DOCKETED	
Docket Number:	79-AFC-03C
Project Title:	Compliance - Application for Certification of PG&E Geysers Unit 18
TN #:	224577
Document Title:	Petition to Amend – Permanent Diesel Pump for Cooling Tower Wetting System
Description:	The Geysers Power Company, LLC requests the Energy Commission to approve this petition to make identical modifications at each of the facilities to replace temporary portable emergency diesel engines with stationary permanent emergency diesel engines for the cooling tower wet down systems to aid in fire prevention at the Quicksilver, Socrates, and Grant geothermal power plants.
Filer:	Raquel Rodriguez
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	8/23/2018 3:19:00 PM
Docketed Date:	8/23/2018

CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov

DATE: August 23, 2018

TO: Interested Parties

FROM: Keith Winstead, Siting Project Manager

SUBJECT: Quicksilver Geothermal (PG&E Geysers 16) (79-AFC-05C), Socrates Geothermal (PG&E Geysers 18) (79-AFC-03C), and Grant (PG&E Geysers 20) (82-AFC-01C), Petition to Amend – Permanent Diesel Pump for Cooling Tower Wetting System

On December 21, 2017, the California Energy Commission received a petition from the Geysers Power Company, LLC, to amend the Energy Commission licenses for the Quicksilver (formerly PG&E Geysers Unit 16), Socrates (formerly PG&E Geysers Unit 18), and Grant (formerly PG&E Geysers Unit 20) geothermal power plants. These power plants are located in Lake and Sonoma counties, approximately 25 miles north of the City of Santa Rosa.

DESCRIPTION OF PROPOSED MODIFICATIONS

The Geysers Power Company, LLC requests the Energy Commission to approve this petition to make identical modifications at each of the facilities to replace temporary portable emergency diesel engines with stationary permanent emergency diesel engines for the cooling tower wet down systems to aid in fire prevention at the Quicksilver, Socrates, and Grant geothermal power plants.

For additional information see the Energy Commission's webpages for these facilities at:

- Quicksilver:
  http://www.energy.ca.gov/sitingcases/pre1999_page/index.php?xkm=ajdkha2385duhkasd208dsasjd5598fhajkhs

- Socrates:
  http://www.energy.ca.gov/sitingcases/pre1999_page/index.php?xkm=ajdkha2385duhkasd211dsasjd5598fhajkhs

- Grant:
  http://www.energy.ca.gov/sitingcases/pre1999_page/index.php?xkm=ajdkha2385duhkasd197dsasjd5598fhajkhs

The petitions requesting the project modifications (TN 222035-37) are accessible from each of the above webpages through the “Documents for this Proceeding (Docket Log)" link.

Staff determined that the proposed changes would not cause significant impacts on the environment and, with the adoption of the attached amended conditions of certification,

the Quicksilver, Socrates, and Grant geothermal facilities would conform with applicable federal and state air quality laws, ordinances, regulations, and standards (LORS), and would not result in significant air quality or worker safety and fire protection impacts. Staff recommends approval of the petition by the Energy Commission.

ENERGY COMMISSION AMENDMENT REVIEW PROCEDURES

This notice is being mailed to the Energy Commission's list of interested parties and property owners adjacent to the sites of the facilities. It is also available through the facilities' listserv. The listserv is an automated system by which information about these facilities is emailed to parties who have subscribed. To subscribe, go to the Energy Commission's webpage for each facility, cited above, scroll down the right side of the project webpage to the box labeled "Subscribe," and provide the requested contact information.

Any person may comment on the staff analysis. Those who wish to comment are asked to submit their comments by 5:00 p.m. on Monday, September 17, 2018.

To use the Energy Commission's electronic commenting feature, go to the Energy Commission's webpage for this facility, cited above, click on the "Comment on this Proceeding" or "Submit e-Comment" link, and follow the instructions in the on-line form. Be sure to include the facility name in your comments. Once the Energy Commission Dockets Unit dockets your comments, you will receive an e-mail with a link to them. Written comments may also be mailed or hand-delivered to:

California Energy Commission
Dockets Unit, MS-4
Quicksilver Docket No. 79-AFC-05C,
Socrates Docket No. 79-AFC-03C, or
Grant Docket No. 82-AFC-01C
1516 Ninth Street
Sacramento, CA 95814-5512

All comments and materials filed with the Dockets Unit will be added to the facility Docket Log and become publicly accessible on the Energy Commission's webpage for the facility.

For information on participating in the Energy Commission's review of the petition, call the Public Adviser at (800) 822-6228 (toll-free in California) or send an email to publicadviser@energy.ca.gov.

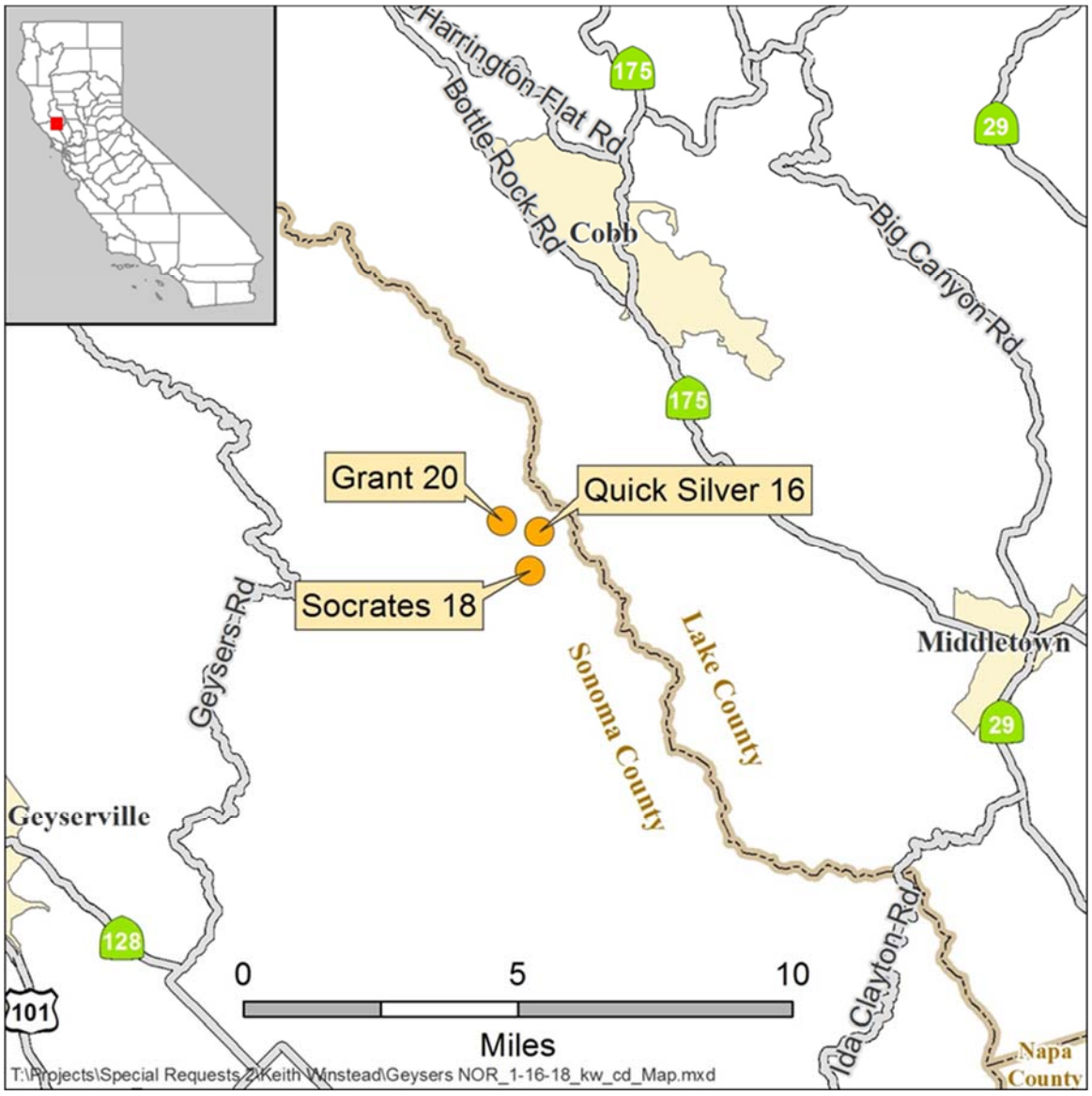
News media inquiries should be directed to the Energy Commission Media Office at (916) 654-4989, or by email to mediaoffice@energy.ca.gov.

