five new well pads, drilling up to 21 geothermal wells, and constructing 2,500 feet of new roads and 6,700 feet of new access corridors for pipelines and similar geothermal infrastructure. Activities associated with the proposed Wildhorse Development Project include constructing up to three new well pads, an estimated nine new geothermal wells, constructing 3,000 feet of new access roads and 12,600 feet of new access corridors for pipelines and similar geothermal infrastructure, and installing a 21 kilovolt electrical distribution line. The purpose of the Project is to generate power and to recharge steam resources within the Geysers Steamfield.
6. This Order and its associated Notification, Monitoring and Reporting Program Order (NMRP) address a number of activities, waste streams, and possible discharges of waste associated with the Discharger's operations on the site, including well construction and drill cutting disposal; well and well pad maintenance activities; road and pipeline construction and maintenance; steam transport and handling; transport and injection of fluids, including a sodium hydroxide corrosion mitigation system and geothermal steam condensate and treated wastewater; capture, transport and disposal of storm water runoff; and spill and emergency response. The Discharger also maintains and operates two waste disposal units, which the Regional Water Board regulates separately under the following individual WDR Orders:
 - a. R1-2001-0079, covers the Geysers Power Company, LLC, Class II Waste Management Unit. This Order is still in effect;

- b. 99-35, for Geysers Power Company, LLC, for the injection of Lake County treated wastewater. Only the portion of 99-35 that covers the Geothermal Drilling Mud and Cuttings Disposal Area Waste Management Unit is still in effect; the rest of 99-35 will be rescinded by this Order.

Site Description

7. The Geysers steamfield sites and surrounding areas are rural, and are primarily used for geothermal steam and energy production, and hunting. Vegetation consists of chaparral, oak woodlands, grassland, and coniferous forest areas. The area consists of steep northwest to southeast trending mountainous terrain, ranging in elevation from 1,000 to 3,800 feet above sea level.

Storm Water Runoff

8. The Geysers steamfield receives approximately 60 inches of annual precipitation, with some years exceeding 114 inches of precipitation. The area experiences several snowstorms each year. Historically the area has received up to 18 inches of precipitation in a 24-hour period. Approximately 85 percent of the storm events occur between the months of November and April. Storm water runoff from the power plant sites can be toxic to aquatic life; the Discharger captures and contains all storm water generated on the power plant footprints, and injects the storm water into the geothermal reservoir via injection wells.

Geothermal Steam Condensate

9. Geothermal steam condensate produced during geothermal power generation is known to contain ammonia, which can be toxic to aquatic life present in streams. Geothermal steam condensate is also known to contain boron, which can be deleterious to irrigated agriculture located downstream of the development area. The steam condensate may also contain various other compounds and metals, which have the potential to adversely impact surface water quality.
10. The Discharger typically meters, transports, and injects the geothermal steam condensate into the subsurface steam-producing geothermal reservoir. The Discharger may also use geothermal steam condensate as a water source for drilling mud and other drilling related activities, earthwork compaction at the geothermal construction sites, and for fire suppression.

Treated Wastewater from Lake County and the City of Santa Rosa

11. The Lake County Sanitation District delivers disinfected secondary-23¹ treated wastewater, via pipeline, to a sedimentation basin owned by the Northern California Power Agency, in compliance with WDRs issued by the Central Valley Regional Water Quality Control Board. The Discharger transports and injects 3.0 mgd of this effluent into injection wells located within Region 1 in the southeast portion of The Geysers (Units 18 and 20). The Discharger is responsible for properly handling the Lake County treated wastewater, which it collects from the sedimentation basin. Disinfected secondary-23 recycled water means wastewater that has been treated using settling, oxidation and disinfection processes with total coliform bacteria in the disinfected effluent not exceeding 23 colonies in 100 milliliters of water. This treated water still poses a health risk through skin contact, ingestion, and inhalation of mist. An effluent spill would present health risks and cause soil erosion and sedimentation into streams. In the event of a pipeline failure, impacts caused by a spill would be minimized using pipeline isolation valves every two miles and at stream crossings and automatic equipment to shut down pump stations.
12. The City of Santa Rosa currently can deliver an annual average of 19.8 mgd of disinfected, tertiary treated wastewater, via pipeline, to a structure known as the Termination Reservoir, in compliance with Waste Discharge Requirements Order No. R1-2008-0091 which amends Order No. R1-2006-0045, issued to the City of Santa Rosa by the North Coast Regional Water Quality Control Board. The Discharger is responsible for handling the City's treated wastewater once the water exits the Termination Reservoir discharge flange or point-of-delivery. Disinfected tertiary treated water means wastewater that has been treated using settling, oxidation, filtration, and disinfection processes with total coliform bacteria in the disinfected effluent not exceeding 2.2 colonies in 100 milliliters of water. An effluent spill would cause soil erosion and sedimentation into streams. In the event of a pipeline failure, impacts caused by a spill would be minimized using pipeline isolation valves.

