California Regional Water Quality Control Board
North Coast Region

ORDER NO. R1-2007-0027
ID NO. 1B86002RSON

WASTE DISCHARGE REQUIREMENTS

FOR

GEYSERS POWER COMPANY, LLC

CALPINE CORPORATION

AT

THE GEYSERS AND WILDHORSE DEVELOPMENT PROJECT

Sonoma County

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

Introduction

The Geysers Power Company, LLC (Discharger), a subsidiary of the Calpine Corporation, operates several geothermal power plants at The Geysers Known Geothermal Area (The Geysers) located on a ridge top between Sonoma and Lake Counties, east of Geyserville (refer to Site Location Map, Attachment "1"). The existing and expanded operations will be conducted on approximately 30 square miles within the Geysers (refer to Site Plan, Northwestern Portion of The Geysers Geothermal Field, Attachment "2", and, Southeastern Portion of The Geysers Geothermal Field, Attachment "3"). This area is located within the Big Sulphur Creek Watershed, and is tributary to the Russian River. The Discharger proposes to expand its operations into a previously developed and abandoned geothermal area known as the Wildhorse Development Project (Wildhorse project area). Activities associated with this proposal include constructing a conveyance pipeline, injection network, and steam conveyance pipelines; renovating several existing plugged steam and injection wells; extracting steam from the steam wells; and injecting Santa Rosa treated wastewater into the injection wells within the Wildhorse project area.

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 storm water runoff back into the geothermal reservoir (injectate). Portions of the project are located in the Central Valley Region (Region 5). This Order regulates those operations and discharges located with in the North Coast Region (Region 1).

The Discharger injects approximately 3.0 million gallons per day (mgd) of disinfected secondary-23 treated effluent from the Lake County Special Districts, Southeast Regional Wastewater System (Lake County treated wastewater) and approximately 12.44 mgd of tertiary treated effluent from the City of Santa Rosa Laguna Subregional Wastewater Treatment Plant (Santa Rosa treated wastewater) into its injection wells to produce geothermal energy. This treated wastewater would have otherwise been discharged onto land or into surface waters.

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 geothermal steam condensate and treated wastewater; capture, transport and disposal of storm water runoff; and spill and emergency response.

1. The Discharger is currently regulated under Waste Discharge Requirements Order No. R1-2005-0070 for geothermal operations at the Geysers. The Discharger is also regulated under the following Waste Discharge Requirements Order Nos.:

   a. R1-2001-79, covers the Geysers Power Company, LLC, Class II Waste Management Unit; this permit will be retained;
   b. 99-35, for Geysers Power Company, LLC, for the injection of Lake County treated wastewater; a portion of this permit covers the Geothermal Drilling Mud and Cuttings Disposal Area Waste Management Unit; this permit will be retained;
   c. 95-6, for Calpine Geysers Company, L.P., Geothermal Lease No. 7 CA 1862, covers operations within Lease No. 7 CA 1862; this permit is outdated, and operations will be covered under Order No. R1-2007-0027; this permit will be rescinded; and
   d. 95-5, for Calpine Geysers Company, L.P., Geothermal Unit 13 Project Area, covers operations within the Geothermal Unit 13 Project Area; this permit is outdated and operations will be covered under Order No. R1-2007-0027; this permit will be rescinded.

   This Order, WDR R1-2007-0027, rescinds Order Nos. R1-2005-0070, 95-6, and 95-5, and adds the Discharger's proposed project in the Wildhorse project area.

Site Description

2. The Geysers and Wildhorse Development steam field sites and surrounding areas are rural, and are primarily used for geothermal steam and energy production and hunting. Vegetation consists of chaparral, oak woodlands, grassy, 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

3. The steam fields receive 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 onsite, and injects the storm water into the geothermal reservoir.

Geothermal Steam Condensate

4. Geothermal steam condensate produced during geothermal power generation is known to contain ammonia, which can be toxic to aquatic life present in streams in the development area. Geothermal steam condensate is also known to contain boron, that 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.

5. 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 protection.

Treated Wastewater from Lake County and the City of Santa Rosa

6. The Lake County Sanitation District delivers disinfected secondary-23 treated wastewater, via pipeline, to a sedimentation basin owned by the Northern California Power Agency, in compliance with waste discharge requirements issued by Region 5. 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.

7. The City of Santa Rosa currently delivers an average of 12.44 mgd, but up to 16 mgd, of disinfected tertiary treated wastewater, via pipeline, to a structure known

as the Termination Reservoir, in compliance with Waste Discharge Requirements Order No. R1-2006-0045, issued 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.