If you have questions about this Notice, please contact Keith Winstead, Siting Project Manager, at (916) 654-5191, or by fax to (916) 654-3882, or via e-mail at: keith.winstead@energy.ca.gov

Date: _____

CHRIS DAVIS
Siting Office Manager
Siting, Transmission & Environmental Protection Division

Mail List 771- Geyser List-Serve


Harrington Flat Rd
Bottle Rock Rd
175
29
Cobb
Big Canyon Rd
175
Grant 20
Quick Silver 16
Socrates 18
Geysers Rd
Lake County
Sonoma County
Middletown
29
Geyserville
128
101
0
5
10
Miles
Napa County
T:\Projects\Special Requests 2\Keith Winstead\Geysers NOR_1-16-18_kw_cd_Map.mxd

Quicksilver Geothermal (PG&E Geysers 16) (79-AFC-05C), Socrates Geothermal (PG&E Geysers 18) (79-AFC-3C), and Grant (PG&E Geysers 20) (82-AFC-1C)

Petition to Amend the Final Decision and Allow Minor Improvements to the Fire Prevention Cooling Tower Wet-Down Systems

Executive Summary

Keith Winstead

INTRODUCTION

On December 21, 2017, the California Energy Commission received a petition from the Geysers Power Company, LLC, to amend the Energy Commission licenses for the Quicksilver (formerly PG&E Geysers Unit 16) Socrates (formerly PG&E Geysers Unit 18), and Grant (formerly PG&E Geysers Unit 20) geothermal power plants to install permanent diesel pumps for each unit's cooling tower wetting system for fire protection. These power plants are located in Lake and Sonoma counties, approximately 25 miles north of the City of Santa Rosa.

The purpose of the Energy Commission's review process is to assess any impacts the proposed modifications would have on environmental quality and on public health and safety. The process includes an evaluation of the consistency of the proposed changes with the Energy Commission's Final Decision (Decision) and an assessment of whether the project, as modified, would remain in compliance with applicable laws, ordinances, regulations, and standards (LORS) (Cal. Code Regs., tit. 20, § 1769).

Energy Commission staff has completed its review of all materials received. The staff analysis below is staff's independent assessment of the project owner's proposal to modify the conditions of certification for the installation of permanent diesel pumps for fire protection for each cooling tower wetting system, and to conform with each air districts air quality conditions of certification. With the adoption of staffs recommended new air quality, and worker safety and fire protection, conditions of certification, the amended Quicksilver, Socrates, and Grant geothermal power plants would comply with applicable federal, state, and District air quality LORS, and not result in significant air quality or worker safety and fire protection impacts.

PROJECT LOCATIONS AND DESCRIPTIONS

Pacific Gas and Electric Company's (PG&E) Geysers Unit 16 Geothermal Project (now Socrates Geothermal) was certified by the Energy Commission in September 1981 and began commercial operation in October 1985. The dry-steam geothermal plant was approved for up to 110 megawatts (MW); however, the plant supplies about 53 MW of base-load electricity to northern California's power grid. The facility is located on the east slope of the Mayacamas Mountains, approximately 0.6 mile southwest of the community of Anderson Springs in Lake County, near the Sonoma County line. The associated steam field is located

entirely in Lake County. PG&E Geysers 16 was purchased by Calpine Corporation in 1999, at which time the project was renamed Quicksilver.
PG&E Geysers Unit 18 Geothermal Project (Now Socrates Geothermal) was certified by the Energy Commission in May 1980 and began commercial operation in November 1982. The dry-steam geothermal plant was approved for up to 110 MW; however, the plant supplies approximately 50 MW of base-load electricity to northern California's power grid. The facility is located on the west slope of the Mayacamas Mountains, above Big Sulphur Creek in eastern Sonoma County, near the Lake County line. PG&E Geysers 18 was purchased by Calpine Corporation in 1999, at which time the project was renamed Socrates.

PG&E Geysers Unit 20 Geothermal Project (now Grant) was certified by the Energy Commission in February 1983 and began commercial operation in October 1985. The geothermal plant was approved for up to 110 MW; however, the plant supplies approximately 41 MW of base-load electricity to northern California's power grid. The facility is located approximately 65 miles north of San Francisco and 60 miles northwest of Sacramento, in eastern Sonoma County, near the Lake County border, on a spur west of the main ridge of the Mayacamas Mountains and within the Calm Creek drainage (a tributary of Big Sulphur Creek). Healdsburg and Cloverdale are the nearest Sonoma County communities; Anderson Springs, Middletown, Cobb Valley, Whispering Pines, Loch Lomond, and Hobergs are the closest Lake County communities. PG&E Geysers 20 was purchased by Calpine Corporation in 1999, at which time the project was renamed Grant.

DESCRIPTION OF PROPOSED MODIFICATIONS

The Geysers Power Company, LLC requests the Energy Commission to approve this petition to make identical modifications at each of the facilities to replace temporary portable emergency diesel engines with stationary permanent emergency diesel engines for the cooling tower wet down systems to aid in fire prevention at the Quicksilver, Socrates, and Grant geothermal power plants.

For additional information see the Energy Commission's webpages for these facilities at:

- Quicksilver Geothermal: http://www.energy.ca.gov/sitingcases/pre1999_page/index.php?xkm=ajdkha2385duhkasd208dsasjd5598fhajkhs
- Socrates Geothermal: http://www.energy.ca.gov/sitingcases/pre1999_page/index.php?xkm=ajdkha2385duhkasd211dsasjd5598fhajkhs
- Grant: http://www.energy.ca.gov/sitingcases/pre1999_page/index.php?xkm=ajdkha2385duhkasd197dsasjd5598fhajkhs

The petitions requesting the project modifications (TN 222035-37) are accessible from each of the above webpages through the “Documents for this Proceeding (Docket Log)" link.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The purpose of this petition is to provide fire protection for each cooling tower at the Quicksilver, Socrates, and Grant geothermal projects during fires and power outages.

STAFF'S ASSESSMENT OF THE PROPOSED PROJECT CHANGES

Staff reviewed the petition for potential environmental effects and consistency with applicable LORS, and determined that, in all areas except for Air Quality and Worker Safety and Fire Protection, the proposed changes to the facilities would not cause significant impacts on the environment, cause the projects to not comply with applicable LORS, or require new or revised conditions of certification. The Air Quality and Worker Safety and Fire Protection analyses include staff-recommended changes to the existing conditions of certification. Staff believes with the implementation of these new and revised conditions, the facilities would remain in compliance with applicable LORS, and the proposed project changes would not result in any significant adverse impacts on the environment (Cal. Code Regs., tit. 20, § 1769).

Staff's conclusions in each technical area are summarized in **Executive Summary Table 1** and discussed in more detail, below.

Executive Summary Table 1 Summary of Impacts for Each Technical Area

TECHNICAL AREAS REVIEWED	STAFF RESPONSE			Revised Conditions of Certification Recom-mended
	Technical Area Not Affected *	No Significant Environmental Impact or LORS Inconsistency*	Process As Amendment	
Air Quality			X	X
Biological Resources	X			
Cultural Resources		X		
Facility Design		X		
Geological & Paleontological Resources	X			
Hazardous Materials Management	X			
Land Use	X			
Noise & Vibration		X		
Public Health		X		
Socioeconomics		X		
Soil & Water Resources	X			
Traffic & Transportation		X		
Transmission Line Safety & Nuisance		X		
Transmission System Engineering	X			
Visual Resources	X			
Waste Management	X			
Worker Safety & Fire Protection			X	X

*There is no possibility that the proposed modifications may have a significant effect on the environment, and the modifications will not result in a change in or deletion of a condition adopted by the Commission in the Final Decision, or make changes that would cause project noncompliance with any applicable laws, ordinances, regulations, or standards (Cal. Code Regs., tit. 20, § 1769 (a)(2)).

Staff has determined that technical areas of Biological Resources, Geological and Paleontological Resources, Soil and Water Resources, Transmission System Engineering, Visual Resources, and Waste Management are not affected by the proposed project changes.

For the technical areas of Cultural Resources, Facility Design, Noise and Vibration, Public Health, Socioeconomics, Traffic and Transportation, and Transmission Line Safety and Nuisance, staff has determined there is no possibility that the modifications would have a significant effect on the environment, the projects would continue to comply with applicable

LORS, and no changes to any conditions of certification are necessary. Staff notes the following for these technical areas:

- **Cultural Resources.** Cultural resources have not been identified in the areas proposed for modifications, nor are impacts on cultural resources expected in these areas during ground disturbance because of the age of the existing grades. In the unlikely event that cultural resources are encountered during construction of the proposed modifications, the conditions of certification in the decisions will mitigate any potential impacts.
- **Facility Design.** Installation of the permanent diesel pump and cooling tower wetting piping must comply with the 2016 California Building Code. Implementation of the existing Facility Design conditions of certification adopted in the Decisions would ensure this.
- **Hazardous Materials Management.** Staff reviewed the petition and found that the installation of the permanent diesel pumps would comply with applicable laws, ordinances, regulations, and standards related to the transportation, storage, and use of hazardous materials, posing a less than significant risk.
- **Noise and Vibration.** The diesel pump would operate for a 24-hour period following a planned evacuation. The diesel pump would operate during the event of a wild fire approaching. In this scenario, the power plant will disconnect from the transmission grid and the plant will therefore shutdown. All noise-producing equipment related to power generation, including cooling tower fans and pumps, will cease to operate. The diesel generator would start to operate to sprinkle areas of the cooling tower that can dry out, to help prevent the cooling tower from burning. In this mode, the overall project noise would be substantially less than operational noise, and thus less than significant.
- **Public Health.** Staff recommends approval of the proposed emergency standby diesel system whose operation would not adversely affect the environment. As discussed in the Air Quality section, operation would lead to emissions below the specific air quality standards listed in air quality Tables 1-4. Staff's recommended conditions of certification would further ensure the desired operation without emissions of public health significance
- **Socioeconomics.** The proposed modifications would require approximately three to four workers. The piping, foundation, and pump installation would take an estimated five calendar weeks to complete. From a socioeconomics standpoint, the modifications would have insignificant workforce-related impacts on housing and community services.