Steamfield Injectate Distribution System

13. The Discharger operates and maintains a system to distribute the injectate, which runs from the Termination Reservoir at the top of Pine Flat Road to the injection wells. The Discharger also operates and maintains a pipeline and injectate distribution system originating from the Northern California Power Agency sedimentation basin. The Discharger's recycled water distribution system consists of approximately 32.0 miles of 6- to 36-inch diameter pipeline,

¹ 23 MPN/100 mL for Total Coliform is the common standard for using reclaimed wastewater

a pump station to elevate the water to higher elevations in the Geysers, a one million gallon storage/surge protection tank, and approximately 55 existing injection wells.

In addition, the Lake County Sanitation District pipeline is connected to the pipeline carrying Santa Rosa's treated wastewater using a valve system to maximize flexibility for recharge. However, these valves will normally be closed to avoid mixing of the two treated water systems. The Discharger also operates and maintains pipelines and injectate distribution systems that originate at the power plant cooling tower basins, where excess geothermal condensate is collected and distributed to injection wells.

14. Geothermal reservoir conditions constantly change, and the use of geothermal wells for injection depends on many variables, including maintenance schedules, power generation demands, well function, geothermal reservoir response, etc. The Geysers distribution pipeline and injection system may distribute an annual average of 19.8 mgd of treated effluent from the City of Santa Rosa and 3.0 mgd from Lake County Sanitation District. Known existing and idle injection wells include the following:

Existing Injection Wells and Unit No.		Idle Injection Wells and Unit No.	
Aidlin 11	1	Aidlin 5	1
CA 1862-16	3	Aidlin 8	1
GDC32A13	5&6	CA 1862-6	3
GDC5313	5&6	CURRY8513	5&6
GDC53A13	5&6	GDC26	5&6
GDC8812	5&6	DX10	7&8
SB15	5&6	DX44	7&8
SB25	5&6	OF27A2	7&8
DX-5	7&8	OS3	7&8
OF45A12	7&8	LF2	9&10
OF51A11	7&8	LF3	9&10
OF73B12	7&8	OCF9618	12
OF87A2	7&8	GDCF9419	12
OS11	7&8	GDCF117A19	14
LF15	9&10	DX72	17
DX19	11	GDH2	17
DX61	11	GDCF6529	20
OS12	11		
OS16	11		
Prati9	11		
PratiST10	11		

Existing Injection Wells and Unit No.	Idle Injection Wells and Unit No.
PratiST54 11	
CMHC2 12	
CMHC6 12	
DX24 12	
DX26 12	
GCD3618 12	
CA 956A-2 13	
GDC8 14	
GDC18 14	
GDC19 14	
DX45 17	
DX47 17	
DV2 18	
DV4 18	
DV7333 18	
BEF42B33 20	
GDC1728 20	

15. This Order prohibits the discharge of injectate to soils, surface waters, or surface water drainage courses. However, in certain cases, the Discharger may use injectate for fire fighting or for soil compaction on well drilling pads. Injectate fluids might contain pathogens from minor amounts of power plant black water and Lake County treated wastewater, as well as metals and other compounds from geothermal condensate, which could enter surface waters during emergency applications for fire fighting or could leach from compacted soils and enter surface waters. Therefore, in the event that the Discharger uses injectate water for firefighting, or proposes to use injectate water for soil compaction, this Order and the associated Notification, Monitoring, and Reporting Program require that the Discharger provide notification, conduct monitoring, and take additional steps to protect water quality.