Steam Field Injectate Distribution System

8. The Discharger operates and maintains an injectate (effluent) distribution system 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 from the sedimentation basin. The Discharger's recycled water distribution system consists of approximately 24 miles of 6 to 36-inch diameter pipeline, a pump station to elevate the water to higher elevations in the Geysers, a one million gallon storage/surge protection tank, and approximately 38 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.

9. 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 up to 16 mgd of treated effluent from the City of Santa Rosa, and 3.0 mgd from Lake County Sanitation District. Known existing and proposed injection wells include:

Existing Injection Wells and Unit No.		Proposed Injection Wells and Unit No.	
Aidlin 8	1	CA 1862-6	3
Aidlin 11	1	CA 1862-6	3
CA 1862-16	3	GDC 8812	7&8
GDC 26	5&6	DX 5	7&8
GDC 53-13	5&6	OF 51B12	7&8
GDC 53A-13	5&6	OS 87A-2	7&8
GDC 88-12	5&6	LF 16	9&10
SB 15	5&6	DX 14	11
DX 10	7&8	DX 19	11
OS 3	7&8	OS 13	11
OS 21	7&8	CMHC 6	12
OF27 A-2	7&8	LF 03	12
OF 45A-12	7&8	GDC 19	14

OS 11	7&8
LF 02	9&10
LF 23	9&10
LF 15	9&10
DX 61	11
OS 12	11
OS 16	11
DX 19	11
CMHC 2	12
DX 26	12
DX 24	12
GDC 05	14
GDC 08	14
GDC 18	14
GDCF 117A-19	14
DX 72	17
DX 47	17
D&V 11	18
D&V 73-33	18
BEF 42B-33	20
GDC 17-28	20
GDC 21	20
GDC 36-28	20
GDCF 65-29	20
DX 45	17
DX 48	17
BEF 85A-28	18
D&V 4	18
GDCF 36-28	18
GDCF 36-2	20

10. This Order prohibits the discharge of injection fluids to soils, surface waters, or surface water drainage courses; however in certain cases, the Discharger may use injection fluids for fire fighting or for soil compaction on well drilling pads. Injection 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 injection water for firefighting, or proposes to use injection 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.

Wildhorse Development Project

11. The Wildhorse project area is located approximately 1 mile west of the Discharger's existing operations, and comprises 3,902 acres. The Wildhorse project area is owned by WHR, Inc; of Idaho. The Discharger has obtained a Geothermal Lease and Agreement with WHR, Inc., to use this land for geothermal steam production to produce electricity.

12. The eastern portion of Squaw Creek and its tributaries, known to contain threatened steelhead trout, *Oncorhynchus mykiss*, traverse the Wildhorse project area.

13. In the 1980s, California Central Power Agency constructed a power plant in the Wildhorse project area and GEO Operator Corporation operated the steam field where 58 geothermal wells were permitted. Twenty-four wells were developed ranging in depth from 8,000 to 10,000 feet. Commercial operations commenced at the site in 1988 and continued under various operators until May 1996. The operator at that time removed the power plant, and plugged and abandoned the steam wells. At this time, only the steam field roads and well pads remain on the Wildhorse project area.

14. The Discharger has re-evaluated the geothermal resources in the Wildhorse project area, and proposes to re-open several steam and injection wells on existing drill pads and to use existing roads and previously approved pipeline routes. The Discharger is proposing to construct up to 19,000 linear feet of new aboveground injection pipelines up to 14 inches in diameter and associated pipeline access roads. The pipelines will transport up to 2.0 mgd of additional Santa Rosa treated wastewater injectate to two or more injection wells. The pipelines will extend from the adjacent existing geothermal well pads located in the main geothermal field to nearby geothermal well pads in the Wildhorse project area. In the future, the Discharger is proposing to reopen and place online a number of injection and steam wells in the Wildhorse project area. Maximum injection line operating pressure will be 850 pounds per square inch (psi) and will be pressure tested at 1,000 psi.

15. The Discharger proposes to use a diesel/electric rotary drill rig to redrill plugged wells, on regraded existing well pads, to a depth of approximately 10,000 feet below ground surface. The Discharger will drill out the cement well plugs, and will then use various methods to complete the wells. The Discharger proposes to use sumpless drilling and mud processing technology. Returning drilling mud and drill cuttings are screened and centrifuged to remove drill cuttings, with the liquid fraction reintroduced back into the mud system for reuse and recirculation in a closed loop system. The drill cuttings will be removed, sampled for hazardous wastes, and properly disposed of. All non-hazardous solids will be transported to the Class II Waste Management Unit (regulated under Waste Discharge Requirements Order No. R1-2001-79) and the Geothermal Drilling Mud and Cuttings Disposal Area Waste Management Unit (regulated under Waste Discharge Requirements Order No. 99-35). All hazardous wastes will be transported offsite to an appropriate licensed and permitted Class I Hazardous Waste Management Unit.