  Traffic and Transportation. Installation of the diesel pumps would use at most a few workers and would generate a negligible number of traffic trips. Operation of the pumps would require no traffic trips, as the pumps would be manually started prior to evacuation of the plants. Roadway level of service would not be significantly affected during installation or operation.
- **Transmission Line Safety and Nuisance.** The field and non-field effects of the generating high-voltage lines and would continue to be operated in ways established as without significant impacts according existing knowledge. Operation would not change due to the construction of the proposed emergency standby wet down system and therefore there would be no affect different from the existing conditions. There would be

no significant effects on humans or the environment because conditions would not change. The project owner would continue compliance with all relevant health and safety LORS.

For the technical areas of **Air Quality** and **Worker Safety and Fire Protection**, staff has proposed new conditions of certification to assure compliance with current design standards that protect the public health and safety. The details of the proposed condition changes are found in the attached **Air Quality** and **Worker Safety and Fire Protection** staff analyses**.**

ENVIRONMENTAL JUSTICE

Environmental Justice – Figure 1 shows 2010 census blocks in the six-mile radii of the Quicksilver, Socrates, and Grant geothermal power plants with a minority population greater than or equal to 50 percent. The population in these census blocks represents an environmental justice (EJ) population based on race and ethnicity as defined in the United States Environmental Protection Agency's *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*. Staff conservatively obtains demographic data within a six-mile radius around a project site based on the parameters for dispersion modeling used in staff's air quality analysis. Air quality impacts are generally the type of project impacts that extend the furthest from a project site. Beyond a six-mile radius, air emissions have either settled out of the air column or mixed with surrounding air to the extent the potential impacts are less than significant. The area of potential impacts would not extend this far from the project site for most other technical areas included in staff's EJ analysis.

Based on California Department of Education data in the **Environmental Justice – Table 1**, staff concluded that the percentage of those living in the Middletown Unified School District and Alexander Valley Union Elementary School District (in a six-mile radius of the project site) and enrolled in the free or reduced price meal programs are comparatively fewer than those in the reference geographies, and thus are not considered an EJ population based on low income as defined in *Guidance on Considering Environmental Justice During the Development of Regulatory Actions*. **Environmental Justice – Figure 2** shows where the boundaries of the two school districts are in relation to the six-mile radii around the Quicksilver, Socrates, and Grant geothermal plant sites.

Environmental Justice – Table 1
Low Income Data within the Project Area

SCHOOL DISTRICTS IN SIX-MILE RADIUS	Enrollment Used for Meals	Free or Reduced Price Meals	
Middletown Unified School District	1,680	998	59.4%
REFERENCE GEOGRAPHY			
Lake County	9,435	6,686	70.9%
Alexander Valley Union Elementary School District	130	34	26.2%
REFERENCE GEOGRAPHY			
Sonoma County	70,952	30,959	43.6%

Source: CDE 2017. California Department of Education, DataQuest, Free or Reduced Price Meals, District level data for the year 2016-2017, <http://dq.cde.ca.gov/dataquest/>.

The following technical areas (if affected) consider impacts to EJ populations: Air Quality, Cultural Resources (indigenous people), Hazardous Materials Management, Land Use, Noise and Vibration, Public Health, Socioeconomics, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, and Waste Management.

ENVIRONMENTAL JUSTICE CONCLUSIONS

For the technical areas affected by the project modifications – Cultural Resources, Hazardous Materials Management, Noise and Vibration, Public Health, Socioeconomics, Traffic and Transportation, and Transmission Line Safety and Nuisance – staff concludes that impacts would be less than significant, and thus would be less than significant on the EJ population represented in **Environmental Justice – Figure 1**. In the air quality analysis, staff proposes changes to conditions of certification. Staff has determined that by adopting the proposed changes to the existing conditions of certification, the modified projects would not cause significant air quality impacts for any population in the project's six-mile radius, including the EJ population. Impacts to the EJ population are less than significant.

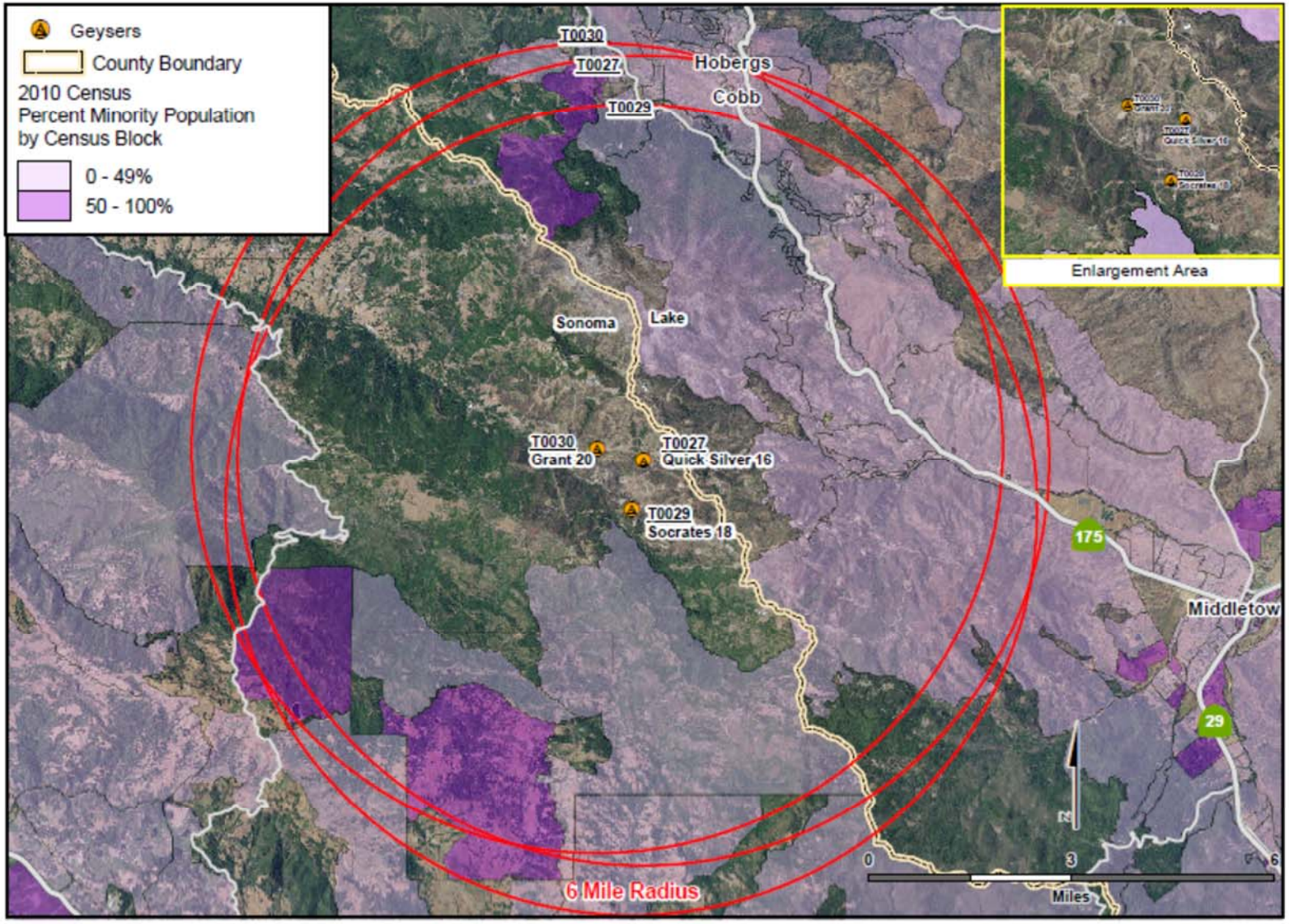
STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff concludes that with the adoption of the attached conditions of certification, the Quicksilver, Socrates, and Grant geothermal plants would continue to comply with applicable LORS and no significant impacts on the environment would occur.

Staff concludes that the required findings, mandated by Title 20, California Code of Regulations, section 1769 (a)(3), can be made, and staff recommends approval of the petition by the Energy Commission.