Surface Water

16. The Geysers is located within the Big Sulphur Creek and Squaw Creek watersheds of the Russian River Hydrologic Unit.
17. The beneficial uses of Squaw Creek and Big Sulphur Creek include:
- a. domestic supply
 - b. agricultural supply
 - c. industrial supply

- d. groundwater recharge
 - e. freshwater replenishment
 - f. water contact recreation
 - g. non-contact water recreation
 - h. sport fishing
 - i. warm freshwater habitat
 - j. cold freshwater habitat
 - k. preservation of areas of special biological significance
 - l. wildlife habitat
 - m. preservation of rare and endangered species
 - n. fish migration
 - o. fish spawning
18. Big Sulphur Creek and the western portion of Squaw Creek and its tributaries, are known to contain threatened steelhead trout *Oncorhynchus mykiss*.
19. The beneficial uses of the Russian River include:
- a. municipal and domestic supply
 - b. agricultural supply
 - c. industrial supply
 - d. groundwater recharge
 - e. freshwater replenishment
 - f. navigation
 - g. hydropower generation
 - h. water contact recreation
 - i. non-contact water recreation
 - j. sport fishing
 - k. warm freshwater habitat
 - l. cold freshwater habitat
 - m. preservation of areas of special biological significance
 - n. wildlife habitat
 - o. preservation of rare and endangered species
 - p. fish migration
 - q. fish spawning
20. The Russian River has been included on the Clean Water Act section 303(d) list as an impaired water body due to excessive sediment and elevated water temperature. A Total Maximum Daily Load (TMDL) and Implementation Plan have been scheduled for completion by the Regional Water Board in 2011. The TMDL lists impairments of the beneficial uses for the Russian River and its tributaries and sets objectives and targets for the reduction of those impairments to the maximum extent possible. The intent of the TMDL and

Implementation Plan is to restore, enhance, and protect the beneficial uses that are being impaired.

Groundwater

21. Beneficial uses of areal groundwaters include:
 - a. domestic water supply
 - b. industrial supply
22. On May 19, 1988, the State Water Resources Control Board adopted Resolution No. 88-63, "Sources of Drinking Water," a policy that states all surface and groundwaters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Water Boards, with certain exceptions. For example, State Water Resources Control Board Resolution No. 88-63 provides for exceptions where the aquifer is regulated as a geothermal energy producing source or has been exempted administratively pursuant to title 40, Code of Federal Regulations, section 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under title 40, Code of Federal Regulations, section 261.3. The geothermal water contained in the geothermal reservoir at The Geysers including the Projects is not a source of drinking water.
23. Primary shallow groundwater resources in The Geysers area occur as small, localized, perched aquifers in Franciscan Complex nonreservoir rocks and along slide planes in Quaternary landslide deposits. These waters express themselves as predominantly low yielding springs and seeps of non-potable and potable water. The geothermal reservoir is located from approximately 1,500 to over 12,000 feet below ground surface, and contains hot, pressurized, highly mineralized, non-potable water, steam, and non-condensable gases.
24. The Discharger's pipeline construction and operations and injection activities will have no impacts to groundwater. No regional groundwater aquifers of significant yield have been reported in the Mayacamas Mountains near The Geysers. Available evidence indicates that groundwater from the steamfield does not mix with groundwater in the volcanic rocks at Cobb Mountain; the contact between these ground water formations is nearly impermeable. In addition, a zone of nearly impermeable rock marks the transition zone between the nonreservoir and reservoir rocks. This zone has been postulated to cap the reservoir and to serve as a barrier to reservoir recharge. This reservoir cap effectively seals the steamfield from overlying groundwater formations. Additionally, injection wells are designed, constructed, and steel cased in

compliance with California Division of Oil, Gas and Geothermal Resources regulations, intended to insure that water cannot flow from the injection well at depths shallow enough to affect groundwater resources. No mixing or cross-contamination is likely.