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. 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

19. 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 Attainment Strategy has been scheduled for completion by the Regional Water Board in the Year 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 is to restore, enhance, and protect the beneficial uses that are being impaired.

Groundwater

20. Beneficial uses of areal groundwaters include:

a. domestic water supply
b. industrial supply

21. On May 19, 1988, the State Water Resources Control Board adopted Resolution No. 88-63, a Policy Entitled "Sources of Drinking Water," which states that 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.

22. 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 predominately 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.

23. 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 steam field 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 steam field 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

24. Existing activities regulated under Waste Discharge Requirement Order No. R1-2005-0070 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. Previous

geothermal development and operations in the Wildhorse project area are described in several California Environmental Quality Act documents, including Northwest Wildhorse State (March 1983); Wildhorse Field Development Area A-1 (April 1984); and Wildhorse Area A-2 Geothermal Field Development Project (November 1984).

25. On May 11, 2006, the Sonoma County Permit and Resource Management Department (PRMD) prepared, certified, and adopted a Subsequent Mitigated Negative Declaration, entitled *Geysers Power Company, LLC, Wildhorse Ranch,* tiered off of the City of Santa Rosa's November 2003 Incremental Recycled Water Program (IRWP) Program Environmental Impact Report (PEIR). The Subsequent Mitigated Negative Declaration identified potentially significant impacts and proposed mitigations listed below to reduce the impacts to a less than significant level. The Regional Water Board, as a responsible agency, has reviewed the Subsequent Mitigated Negative Declaration, and finds that significant impacts will be mitigated to less than significant levels by the following mitigation measures.

    a. Impact:

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

        Mitigation:

        The proposed additional 2.00 mgd would bring the total of the City of Santa Rosa treated wastewater to 14.44 mgd, below the 25 mgd evaluated in the City of Santa Rosa's Incremental Recycled Water Program Addendum to the EIR. This would tend to increase the frequency of shaking of MMI V or greater at Cobb from 0.96 to 1.00 per year, and at Anderson Springs from 1.16 to 1.20 per year. This amounts to an incremental increase of 4.2% and 3.4%, respectively for these communities and is less than 20% significance threshold for CEQA as defined in the City of Santa Rosa's Incremental Recycled Water Program Addendum to the EIR. Therefore, the Project's induced seismicity impact will be less than significant. The Applicant shall reduce effects of induced seismicity from injection at The Geysers steam field to the extent feasible. The purpose of this mitigation is to minimize increased felt seismic activity, while maintaining the full level of injection.

        The applicant shall determine which injection wells are more susceptible to felt induced seismicity and decrease injection at wells that produce higher levels of felt 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.

b. Impact:

Unstable slopes in the area may damage the pipeline.

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. Impact:

The project could violate water quality standards or waste discharge requirements.

Mitigation:

The California Regional Water Quality Control Board, North Coast Region Board Order No. R1-2005-0070 for the Geysers Power Company will be subject to revision. A Storm Water Pollution Prevention Plan will be developed; and a Notice of Intent to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity will be submitted when applicable. The water to be conveyed by the pipeline will have undergone tertiary treatment and will comply will all applicable water quality standards.

In addition to the above mitigation described in the *Geysers Power Company, LLC, Wildhorse Ranch,* the Discharger will be performing the following mitigation:

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. Impact:

The project 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 Waste Discharge Requirements adopted for the existing Geysers Project, the North Coast Regional Water Quality Control Board concluded 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 project does 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.

In addition to the above mitigation described in the *Geysers Power Company, LLC, Wildhorse Ranch,* this Order requires/acknowledges the following additional mitigations:

All recycled water will be used in compliance with title 22 of the California Code of Regulations. Reclaimed wastewater contact with the general public is highly unlikely because the public is excluded from The Geysers steam field.

The Division of Oil Gas and Geothermal Resources 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. This Order allows discharge only to injection wells that have received approval from the Division of Oil Gas and Geothermal Resources.

e. Impact:

The project could alter the existing drainage pattern of the area, including through the alteration of the course of a stream and result in on or off-site erosion and sedimentation.

Mitigation:

The project will not alter the existing drainage pattern on the site. Proposed construction will utilize Best Management Practices to reduce erosion or siltation on or off-site. The pipelines will not release water to the surface environment.

f. Impact:

The project could result in substantial soil erosion or the loss of topsoil.

Mitigation:

Due to Best Management Practice requirements, and because the majority of the project development is in areas already in place, and the requirements that erosion control measures be implemented, impacts of erosion and the loss of topsoil will be less than significant. A Storm Water Pollution Prevention Plan will be developed; and a Notice of Intent to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction Activity will be submitted when applicable.