ENVIRONMENTAL JUSTICE - FIGURE 1

Geysers - Census 2010 Minority Population by Census Block



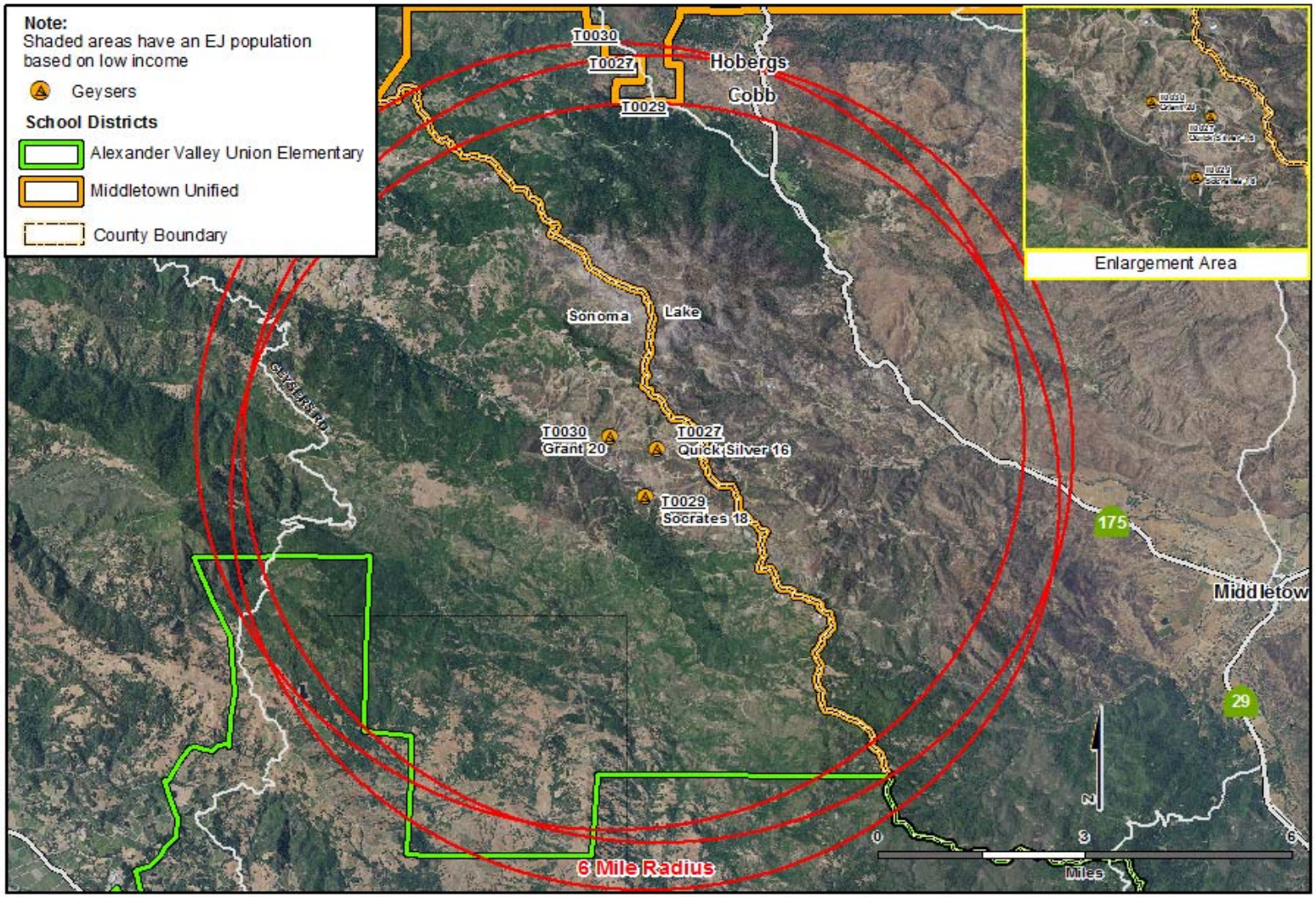
ENVIRONMENTAL JUSTICE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCES: Census 2010 PL 94-171 Data

ENVIRONMENTAL JUSTICE - FIGURE 2

Geysers - Environmental Justice Population Based on Low Income



ENVIRONMENTAL JUSTICE

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Department of Education DataQuest

Quicksilver Geothermal (PG&E Geysers 16)
(79-AFC-05)
Request to Amend Final Commission Decision
Air Quality Analysis of Minor Improvements to
Fire Protection Cooling Tower Wet-down Systems
Nancy Fletcher

INTRODUCTION AND SUMMARY

On December 21, 2017, the Geysers Power Company, LLC (petitioner or GPC) filed a petition (GPC 2017) with the California Energy Commission requesting an amendment to the Energy Commission license for the addition of a stationary emergency diesel engine at the Quicksilver Geothermal power plant. On January 23, 2018, the request was updated (GPC 2018a). When licensed, Quicksilver was named Pacific Gas & Electric Company (PG&E) Geysers Unit 16 Geothermal Project (Unit 16). Unit 16 was certified by the Energy Commission on September 30, 1981 and was renamed Quicksilver following the purchase of the facility by Calpine Corporation. Quicksilver consists of a nominal 120-megawatt (MW) turbine-generator, turbine building, cross-flow mechanical draft cooling tower, electrical switchyard, and a hydrogen sulfide (H_2S) abatement system.

Quicksilver is located in Lake County near the Sonoma County border, within the Lake County Air Quality Management District (LCAQMD). The Energy Commission originally approved Quicksilver in September of 1981 for up to 110-megawatts (MWs) of base-load electricity. Quicksilver began commercial operation in October 1985. Given degradation of the geothermal steam field, Quicksilver provides approximately 53 MWs of base-load electricity to northern California.

In 2015, the Valley Fire damaged the Quicksilver cooling tower. Governor Brown issued Executive Order B-36-15 to expedite demolition and reconstruction of fire-damaged assets such as the cooling tower. The Energy Commission approved the requested reconstruction to remediate the wildfire damage and directed the incorporation of the Authority to Construct (ATC) issued by the LCAQMD into the Energy Commission's Quicksilver Final Decision. The resulting changes to the conditions of certification from the cooling tower reconstruction are included in this analysis.

In 2016, GPC began installation of cooling tower wet-down systems for several cooling towers at selected geothermal sites, including Quicksilver, to keep side surfaces and the top deck wet when the cooling tower is threatened by wildfire. The wet-down systems have been operating with temporary portable emergency diesel engines permitted by the California Air Resources Board (ARB) in the portable equipment registration program (PERP). GPC is proposing the addition of a permanent stationary emergency standby wet-down pump using a Tier-3 diesel-fueled drive engine rated at 204 horsepower (HP) for use in the event of an emergency plant evacuation due to the threat of an approaching wild fire.

GPC submitted an application to the LCAQMD to evaluate the addition of the emergency diesel fired engine. The LCAQMD issued an ATC on January 3, 2018. The final Permit to

Operate (PTO) is still pending. The final PTO will not be issued until the equipment has been installed and verified by the LCAQMD.

Staff recommends additional California Environmental Quality Act (CEQA) mitigation measures described in this analysis to ensure potential air quality impacts from the proposed operation of the emergency diesel engine are mitigated to a less than significant level. Therefore, with the proposed mitigation, there would be no significant air quality impacts related to Quicksilver and no population, including the environmental justice (minority) population would be significantly impacted.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE

The LCAQMD reviewed the requested addition of the emergency diesel engine and determined the proposed changes would comply with their regulations. Energy Commission staff reviewed the LCAQMD permit evaluations which incorporate the proposed changes. Staff evaluated the proposed changes for consistency with all federal, state, and LCAQMD laws, ordinances, regulations, and standards (LORS).

Air Quality Table 1 includes a summary of the LORS currently applicable to Quicksilver. The conditions of certification in the Energy Commission Decision and any and all amendments thereafter ensure that the facility would remain in compliance with all applicable LORS.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	*Description*
Federal	**U.S. Environmental Protection Agency (EPA)**
Title 40 Code of Federal Regulations (CFR) Part 50 (National Primary and Secondary Ambient Air Quality Standards)	National Ambient Air Quality Standards (NAAQS) are set in this part. NAAQS defines levels of air quality necessary to protect public health.
Title 40 CFR Part 51 (Requirements for Preparation Adoption and Submittal of Implementation Plans)	Requires emission reporting and control strategies for the attainment and maintenance of national standards.
Title 40 CFR Part 52 (Approval and Promulgation of Implementation Plans)	Prevention of Significant Deterioration (PSD) requires review and facility permitting for construction of new or modified major stationary sources of pollutants at locations where ambient concentrations attain the NAAQS. PSD requirements for LCAQMD are not required for the addition of the emergency wet-down engine as emissions would not exceed levels of significance.