California Environmental Quality Act Compliance

25. Existing activities regulated under WDR Order No. R1-2008-0025 are described in the Environmental Impact Report/Environmental Impact Statement for the Southeast Geysers Effluent Pipeline Project, Lake County Sanitation District and Southeast Geysers Effluent Pipeline Project Mitigation, Monitoring & Operation Plan (September 1994); Santa Rosa Environmental Impact Report (53 addenda) and Santa Rosa Geysers Recharge Project, Calpine Addenda (various dates from July 1996 through February 2001); City of Santa Rosa's November 2003 Incremental Recycled Water Program (IRWP) Program Environmental Impact Report (PEIR) and Subsequent Mitigated Negative Declaration for the Aidlin Recycled Water Pipeline May 2005.
26. The Discharger's geothermal development and operations in the Buckeye and Wildhorse steamfield areas are described in several California Environmental Quality Act documents, including the following:
 - Buckeye Development Project Mitigated Negative Declaration (April 2009)
 - Wildhorse Development Project Mitigated Negative Declaration (April 2009)
 - Geysers Power Company, LLC, Wildhorse Ranch (May 2006)
 - Wildhorse Field Development Area A-1 (April 1984)
 - Wildhorse Area A-2 Geothermal Field Development Project (November 1984)
 - Northwest Wildhorse State (March 1983).
27. On August 14, 2007, the City of Santa Rosa prepared, certified, and adopted an Addendum and Checklist evaluation titled *Incremental Recycled Water Program, August 2007 Addendum to Program EIR and Geysers Expansion Project CEQA Checklist*. The Addendum and Checklist evaluations take into consideration changes in the environmental setting, cumulative projects and regulations that have occurred since development and certification of the IRWP PEIR.
28. The Regional Water Board has considered the above documents, particularly the mitigated negative declarations prepared for the Buckeye and Wildhorse Development Projects and the Addendum prepared for the IRWP, and has used its independent judgment to conclude that the proposed Projects will not

cause any new significant impacts with the incorporation of the mitigation measures identified below, and incorporated as conditions of this Order. The IRWP Addendum and the Mitigated Negative Declarations for the Buckeye and Wildhorse Development Projects evaluated the impacts of the proposed expansion of The Geysers steamfield and identified the following potentially significant impacts and proposed the mitigation measures identified below to reduce the any potential impacts to a less than significant level.

A. Potential Impact:

Injection of treated water could result in strong seismic ground shaking.

Discussion:

Under the proposed Projects, an annual average of 19.8 mgd would be supplied to the Geysers Steamfield. This is below the 25 mgd evaluated in the City of Santa Rosa's Incremental Recycled Water Program Addendum to the EIR. The IRWP Certified EIR analyzed the potential for induced seismicity on a cumulative basis, including the initial deliveries of 11 mgd, expanded deliveries up to 25 mgd, and other sources of induced seismicity from naturally occurring earthquakes, steam production, and other sources of injection. The IRWP Certified EIR concluded that deliveries of 25 mgd would likely increase the incidence of induced seismic activity for earthquakes rated as Modified Mercalli Intensity (MMI) III, IV, and V in the nearby communities including Cobb and Anderson Springs. The IRWP Certified EIR reports that injecting up to 25 mgd of recycled water would tend to increase the frequency of earthquakes of MMI V and greater at Cobb and Anderson Springs by approximately 55% and 45% respectively. The increased frequencies exceed the 20% threshold identified in the evaluation criteria, and therefore, are considered significant in the Program EIR. The applicant shall determine which injection wells are more susceptible to felt (noticeable) induced seismicity and decrease injection at wells that produce higher levels of felt (noticeable) induced seismicity and increase injection at wells located farther from residences and/or produce fewer seismic events. Success of redistribution of water and any other modifications in operations in reducing felt seismic events shall be continually evaluated so that the program can become more effective. The project operators shall prepare and submit reports to the City of Santa Rosa twice a year. The reports shall include a description of revised operations intended to reduce felt seismic activity, time-series plots showing daily volume of injection at each well together with associated seismic event counts, and tables and plots of seismicity (magnitude 1.5 and greater) within a two-kilometer control radius of injection wells. The reports shall also include tables and plots of

seismicity associated with production wells, and shall evaluate seismicity in the injection well study areas both with and without consideration of the influence of production wells.