In addition to the above mitigation described in the *Geysers Power Company, LLC, Wildhorse Ranch,* the Discharger proposes the following additional mitigations for the Wildhorse Development Project:

The discharger will construct new pipeline roads up to 30 feet wide, with a 6-inch thick base rock surface, and will construct the pipeline along these roads, as well as along segments of an existing road system. The Discharger will use track mounted equipment to construct cross-country sections of pipeline on steep hillsides, and will water-bar and revegetate the cross country pipeline routes following construction.

Notification

26. 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.

27. 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. R1-2005-0070, 95-6, and 95-5 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 NPDES General Permit for Storm Water Discharges Associated with Construction Activity, and shall prepare and implement a Storm Water Pollution Prevention Plan for the Wildhorse project 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 techniques 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 techniques 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 Wildhorse project area 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 Subsequent Mitigated Negative Declaration titled *Geysers Power Company, LLC, Wildhorse Ranch*, and previous CEQA documents for the project. The Discharger shall implement the project as described in this Order. Compliance with mitigation measures are requirements under this Order. Violation of any requirements subject 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. Within six months of adoption of this permit, the Discharger shall submit in writing to the Executive Officer of the Regional Water Board, an amended Spill Response, Monitoring, and Cleanup Plan addressing spills from The Geysers distribution pipeline, incorporating the Wildhorse project area.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. Monitoring

The Discharger shall comply with the Contingency Planning and Notification Requirements Order No. 74-151 and the Notification, Monitoring and Reporting Program No. R1-2007-0027 and any modifications to these documents as specified by the Executive Officer. Such documents are 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.

a. Order No. 74-151 requires immediate incident reporting of unintentional or accidental spills (including Emergency Response actions) and diligent action to abate the effects of the discharge. Written confirmation of the incident is required within two weeks of notification.

b. General Monitoring and Reporting Provisions require sampling and analysis performance criteria in addition to compliance reporting criteria and timeframes.

10. 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.

11. 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.

12. 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 April 26, 2007.