Applicable Law	*Description*
Title 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)	Outlines requirements for stationary diesel engines. The proposed stationary emergency diesel engine is a certified Tier 3 engine. Compliance is expected.
Title 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)	Establishes National Emission Standards for Hazardous Air Pollutants (NESHAPS) for both major and area sources of Hazardous Air Pollutants (HAPs) emissions. Establishes emission and operating limitations for applicable internal combustion engines. Compliance with Part 60, Subpart IIII satisfies Part 63 Subpart ZZZZ requirements.
State	**California Air Resources Board and Energy Commission**
California Health & Safety Code (H&SC) §41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.
H&SC §40910-40930 (District Plans to Attain State Ambient Air Quality Standards)	State Ambient Air Quality Standards should be achieved and maintained. The permitting of the source needs to be consistent with the approved clean air plan. The LCAQMD New Source Review (NSR) program needs to be consistent with regional air quality management plans.
Title 17 CCR, §93115 Airborne Toxic Control Measure for Stationary Compression Ignition Engines.	The Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines limits fuels, establishes maximum emission rates, and establishes recordkeeping requirements for stationary compression ignition engines. Diesel-fueled emergency engines are subject to the regulations.
Local	**Lake County Air Quality Management District**
Chapter II Prohibitions and Standards Article I Section 400	Visible Emissions— Prohibits the discharge of visible emissions to no greater than a Ringelmann 2 for a period or periods aggregating more than 3 minutes in any one hour. The operation will have conditions to ensure compliance.
Chapter II Prohibitions and Standards Article II Section 410	Particulate Matter Emissions— Specifies standards for particulate matter emission rates for general combustion sources. The requirements specify 0.10 grains per standard cubic foot of exhaust gas calculated to 12 percent carbon dioxide for equipment beginning operation after December 20, 1971. The engine is not expected to exceed the grain loading standard.
Chapter II Prohibitions and Standards Article II Section 411	Particulate Matter Emissions: Other Sources— Specifies standards for particulate matter emission rates for sources other than combustion. The requirements specify 0.20 grains per standard cubic foot of exhaust gas calculated to 12 percent carbon dioxide or emissions rates dependent on process rates. Continued compliance with the emission standards is expected.

Applicable Law	*Description*
Chapter II Prohibitions and Standards Article III Section 421.2	Geothermal Operations: Geothermal Power Plant Operations— Establishes hydrogen sulfide emission standards for geothermal power plant operations.
Chapter II Prohibitions and Standards Article IV Section 430	Other emissions or Contaminants: General— Establishes public nuisance prohibitions. The discharge of air contaminants or other material which could detrimentally impact the public are not permitted. Nuisance problems are not expected.
Chapter II Prohibitions and Standards Article IV Section 431	Other emissions or Contaminants: Non-agricultural Burning— Establishes prohibitions for non-agricultural burning. Continued conformance is expected.
Chapter II Prohibitions and Standards Article IV Section 439	Other emissions or Contaminants: Gasoline Storage— Establishes requirements for gasoline storage. This is a general rule applicable to all facilities whether there is onsite storage or not.
Chapter II Prohibitions and Standards Article IV Section 440	Other emissions or Contaminants: New Source Performance Standards (NSPS)— General provisions from reviewing new and modified stationary sources. The LCAQMD experience with similar operated engine was used by the LCAQMD to conclude compliance with NSPS requirements is expected.
Chapter II Prohibitions and Standards Article IV Section 450	Other emissions or Contaminants: National Emissions Standards for Hazardous Air Pollutants (NESHAPS)— General provisions for reviewing new and modified stationary sources. The emergency engine was evaluated for compliance with NSPS requirements.
Chapter II Prohibitions and Standards Article IV Section 461	Other emissions or Contaminants: Cooling Tower Requirement— Establishes requirements for cooling towers including permitting and testing provisions. Continued compliance is expected.
Chapter II Prohibitions and Standards Article IV Section 467	Other emissions or Contaminants: Asbestos Emissions Control Measure— Establishes requirements to control asbestos emissions and provides waste handling and disposal procedures. No demolition or renovation is required for the installation of the proposed engine. Continued compliance is expected.
Chapter III Maintenance, Malfunction Evasion and Inspection Article I Section 500	Maintenance— Establishes requirements for maintenance and outages. Continued compliance is expected.

Applicable Law	*Description*
Chapter III Maintenance, Malfunction Evasion and Inspection Article II Section 510	Malfunction— General requirements for malfunctions. Establishes criteria for LCAQMD to use in determining if enforcement action will be pursued.
Chapter III Maintenance, Malfunction Evasion and Inspection Article III Section 520	Evasion— Prohibits the installation of devices that conceal or dilute emissions that would otherwise violate an air pollution control regulation. Continued compliance is expected.
Chapter III Maintenance, Malfunction Evasion and Inspection Article IV Section 530	Inspection: Emission Data and Sampling Access— General provisions for access to emission data, sampling access, and maintenance of sampling and monitoring apparatus if required. Continued compliance is expected.
Chapter III Maintenance, Malfunction Evasion and Inspection Article IV Section 530	Inspection: Trade Secrets— Establishes provisions for information considered trade secrets. The proposed engine data and report would not be considered trade secrets.
Chapter IV Permits Article I Section 600	Authority to Construct— Establishes requirements for obtaining permits for stationary sources that could potentially be the source of air contaminants. The LCAQMD issued an ATC for the proposed engine.
Chapter IV Permits Article I Section 601	Authority to Construct— Establishes permitting requirements and timeline. The LCAQMD issued ATC for the proposed engine is valid for one year, unless extended, or until a PTO is issued.
Chapter IV Permits Article I Section 602	Authority to Construct— Establishes parameters for granting and denying ATCs. The LCAQMD issued an ATC for the proposed engine.
Chapter IV Permits Article I Section 606	Authority to Construct— Requires the project owner to comply with all applicable local, state or national air pollution rules or regulations. Compliance is expected.
Chapter IV Permits Article I Section 607	Authority to Construct— Requires ARB review and concurrence of the ATC within thirty days. Concurrence is assumed in the absence of a written notice of nonconcurrence. The ATC for the proposed engine was submitted to the ARB. No response was received, therefore concurrence is assumed.
Chapter IV Permits Article I Section 609	Authority to Construct: Geothermal Stacking Emissions— Requires a plan to limit geothermal stacking at the time of permitting.

Applicable Law	*Description*
Chapter IV Permits Article II Sections 610-617	Permit to Operate— Establishes requirements for PTOs. A PTO will be obtained from the LCAQMD once the engine is installed and ready to operate. Compliance is expected.
Chapter IV Permits Article III Section 620	Permits, Posting and Transfers: Posting of Permits— Requires permits be posted on or close to the permitted equipment. Compliance is expected.
Chapter IV Permits Article V Section 650	Source Emission Testing— Establishes source testing and monitoring requirements. Ongoing source testing of the emergency engine is not required unless requested by the Energy Commission or LCAQMD.
Chapter IV Permits Article V Section 655	Performance Plan— Establishes requirements allowing compliance with emission limitations to be determined through a protocol or performance plan. A performance plan is in place for H_2S source testing of the cooling tower.
Chapter IV Permits Article VI Sections 660-662	Permit Fees— Establishes fee schedule. Compliance is expected.
Chapter IV Permits Article VII Section 671	Plans, Specifications, Permit Revocation— The LCAQMD can suspend a permit if the project owner refuses to furnish information, analyses, plans or specifications.
Chapter V Permits Section 700	Emergency Conditions— In emergency conditions the LCAQMD can request the reduction or discontinuation of air contaminant emissions. Cooperation and compliance is expected.
Chapter II Prohibitions and Standards Table 5	National Emissions Standards for Hazardous Air Pollutants (NESHAPS)— Establishes standards for NESHAP categories. Compliance is expected.

SETTING

AMBIENT AIR QUALITY STANDARDS

The U.S. EPA and the California Air Resources Board (ARB) have both established allowable maximum ambient concentrations of criteria air pollutants. Ambient air quality standards are designed to protect people who are most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The ambient air quality standards are also set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The California Ambient Air Quality Standards, established by ARB, are typically lower (more stringent) than the federally established NAAQS. See **Air Quality Table 2.** The averaging time for the various ambient air quality standards (the duration of time the measurements are taken and averaged) ranges from one hour to one year. The standards are read as a concentration, in parts per million (ppm), parts per billion (ppb), or as a weighted mass of material per unit volume of air, in milligrams (mg) or micrograms (µg) of pollutant in a cubic meter (m^3) of ambient air, drawn over the applicable averaging period.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)[a]	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	53 ppb (100 µg/m^3)	30 ppb (57 µg/m^3)
	1 Hour	100 ppb (188 µg/m^3)[b]	180 ppb (339 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	—	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	75 ppb (196 µg/m^3)[c]	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [b]	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2018b, U.S. EPA 2018 b

Notes: [a] Fourth- highest maximum 8 – hour concentration, averaged over 3 years.
[b] 98th percentile of daily maximum value, averaged over 3 years
[c] 99th percentile of daily maximum value, averaged over 3 years

AMBIENT AIR QUALITY ATTAINMENT STATUS

Federal and state ambient air quality attainment status designations have been revised since the Energy Commission Decision. Quicksilver is located within the Lake County Air Basin (LCAB). The LCAB is a federally and state recognized geographical area equivalent to the county boundary.