The Discharger can inject an annual average of 19.8 mgd of tertiary treated effluent from the City of Santa Rosa Laguna Subregional Wastewater Reclamation Facility (Santa Rosa treated wastewater) into the geothermal reservoir via injection wells.

B. Potential Impact:

Unstable slope conditions in the area may damage facilities.

Mitigation:

If the project engineer identifies hazards due to unstable slopes, the engineer shall identify slope stability risks, and conduct or obtain geotechnical investigations that provide engineering design and construction recommendations to stabilize slope facilities. Several measures or alternative measures of equivalent effectiveness, shall be implemented, depending upon their applicability to site specific conditions.

C. Potential Impact:

The Buckeye and Wildhorse Development Projects could violate water quality standards or waste discharge requirements.

Mitigation:

The Waste Discharge Requirements Order No. R1-2008-0025 for the Geysers Power Company will be subject to revision. Before construction of the well pads, pipelines, and access roads, a Storm Water Pollution Prevention Plan will be developed, and the Geysers Power Company must submit a Notice of Intent to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity. Additional temporary Squaw Creek Aquatic Monitoring Program stations and parameters may be required if the California Department of Fish and Game and/or the Sonoma County Permit and Resource Management Department determine they are necessary.

The injectate to be conveyed by the pipeline must undergo tertiary treatment and comply with all applicable water quality standards. Any potential pipeline corridors that cross the creeks must span the creek or will be placed along an existing road crossing.

A long-term program for maintenance of drainage facilities must be established. This program must include frequent inspection of culverts for clogging and accumulation of debris.

In compliance with the Discharger's zero discharge policy, all storm water generated on power plant sites shall be contained onsite and injected back into the geothermal reservoir.

D. Potential Impact:

The projects could substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Mitigation:

In adopting Waste Discharge Requirements for the existing Geysers Project, the North Coast Regional Water Quality Control Board has previously found that "the proposed Calpine design would have no impact to groundwater from construction and operation of distribution pipelines. No regional groundwater aquifers of significant yield have been reported in the Mayacamas Mountains near The Geysers." Although the Projects do not include a statement that water wells may be drilled, the distance to any off-site users is so great and, given the geomorphology of the area, it is extremely unlikely that there would be an impact to other wells.

All recycled water must be used in compliance with title 22 of the California Code of Regulations.

All injection wells must be approved by the Division of Oil Gas and Geothermal Resources, which regulates the installation, conversion of geothermal wells, well use, injection reporting, and integrity testing and liquid monitoring of geothermal injection wells to ensure the protection of all aquifers containing useable water and surface water from contamination.

E. Potential Impact:

The Projects could alter the existing drainage pattern of the area resulting in flooding.

Mitigation:

The Projects will not alter the existing drainage pattern. The proposed installation of eight new well pads, access roads, and pipelines and geothermal infrastructure will not be located within the 100-year flood plain and therefore would not displace flood capacity. The pipelines carrying steam, condensate, and treated effluent will not release water to the surface environment. The proposed construction would not release liquids to the surface environment.

F. Potential Impact:

The Projects will involve construction that has the potential to disturb soils resulting in soil erosion and off-site sedimentation.

Mitigation:

The applicant must submit a Notice of Intent (NOI) to comply with the General Permit for Discharges of Storm Water Associated with Construction Activities to the California Regional Water Quality Control Board for construction of the Projects. A Storm Water Pollution Prevention Plan must be prepared, and Best Management Practices must be instituted for the control of erosion and sediment. Each of the proposed new sites and access roads will be evaluated and designed for stability by a civil engineer to prevent adverse effects from erosion. During drilling operations, each pad must be surrounded by an eighteen-inch high dirt berm to control any spills and stormwater runoff. In addition, several short term and long term control measures will be adopted.

G. Potential Impact:

The Projects will have a substantial adverse affect on riparian habitat or alter wetlands or other waters of the U.S. or of the State of California.