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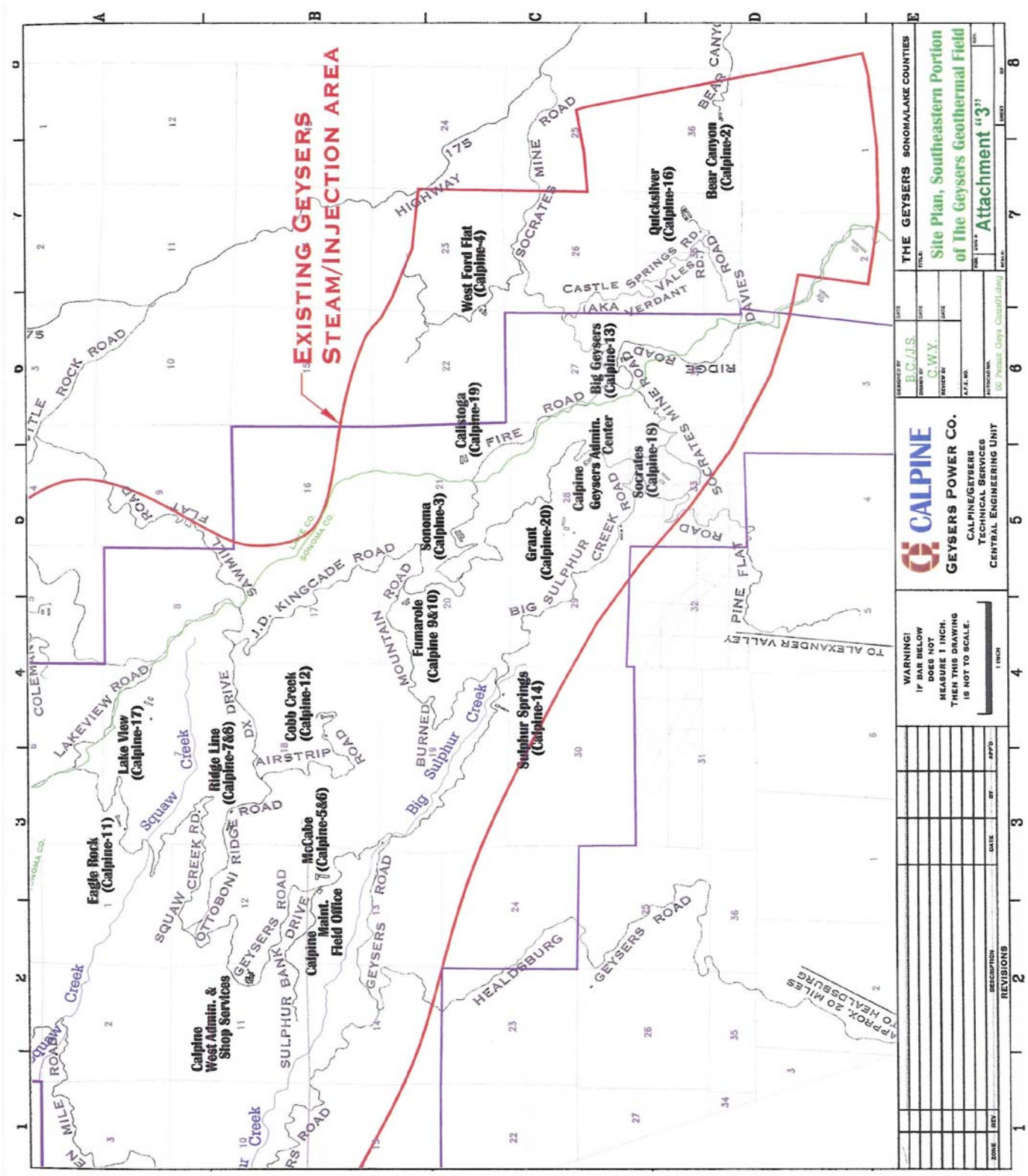