Quicksilver is located approximately one-half mile southwest of Anderson Springs on an intermediate ridge of an east slope of the Mayacamas Mountains in the Known Geothermal Resource Area (KGRA). The KGRA includes portions of the Lake County Air Basin and Northern Sonoma Air Pollution Control District. A special air monitoring program referred to as the Geysers Air Monitoring Program (GAMP), monitors air quality in the residential communities adjacent to large scale geothermal operations. The program monitors hydrogen sulfide and other air contaminants to document long-term air quality trends in the KGRA. There are currently five operating air monitors in the GAMP program. The various monitors measure H_2S, PM10, and Radon and provide meteorological data. The KGRA is considered in attainment or unclassified with all state and federal ambient air quality standards (AAQS).

For convenience, staff includes **Air Quality Table 3**, which summarizes the area's current attainment status for AAQS for the LCAQMD. LCAQMD is classified as attainment or unclassified for all federal and state AAQS. A classification of unclassified is treated as attainment.

Air Quality Table 3
LCAQMD Attainment Status

Pollutants	Attainment Status	
	Federal Classification	State Classification
Ozone	Unclassified/Attainment	Attainment
CO	Unclassified/Attainment	Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified	Attainment
PM10	Unclassified	Attainment
PM2.5	Unclassified/Attainment	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Attainment
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particulates	No Federal Standard	Attainment

Source: ARB 2018a, U.S. EPA 2018a.

ANALYSIS

OPERATION SUMMARY AND EMISSIONS ANALYSIS

The emergency standby wet-down pump diesel drive engine is proposed to provide emergency suppression water pumping for the Quicksilver cooling tower in the event of a wild fire. The emergency diesel engine would be manually started if a wildfire approaches the facility. The wet-down pump would be used to wet the cooling tower and surrounding deck. The wet-down pump would be expected to provide 24 hours or longer of wet-down capability in the case of an emergency. The engine would also be operated for maintenance and readiness testing.

Cooling tower wet-down systems are used to keep normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation. Wet-down systems are different from fire suppression systems. The wet-down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to suppress internal fires.

In 2016, GPC began installation of cooling tower wet-down systems for several cooling towers at selected geothermal sites. The wet-down systems have been operated with temporary portable emergency diesel-fueled engines permitted by the ARB through the portable equipment registration program (PERP).

The California Code of Regulations Title 17 establishes requirements for the PERP program. The regulation establishes the definition of the term “portable” and outlines circumstances for which equipment is not considered portable and circumstances where a district stationary permit is required. Per the regulation, portable engines cannot operate as a stationary source. The regulation places limitations on the duration a portable engine is permitted to operate or reside at a site. A portable engine is not allowed to reside onsite for 12 consecutive months regardless of operation. In addition, per Section 2452(dd), equipment does not meet the definition of portable if any of the following are true:

a. *the engine or equipment unit or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. The period during which the engine or equipment unit is maintained at a storage facility shall be excluded from the residency time determination. Any engine or equipment unit such as back-up or stand-by engines or equipment units, that replace engine(s) or equipment unit(s) at a location, and is intended to perform the same or similar function as the engine(s) or equipment unit(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s) or equipment unit(s), including the time between the removal of the original engine(s) or equipment unit(s) and installation of the replacement engine(s) or equipment unit(s), will be counted toward the consecutive time period; or*

b. *the engine or equipment unit remains or will reside at a location for less than 12 consecutive months if the engine or equipment unit is located at a seasonal source and operates during the full annual operating period of the seasonal source, where*

a seasonal source is a stationary source that remains in a single location on a permanent basis (at least two years) and that operates at that single location at least three months each year; or

c. *the engine or equipment unit is moved from one location to another in an attempt to circumvent the portable residence time requirements.*

Therefore, an engine performing the intended function for an extended period of time would not be considered portable. A stationary permit is required from the air district in order to operate the emergency wet-down diesel engine. The project owner submitted an application to the LCAQMD to evaluate the addition of the emergency diesel-fueled engine. The LCAQMD issued an updated ATC on January 3, 2018. The final Permit to Operate (PTO) is still pending. The final PTO will not be issued until the equipment has been installed and verified by the LCAQMD.

The proposed engine is typically referred to as an 'emergency fire pump'. However, GPC is proposing to operate the engine for emergency purposes not classified as fire protection services. Fire pump engines classified for fire protection services are subject to additional National Fire Protection Association and California Building and Fire Code requirements. The ATCM for stationary diesel engines applies to emergency standby diesel engines. Applicable ATCM requirements were incorporated in the ATC issued by the LCAQMD. Maintenance and readiness testing is limited to 50 hours per year for emergency engines.

According to the updated PTA, the proposed permanent stationary standby wet-down pump is driven by a diesel-fueled engine, all contained on a single skid. Fuel lines would not extend off the skid. Above ground piping would be utilized to connect the unit to the cooling tower wetting system header. Excavation for the skid and piping foundations would be on existing asphalt-covered, previously disturbed ground. Potential construction emissions from this scope of work are expected to be minimal and short term. Therefore, no significant construction emissions are expected from the installation of the proposed equipment.

Air Quality Table 4 includes the emission rates, and the estimated potential emissions for operation and the maintenance and readiness testing of the proposed emergency diesel engine. The LCAQMD evaluated the engine using a maximum of 1,000 hours of operation per year including maintenance and testing. The anticipated actual use would be less than 100 hours per year. The proposed engine conditions would limit the engine to 50 hours per year for testing and maintenance purposes consistent with operation restrictions established for diesel-fueled emergency use engines in the ATCM. The emissions rates for NOx, CO, VOC and PM10 used to calculate the potential emissions are from the manufacturer's specification sheet for the proposed engine. The PM2.5 emission rate is conservatively assumed to be equivalent to the PM10 emission rate. The SOx emission rate is based on the use of ultra-low sulfur diesel. Staff calculated CO_2 and carbon dioxide equivalent (CO_2e) emissions using emission factors from the U.S. EPA greenhouse gas inventory and global warming potentials from the Intergovernmental Panel on Climate Change (IPCC). Staff included emissions for hourly and potential 24-hour operation scenarios for informational purposes.

Air Quality Table 4
Quicksilver Unit 16 Estimated Diesel Engine Emissions

	NOx	CO	VOC	SOx	PM10/2.5	CO_2e [a]
Emission Rate (g/bhp-hr)	2.475	1.193	0.062	0.0055	0.111	NA
Potential Hourly [b] (pounds/hour)	1.113	0.537	0.028	0.002	0.050	239
Potential 24-hour [b] (pounds/hour)	27.4	12.9	0.7	0.1	1.2	5,744
Annual Maintenance [c] (pounds/year)	56	27	1.4	0.12	2.5	11,967
Annual Operation [d] (pounds/year)	1,113	537	28	2.47	50	239,334
Annual Maintenance [c] (tons/year)	0.0278	0.0134	0.0007	0.0001	0.0012	6
Annual Operation [d] (tons/year)	0.5566	0.2683	0.0139	0.0012	0.0250	120

Source: LCAQMD 2018, staff analysis

Notes: [a.] Based on CO_2e emissions rates from the U.S. EPA emission factors for greenhouse gas inventories and global warming potentials from Table A-1 of 40 CFR Part 98, Subpart A: CO_2 = 73.96 kilograms per million British thermal units (kg/MmmBtu) and 1, CH_4 = 3.0 grams per million British thermal units (g/mmBtu) and 25, N_2O = 0.60 g/mmBtu and 298.

[b.] Potential maximum hour operation.

[c.] Based on 50 hours per year operation limitation for testing and maintenance.

[d.] Based on 1000 hours per year maximum operation.

Significant emissions of hydrogen sulfide associated with the proposed emission units are not expected. Essentially all sulfur in the fuel is oxidized to SO_2.

The ATC issued by the LCAQMD includes six categories of requirements, Emissions, Administrative, Records and Reporting, Modification, Monitoring, and Identification and Access. The conditions are standard conditions for emergency engines and limit operations to maintenance and testing and emergency use. These conditions ensure the emissions from the emergency engine would not cause a significant increase in criteria pollutants.

Considering the LCAQMD permit conditions are standard conditions for emergency diesel engines, staff does not expect significant changes to these conditions in the final Permit to Operate issued by the LCAQMD. The LCAQMD indicated they would issue the final Permit to Operate for the emergency diesel engine after the engine is installed and operation of the equipment is verified.

Staff is proposing to update the conditions of certification for consistency with changes incorporated into the LCAQMD permits since Unit 16 was originally licensed. The changes clarify reporting requirements and provide consistency with the reporting requirements already included in the LCAQMD permits. The LCAQMD-issued permits require the submittal of quarterly compliance reports. Staff reviewed the updated LCAQMD permit operating limits and reporting requirements. Staff is proposing to streamline the Energy Commission requirements where possible.