Mitigation:

Northwest Biosurvey prepared two documents titled "Biological Assessment with Botanical Survey for the Calpine Buckeye Project" and "Biological Assessment with Botanical Survey for the Calpine Wildhorse Project," which surveyed 1,508 and 2,407 acres, respectively. The Biological Assessments did not identify any vernal pool habitat in the project area.

In Order to mitigate impacts to Central Coast evolutionarily significant unit steelhead, the design, construction techniques, and construction timing of any crossings must be coordinated with the National Marine Fisheries Service, Fish and Wildlife Service through the U.S. Army Corps of Engineers 404 permit process. In addition, the Regional Water Board will require as a condition of its Clean Water Act section 401 certification that all work within waters of the US be timed to avoid affecting beneficial uses, specifically impacts to spawning habitat, and that Best Management Practices are implemented during construction to avoid any impacts to beneficial uses, specifically to prevent erosion and discharges of sediment to streams and to incorporate protective design structures if stream diversion is required during construction.

The Geysers Power Company must also enter into a Section 1600 Streambed Alteration Agreement with California Department of Fish and Game, if required by that agency.

Work within any headwater stream must incorporate extensive erosion and sediment control measures.

H. Potential Impact:

The Projects will create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Mitigation:

The applicant shall comply with applicable hazardous waste generator, underground storage tank, above ground storage tank and AB 2185 (hazardous materials handling) requirements and maintain any applicable permits for these programs from the Hazardous Materials Division of Sonoma County Department of Emergency Services.

Rock cuttings generated during the drilling of each well must be hauled either to the geothermal drilling mud and cuttings disposal area (GDMACDA) Waste Management Unit or to the Class II solid Waste Management Facility. Both facilities are owned and operated by the Geysers Power Company and located within The Geysers. The facilities are permitted by the Regional Water Board and Sonoma County Environmental Health (Lead Enforcement agency for the Integrated Waste Management Board) to accept non-hazardous drilling wastes. Prior to permanent disposal in these facilities, cuttings will be analyzed upon completion of each well to confirm they are non-hazardous under

regulations in Title 22 of the California Code of Regulations. Any hazardous wastes that may be generated by the Projects must be handled in accordance with federal and state law and in general will be transported offsite to a Class I disposal facility.

Spill Prevention Control and Countermeasure Plans (SPCCs) for the proposed Projects must be prepared to address all petroleum products and spill response. The SPCCs must address the storage and handling of petroleum hydrocarbons including diesel fuel and oils that may be used during construction and well drilling and testing operations. Hazardous Materials Business Plans must be prepared for the proposed Projects and be on file with Sonoma County for hazardous materials that may be used and stored on site.

Notification

29. The Regional Water Board has notified the Discharger and interested parties of its intent to prescribe Waste Discharge Requirements and has provided an opportunity to submit written comments and recommendations.
30. At a public meeting, the Regional Water Board heard and considered all comments pertaining to these Waste Discharge Requirements.

THEREFORE, IT IS HEREBY ORDERED that Order Nos. R1-2008-0025 and relevant portions of 99-35 (see finding 6b) are hereby rescinded and that in order to meet the provisions of the Basin Plan, the Water Code, and all implementing regulations adopted there under, the Discharger shall comply with the following:

A. DISCHARGE PROHIBITIONS (INJECTION FLUIDS)

1. The discharge of any waste not specifically regulated by this Order is prohibited.
2. Creation of a condition of pollution, contamination, or nuisance, as defined by section 13050 of the Water Code is prohibited.
3. The discharge of domestic waste, treated or untreated, to surface waters is prohibited.
4. The discharge of injection fluids (domestic waste, condensate, treated effluent) to soils, surface waters, or surface water drainage courses is prohibited; however, injection fluids may be used for fire fighting and soil compaction.