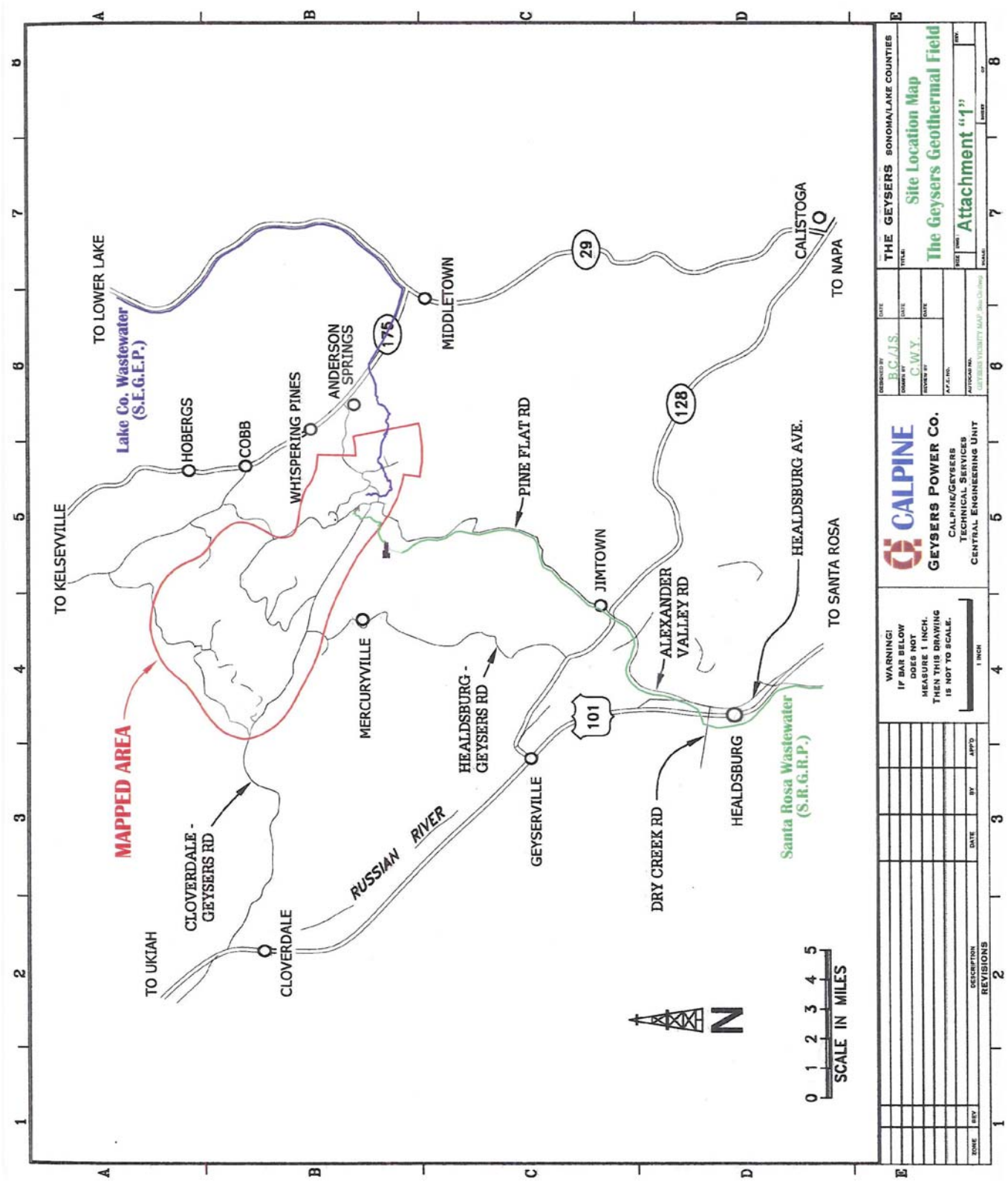
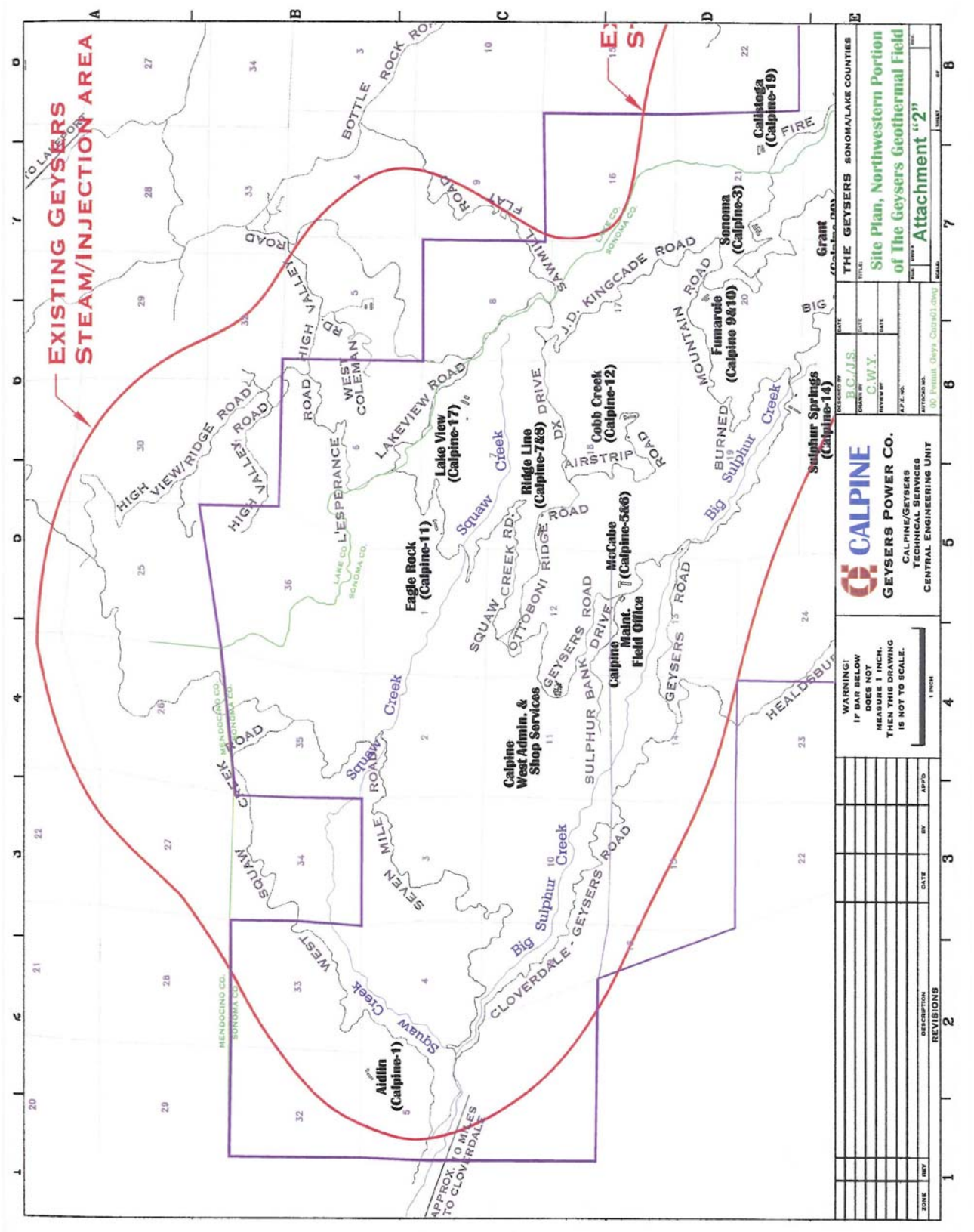
Catherine E. Kuhlman
Executive Officer