Staff is proposing to incorporate the quarterly reporting requirements from the LCAQMD permits. In addition, staff is proposing language specifying the reports and notices required for submittal to the Energy Commission to address the differences in Energy Commission reporting requirements and LCAQMD requirements. Staff is also requesting a demonstration

of compliance pertaining to the conditions of certification, including staff conditions, in the annual periodic report to ensure Quicksilver continues to operate in compliance with Energy Commission requirements.

Staff-proposed changes would replace the existing requirement for the project owner to submit an annual letter from the LCAQMD verifying compliance with the conditions. The Additional Proposed Condition section includes additional detail on the proposed reporting requirements.

Staff incorporated the provisions of the LCAQMD ATC from the Quicksilver cooling tower reconstruction. On November 19, 2015, GPC formerly requested Energy Commission authorization for the reconstruction of the cooling tower (GPC 2015). On November 20, 2015, the Energy Commission authorized the repair of the cooling tower. On February 5, 2016, the Energy Commission approved the requested reconstruction to remediate the wildfire damage and restore power plant operations. The approval included direction for staff to incorporate the ATC into the Energy Commission's Unit 16 Final Decision.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) MITIGATION

As documented in **Air Quality Table 3**, the LCAQMD is in attainment or unclassified with the state and federal AAQS. Staff evaluated the proposed changes taking into consideration the attainment status and potential populations surrounding the facility. The proposed mitigation measures would minimize emissions associated with the proposed equipment.

The staff-proposed mitigation measures noted as conditions of certification would ensure potential direct and cumulative air quality impacts from the proposed facility modifications would be less than significant, including impacts to the environmental justice population. There are no air quality environmental justice issues related to the proposed facility modifications and no minority population would be significantly or adversely impacted.

ADDITIONAL CONDITIONS OF CERTIFICATION FOR THE ENGINE

Staff is proposing the addition of several conditions of certification pertaining to the emergency standby wet-down pump diesel engine. These are standard conditions from the LCAQMD issued ATC for emergency diesel engines. The conditions limit the operation of the emergency engine to be consistent with restrictions imposed by the ATCM for stationary diesel engines.

Staff is proposing to denote these conditions of certification with an "E" preceding the section subset number. The proposed emergency engine conditions of certification with emission limitations are included in **AQ-E1A** and **AQ-E1B**. The proposed emergency engine conditions of certification with administrative requirements are included in **AQ-E2A** through **AQ-E2F**. The proposed emergency engine conditions of certification containing record and reporting requirements are included in **AQ-E3A** through **AQ-E3E**. The proposed emergency engine condition of certification with modification provisions is **AQ-E4A**. The proposed emergency engine condition of certification containing monitoring requirements is **AQ-E5A**.

The proposed emergency engine condition of certification identification and access provisions is **AQ-E6A**.

ADDITIONAL PROPOSED CONDITION CHANGES

Staff is proposing additional changes to update the air quality conditions of certification applicable to ongoing operations with current requirements to ensure the facility operates in compliance with all LORS. These changes include incorporating the provisions of the LCAQMD ATC for the Quicksilver cooling tower reconstruction and additional changes made to the LCAQMD-issued operating permits over the years.

The LCAQMD numbering for permit conditions does not match the Energy Commission's numbering for the conditions of certification. In order to provide clarity and to avoid confusion between the LCAQMD numbering and Energy Commission numbering, staff is proposing to re-order the air quality conditions of certification.

Staff is proposing to include the following condition subcategories: 1: Emissions, 2: Administrative, 3: Records and Reporting, 4: Modification, 5: Testing and Monitoring, and 6: Identification and Access, to organize the requirements for clarity and consistency with LCAQMD permits. Staff is proposing to include the conditions of certification specific to the emergency engines in a subsection of each category. This way, changes to the number of conditions specific to the power plant would not result in numbering changes for the conditions specific to the engines. Additionally, this approach provides clarity in determining the requirements for the separate equipment units.

Staff is proposing to include the equipment list at the beginning of the condition section. Including the list at the beginning of the permit clarifies the equipment subject to air quality requirements. The equipment list includes the steam turbine/generator unit, abatement system, cooling tower, mercury adsorption vessel, and the proposed emergency diesel engine. The equipment listed is included in the LCAQMD issued permits.

Staff is proposing to delete the Applicable Laws, Ordinances, Standards and Practices section. Specific rules and regulations are not included in the LCAQMD permits. The LCAQMD rules and regulations have been updated since the facility was licensed. Staff reviewed the proposed changes for consistency with the current regulations. This review is included in the LORS Section.

Staff is proposing to rename the Requirements Section to Staff Conditions. Staff is proposing to delete Conditions of Certification **12-1**, **12-2**, and **12-3** and replace them with Conditions of Certification **AQ-SC1**, **AQ-SC2**, and **AQ-SC3**. Condition of Certification **12-1** is a general condition requiring compliance with LCAQMD requirements specified in the Settlement of the Parties Regarding Petition for Review of Determination of Compliance dated December 22, 1980. The verification requires the LCAQMD to send the project owner a letter verifying compliance with requirements in the Determination of Compliance. In addition, the verification specifies disputes to the status of compliance would be addressed initially by the LCAPCD and thereafter by the Energy Commission. The existing language is outdated and does not adequately define project owner responsibilities especially considering the

subsequent amendments made to the requirements in the LCAQMD issued operating permits.

Condition of Certification **12-2** specifies alternate abatement equipment must be approved prior to use. Condition of Certification **12-3** states the project owner shall submit abatement equipment plans if requested. The effectiveness and specific details of the abatement equipment were not fully known when Quicksilver was originally licensed. These conditions were included to provide direction and flexibility if a change was needed. Staff is proposing to replace these conditions with updated requirements in Conditions of Certification **AQ-SC1** and **AQ-SC2.**

Any change to Quicksilver operation, including equipment and the abatement system, requires Energy Commission approval. Proposed Condition of Certification **AQ-SC1** includes language requiring the project owner to provide the Energy Commission with copies of all project permits issued and proposals for new project permits or existing project permit amendments for approval. Condition of Certification **AQ-SC2** includes clarifications on submittals required to demonstrate compliance with the conditions of certification. Condition of Certification **AQ-SC2** would specify the project owner is required to submit specified reports and summaries to the CPM within the timeframes outlined in the conditions of certification.

Proposed Condition of Certification **AQ-SC3** clarifies the project owner is required to submit annual compliance reports as stated in the general provisions for the facilities compliance plan. The project owner would need to demonstrate compliance with all air quality conditions of certification, including staff conditions, to satisfy the requirements of the Energy Commission annual compliance report. The submittals required by the LCAQMD include reporting requirements to demonstrate compliance with the majority of the permit conditions. The proposed conditions of certification outline additional information needed to demonstrate compliance.

Staff is proposing to include the facility wide emission limitation included on the LCAQMD-issued ATC for the proposed engine under a separate subsection denoted with an “F” preceding the section subset number. The proposed facility wide Condition of Certification **AQ-F1A** contains language included in other individual LCAQMD-issued permits for the facility.

Staff is proposing to delete remaining Conditions of Certification **12-4** through **12-6**; they are no longer needed due to the incorporation of the ATC from the cooling tower replacement. The ATC contains Condition 1: Emissions with subparts A, B, C, D, E, and G. This condition contains emission limitations for the power plant operations. The ATC contains Condition 2: Administrative with subparts A, B, C, D, E, and D (the conditions has two subpart Ds). This condition contains general operating limitations for the power plant operations. The ATC contains Condition 3: Records and Reporting with subparts A and B. This condition contains record and reporting requirements for breakdowns and exceedances. In addition, it establishes the required reporting criteria. The ATC contains Condition 4: Modification with subpart A. This condition requires the project owner to obtain an ATC prior to any significant changes to the power plant equipment and operations. The ATC contains Condition 5:

Testing and Monitoring with subparts A, B, C, D, and E. This condition contains testing and monitoring requirements including the requirement to monitor ambient H_2S. Ambient monitoring requirements can be satisfied with participation in GAMP. The ATC contains Condition 6: Identification with subpart A. This condition requires the project owner provide access to plant records, logbooks, equipment, and sampling ports.

Staff is proposing a language change to Condition of Certification **AQ-1C**. Staff is proposing to add language to give the project owner flexibility to comply with the emission limit through a performance plan. LCAQMD rules and regulations allow for compliance through a protocol or performance plan per Article 5 Section 655 Performance Plan. This language is not currently contained in the LCAQMD issued operating permit; however, the proposed language requires LCAQMD approval if a performance plan is used. The LCAQMD operating permit currently allows for the option of a performance plan to be used for H_2S testing of the cooling tower.