5. The use of geothermal fluids for purposes other than those specified in this Order is prohibited. Specifically, the use of geothermal fluids on access roads, well pads, or other developed project locations for dust control is prohibited.
6. Effluent from the Lake County Special Districts, Southeast Regional Wastewater System shall meet the requirements of the California Department of Health Services and all implementing regulations adopted thereunder (Cal. Code Regs., title 22, §60301.225) for disinfected secondary-23 treated wastewater.
7. Effluent from the City of Santa Rosa shall be treated to the requirements of the California Department of Health Services and all implementing regulations adopted thereunder (Cal. Code Regs., title 22 §60301.230) for disinfected tertiary wastewater treatment.
8. The discharge shall be limited to injection into the geothermal reservoir except where the Executive Officer has approved other uses of recycled wastewater in compliance with title 22 and all implementing regulations adopted thereunder.
9. The Discharger may use injection wells not specified within this Order, provided that Division of Oil Gas and Geothermal Resources and/or Bureau of Land Management have approved the use of these wells and the Discharger has notified the Executive Officer.

B. DISCHARGE SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES IN THE GEYSERS

1. All construction and maintenance activities shall comply with the following:
 - a. The Discharger shall file with the State Water Resources Control Board a Notice of Intent to comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, or any general permit covering construction activities subsequently adopted by the State Water Resources Control Board, and shall prepare and implement a Storm Water Pollution Prevention Plan for all projects disturbing one acre or more in area.
 - b. All trench and/or excavation spoils shall be disposed of in stable areas, where they will not enter receiving waters, as determined by a qualified engineer.
 - c. All trench and/or excavation spoils shall be limited to inert materials that have not contacted geothermal solid or liquid wastes.

- d. All trench and/or excavation spoils shall be placed at slopes not to exceed 3:1.
- e. All construction and/or maintenance spoils shall be adequately protected from erosion using applicable Best Management Practices by no later than October 15th of each year, and shall be maintained throughout the wet weather season.
- f. The Discharger shall implement appropriate Best Management Practices to control run-on and run-off from all construction and maintenance areas of disturbed earthen materials no later than October 15th of each year, and shall maintain these controls throughout the wet weather season.
- g. All excavation spoils disposal areas in the project area(s) shall be designated on a map and submitted, prior to October 15th of each year, to the Executive Officer of the Regional Water Board.

C. GENERAL PROVISIONS

1. The Discharger shall comply with all mitigation measures identified in the *Buckeye Development Project (April 2009)*, *Wildhorse Development Project (April 2009)*, *Incremental Recycled Water Program, August 2007 Addendum to Program EIR and Geysers Expansion Project CEQA Checklist*, and the IRWP PEIR. The Discharger shall implement the project as described in this Order. Compliance with mitigation measures is a requirement under this Order. Violation of any requirements subjects Discharger to enforcement action, including civil liability, under the Water Code.
2. A copy of this Order shall be kept at the discharge facility for reference by operating personnel at all times. Key operating personnel shall be familiar with its contents.
3. In the event of overlap or conflict between Waste Discharge Requirements Order No. 99-35 and this Order, this Order will regulate construction activities associated with road construction, drill site preparation, well drilling, well re-working, well abandonment, and modification to the wastewater injection distribution system; any circulation loss during the construction of a well at depths less than 300 feet; monitoring of injection fluids and spills; and notification and reporting.

4. Operation and Maintenance

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.

5. Change in Discharge

The Discharger shall promptly report to the Regional Water Board any material change in the character, location, or volume of the discharge. Any material change in the project must receive approval by the Regional Water Board.

6. Change in Ownership

In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Regional Water Board:

- a existence of this Order, and
- b the status of the Discharger's annual fee account.

7. Vested Rights

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from his liability under federal, state, or local laws, nor create a vested right for the Discharger to continue the waste discharge.

8. Monitoring

The Discharger shall comply with Notification, Monitoring and Reporting Program No. R1-2009-0103 and any modifications to this documents as specified by the Executive Officer. This document is attached to this Order and incorporated herein. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services.

9. Inspections

In accordance with Water Code section 13267(c), the Discharger shall allow staff of the Regional Water 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.

10. Noncompliance

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, discharger shall notify the Executive Officer by telephone as soon as he/she or his/her agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate the steps taken to correct the problem and the dates thereof, and the steps being taken to prevent the problem from recurring.

11. Revision of Requirements

The Regional Water Board will review this Order periodically and may revise requirements when necessary.

Certification

I, Catherine Kuhlman, 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, North Coast Region, on December 10, 2009.

Catherine Kuhlman
Executive Officer

December 10, 2009