EXISTING GEYSERS
STEAM/INJECTION AREA
Eagle Rock (Calpine-11)
Lake View (Calpine-17)
Ridge Line (Calpine-7&8)
Cobb Creek (Calpine-12)
McCabe (Calpine-5&6)
Calpine Maint. Field Office
Calpine West Admin. & Shop Services
Fumarole (Calpine 9&10)
Sonoma (Calpine-3)
Calistoga (Calpine-19)
Sulphur Springs (Calpine-14)
Grant (Calpine-20)
Calpine Geysers Admin. Center
Socrates (Calpine-18)
Big Geysers (Calpine-13)
West Ford Flat (Calpine-4)
Quicksilver (Calpine-16)
Bear Canyon (Calpine-2)
HIGHWAY 175
LITTLE ROCK ROAD
LAKEVIEW ROAD
SQUAW CREEK RD.
OTTOBONI RIDGE ROAD
SULPHUR BANK DRIVE
GEYSERS ROAD
AIRSTRIP ROAD
J.D. KINGCADE ROAD
MOUNTAIN ROAD
BURNED MOUNTAIN ROAD
FIRE ROAD
SAWMILL FLAT ROAD
BIG SULPHUR CREEK ROAD
SOCRATES MINE ROAD
CASTLE SPRINGS RD. AKA VERDANT VALES RD.
DAVIES ROAD
RIDGE ROAD
SOCRATES MINE ROAD
PINE FLAT ROAD
TO ALEXANDER VALLEY
TO HEALDSBURG
HEALDSBURG
GEYSERS ROAD
Squaw Creek
Big Sulphur Creek
COLEMAN
SONOMA CO.
LAKE CO.
THE GEYSERS SONOMA/LAKE COUNTIES
Site Plan, Southeastern Portion of The Geysers Geothermal Field
Attachment "3"
CALPINE
GEYSERS POWER CO.
CALPINE/GEYSERS TECHNICAL SERVICES CENTRAL ENGINEERING UNIT
WARNING! IF BAR BELOW DOES NOT MEASURE 1 INCH. THEN THIS DRAWING IS NOT TO SCALE.
1 INCH
REVISIONS
ZONE REV DESCRIPTION DATE BY APP'D


MAPPED AREA
TO LOWER LAKE
Lake Co. Wastewater (S.E.G.E.P.)
TO KELSEYVILLE
HOBERGS
COBB
WHISPERING PINES
ANDERSON SPRINGS
175
MIDDLETOWN
29
CALISTOGA
TO NAPA
PINE FLAT RD
128
JIMTOWN
ALEXANDER VALLEY RD
HEALDSBURG AVE.
TO SANTA ROSA
MERCURYVILLE
HEALDSBURG - GEYSERS RD
101
CLOVERDALE - GEYSERS RD
RUSSIAN RIVER
GEYSERVILLE
DRY CREEK RD
HEALDSBURG
Santa Rosa Wastewater (S.R.G.R.P.)
TO UKIAH
CLOVERDALE
N
SCALE IN MILES
0 1 2 3 4 5
WARNING! IF BAR BELOW DOES NOT MEASURE 1 INCH. THEN THIS DRAWING IS NOT TO SCALE.
1 INCH
CALPINE
GEYSERS POWER CO.
CALPINE/GEYSERS TECHNICAL SERVICES CENTRAL ENGINEERING UNIT
DESIGNED BY B.C./J.S.
DRAWN BY C.W.Y.
REVIEWED BY
A.F.E. NO.
AUTOCAD NO.
GEYSERS VICINITY MAP .dwg
THE GEYSERS SONOMA/LAKE COUNTIES
TITLE: Site Location Map
The Geysers Geothermal Field
SIZE D
DWG Attachment "1"
REV
SHEET OF
ZONE REV DESCRIPTION DATE BY APP'D
REVISIONS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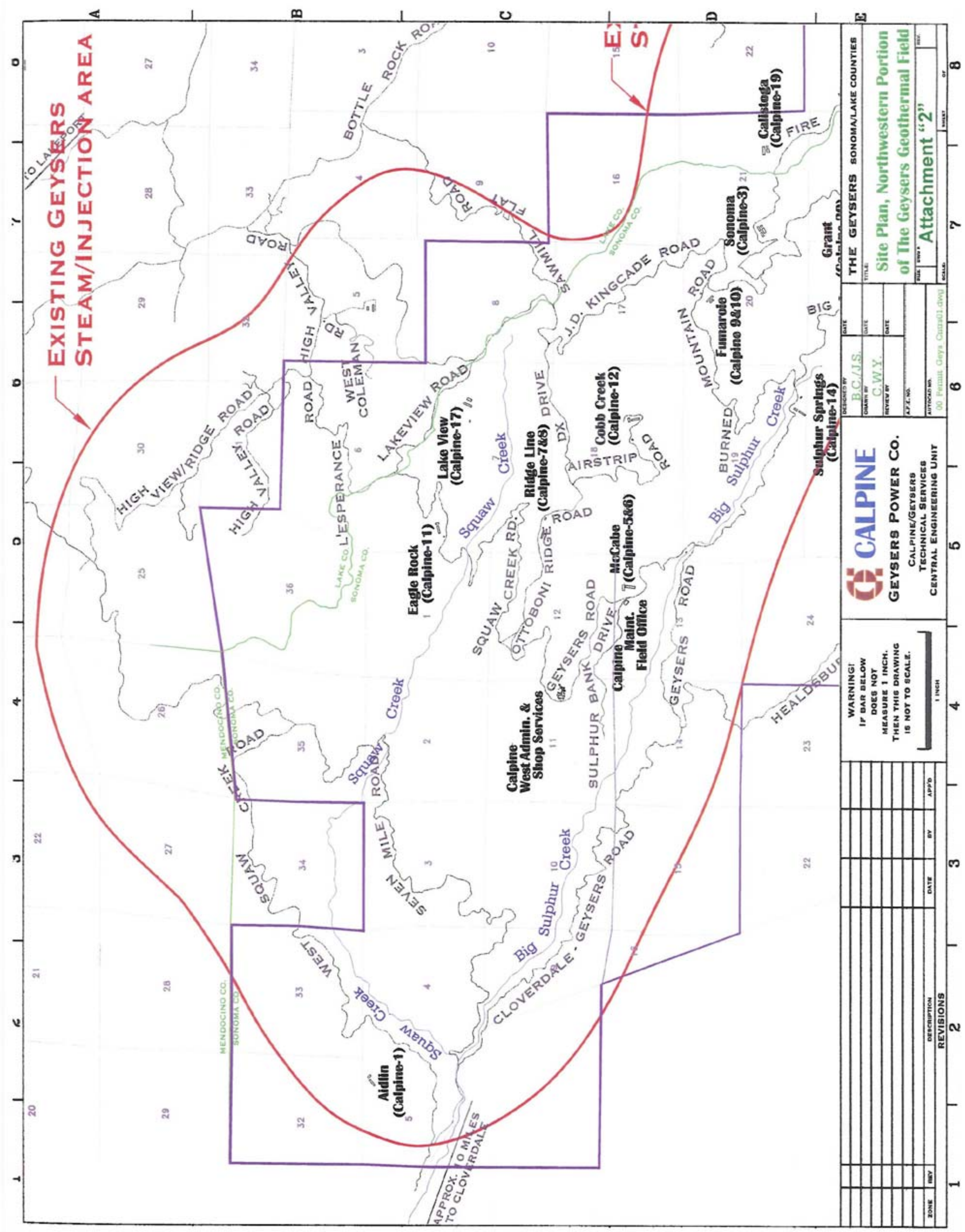
Calpine West Admin. & Shop Services
Calpine Maint. & Field Office
Sulphur Springs (Calpine-14)
Fumarole (Calpine 9&10)
Sonoma (Calpine-3)
Calistoga (Calpine-19)
Grant
HIGH VIEW/RIDGE ROAD
HIGH VALLEY ROAD
WEST COLEMAN ROAD
L'ESPERANCE
LAKEVIEW ROAD
BOTTLE ROCK ROAD
FLAT ROAD
SAWMILL
J.D. KINGCADE ROAD
MOUNTAIN ROAD
BURNED
FIRE
BIG
SQUAW CREEK RD.
OTTOBONI RIDGE ROAD
AIRSTRIP ROAD
GEYSERS ROAD
SULPHUR BANK DRIVE
CLOVERDALE - GEYSERS ROAD
SEVEN MILE ROAD
WEST SQUAW CREEK ROAD
Squaw Creek
Big Sulphur Creek
APPROX. 10 MILES TO CLOVERDALE
TO LAKEPORT
HEALDSBUR
LAKE CO.
SONOMA CO.
MENDOCINO CO.
WARNING! IF BAR BELOW DOES NOT MEASURE 1 INCH. THEN THIS DRAWING IS NOT TO SCALE.
1 INCH
CALPINE
GEYSERS POWER CO.
CALPINE/GEYSERS TECHNICAL SERVICES
CENTRAL ENGINEERING UNIT
THE GEYSERS SONOMA/LAKE COUNTIES
Site Plan, Northwestern Portion of The Geysers Geothermal Field
Attachment "2"
REVISIONS
ZONE REV DESCRIPTION DATE BY APP'D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Sonoma
(Calpine-3)
Calistoga
(Calpine-19)
Sulphur Springs
(Calpine-14)
Calpine
West Admin. &
Shop Services
Calpine
Maint.
Field Office
APPROX. 10 MILES TO CLOVERDALE
WARNING!
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CALPINE
GEYSERS POWER CO.
CALPINE/GEYSERS
TECHNICAL SERVICES
CENTRAL ENGINEERING UNIT
THE GEYSERS SONOMA/LAKE COUNTIES
Site Plan, Northwestern Portion
of The Geysers Geothermal Field
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REVISIONS