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission staff recommends approving the addition of the proposed emergency diesel-fueled engine. Staff recommends the addition of sixteen conditions specific to the proposed engine, one condition establishing an emission limitation for the entire facility, and five general administrative conditions:

1. Two conditions establishing emission limits, Conditions of Certification **AQ-E1A** and **AQ-E1B**;

2. Six conditions establishing administrative/operational requirements, Conditions of Certification **AQ-E2A**, **AQ-E2B**, **AQ-E2C**, **AQ-E2D**, **AQ-E2E**, and **AQ-E2F**;

3. Five conditions with records and reporting requirements, Conditions of Certification **AQ-E3A**, **AQ-E3B**, **AQ-E3C**, **AQ-E3D**, and **AQ-E3E**; and

4. One condition with modification provisions, Condition of Certification **AQ-E4A**;

5. One condition with monitoring provisions, Condition of Certification **AQ-E5A**; and

6. One condition with identification and access provisions, Condition of Certification **AQ-E6A.**

Staff recommends restructuring and updating the existing air quality conditions of certification. Staff proposes to group the conditions of certification into sections organized by type and equipment. Staff proposes to update the equipment list and the conditions and requirements to meet current LORS. These updates include incorporating the current requirements in the LCAQMD operating permits.

Staff recommends replacing vague existing reporting language with more specific updated requirements. Staff is proposing to include periodic reporting requirements already required by the LCAQMD with a few additional requirements. Staff is also proposing to replace the

existing requirement for a letter of compliance from the LCAQMD with specific reporting requirements to the Energy Commission. Reporting requirements include:

1. Submitting the required quarterly and annual reports;

2. Submitting summaries of any notices of violation and associated report(s), and complaints;

3. A statement of compliance with the conditions of certification in the annual compliance report; and

4. Submitting proposals for project modifications and permits issued.

With the additional conditions requested by staff, the proposed changes will conform with the applicable LORS related to air quality and will not result in significant air quality impacts.

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

The proposed conditions of certification include staff-recommended conditions of certification and the applicable LCAQMD operating permit conditions. Staff conditions are additional conditions of certification recommended to provide CEQA mitigation for the project. Staff-recommended conditions of certification make up the '**AQ-SCx**' series of conditions. Staff recommends identifying conditions of certification pertaining to the emergency diesel fired engine as the '**AQ-E**' series.

Bold underline is used to indicate new language. ~~Strikethrough~~ is used to indicate deleted language. The conditions of certification from the ATC issued by the LCAQMD for the cooling tower reconstruction are regular text as they appeared in the Energy Commission approval for the cooling tower repair. The Energy Commission order approved incorporation of these conditions into the license. Updates to the conditions contained in the cooling tower replacement ATC are indicated using **bold underline** and ~~strikethrough~~.

For convenience, a clean version of the conditions of certification reflecting the proposed changes that would become applicable to Quicksilver is included in Appendix A.

CONDITIONS OF CERTIFICATION

~~Section 12: Air Quality~~

EQUIPMENT LIST:

One (1) 120 MW Geothermal Power Plant including:

- One (1) 120 MW Geothermal Steam Turbine/Generator Unit, ancillary piping, pumps and controls including a 50% capacity turbine bypass system;
- One (1) Primary H_2S Abatement System- Stretford sulfur recovery plant, surface condenser, gas handling system, and process H_2S continuous emissions monitor;

- One (1) Secondary H_2S Abatement System- hydrogen peroxide and chelated Iron catalyst chemical storage and feed system; ~~and~~
- One (1) Circulating water system consisting of an 11 cell cooling tower with associated fans, 12 blade with drift elimination ratio at 0.001 %, circulating water pumps, piping, controls, reinjection sump**,** ~~, and~~ non-condensa**i**~~i~~ble gas distribution system, and Turbine Gland Seal System Modification.
- **Mercury Adsorption Vessel**
- **E1: One (1) 2017 Cummins Model: CFP7VS-40 QSB6.7 Diesel Engine Powered Emergency Standby Cooling Tower Wetdown Pump, 204 HP, Tier III, Engine Family: HCEXL0409AAB.**

LOCATION:

Section 35, T11N, R8W, MDB&M Lake County, CA

~~**A. APPLICABLE LAWS, ORDINANCES, STANDARDS, AND PRACTICES**~~

- ~~Lake County Air Pollution Control District Rules, including Rules 411, 412, 421.2-A, 430, 510, 602,602.1, 604, and 605.~~
- ~~Clean Air Act and implementing federal regulations.~~
- ~~California Health and Safety Code, and implementing state regulations.~~

~~**B. REQUIREMENTS**~~ **STAFF CONDITIONS**

~~**12-1.** PG&E shall comply with the requirements specified in the Lake County Air Pollution Control District document entitled, "Settlement of the Parties Regarding Petition for Review of Determination of Compliance" dated December 22, 1980. (~~

Verification: ~~The Lake County Air Pollution Control Officer shall annually send PG&E a letter verifying the status of PG&E' s compliance with the conditions of the Determination of Compliance. Disputes as to the status of compliance with the DOC conditions shall be addressed initially to the LCAPCD, pursuant to its rules and regulations, and thereafter to the CEC.~~

~~**12-2.** PG&E shall obtain LCAPCD Hearinq Board and CEC approval before using any equipment other than the hydrogen peroxide/catalyst and Stretford/surface condenser system as proposed in the AFC to control H_2S emissions (re: DOC Conditions 3, 4, and 5)."~~

Verification: ~~PG&E shall obtain separate letters from the LCAPCD and the CEC Executive Director stating that the use of an alternative H_2S emissions abatement system satisfies the requirements of DOC Conditions 1 and 2.~~

~~**12-3.** PGandE shall submit approved-for-construction drawings of the power plant secondary H_2S control system to the CEC only if requested by the CEC.~~

Verification: ~~If requested, plans shall be submitted by PG&E to the CEC at least 30 days prior to commencing construction of the system.~~

AQ-SC1 **The project owner shall provide the compliance project manager (CPM) copies of any Lake County Air Quality Management District- (LCAQMD or District) issued project air permit for the facility. The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM.**

Verification: The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.

AQ-SC2 **The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project.**

Verification: The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.

AQ-SC3 **The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.**

Verification: The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.

~~**12-4.** PG&E shall ensure that the detailed plan for testing the performance of The Geysers Unit 16 emissions abatement system at normal full load operation includes the following test parameters: (1) the test data shall reflect a minimum of 30 days (not necessarily consecutive days) operation at a minimum of 80 percent of the gross electricity generating capacity, and (2) in the event that at least 30 days of qualifying data could not be obtained durinq the 90-day test period specified in the Determination of Compliance, PG&E shall continue to collect test data until the required information has been obtained. (The application for a Permit to Operate shall be filed as specified in DOC Condition 13 and need only include the results of the performance test conducted during the initial 90 days of commercial operation.) (Re: DOC Conditions 12 and 13.)~~

~~**Verification:** PG&E shall provide the CEC with a copy of the detailed plan submitted to the LCAPCO for review and approval. In addition, if the test period extends beyond the initial 90 days after commercial operation, PG&E shall file a supplementary report with the CEC and the LCAPCO which reflects all the results of the performance test.~~

~~**12-5.** Deleted.~~

~~**12-6.** The ARB and the LCAPCO shall approve the frequency, method of collection, and the testing methods for the operation of the monitoring station to be located at the Anderson Springs Recreation Center (re: DOC Condition 11C).~~

~~**Verification:** PG&E shall obtain separate letters from the ARB and LCAPCO approving the frequency, method of collection, and the testing methods for the operation of the monitoring station.~~

~~CONDITION~~ 1: EMISSIONS

Power Plant and Abatement

AQ-1A The emissions limitations contained below shall apply during normal power plant operation, outages, and/or curtailments. All equipment shall be regularly maintained in good working order and operated in a manner to prevent or minimize air emissions.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-1B Hydrogen Sulfide (H_2S) emissions from the project shall not exceed five (5.0) pounds per hour on a combined basis, and meet an annual performance criterion not to exceed seven and one-half (7.5) pounds per hour for an aggregate of not more than 72 hours per year.

Verification: The project owner shall verify compliance by adhering to all testing and monitoring requirements.

AQ-1C The H_2S content in the sweet gas from the Stretford shall not exceed 10 ppmv, prior to dilution in the cooling tower **or as specified in an LCAQMD-approved performance plan under Section 655**.

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in AQ-5B.

AQ-1D The H_2S concentration from the Gland Steam Seal System vent shall not exceed 250 ppmw, and the H_2S emission rate shall not exceed 0.1 lbs/hr.

Verification: The project owner shall verify compliance by adhering to all testing and monitoring requirements.

AQ-1E ~~Geysers Statutory Trust (GST)~~ **The project owner** shall install and maintain cooling tower drift elimination rated at 0.002 % or better. In the event of generalized atmospheric conditions or localized dangerous contamination of such a nature as to constitute an emergency creating a danger to the health and welfare of the citizens of Lake County, the Air Pollution Control Officer (APCO) will take immediate action by requiring ~~GST~~ **the project owner** to reduce H_2S or other emissions, or to discontinue emissions entirely. In the event emissions are discontinued entirely, **the Lake County Air Quality Management District (LCAQMD) Hearing Board would hold** a hearing ~~shall be held by the Lake~~

~~County Air Quality Management District (LCAQMD) Hearing Board,~~ as soon as practical after such action has been taken, to determine whether such discontinuance shall continue, and under what conditions.

Verification: The project owner shall verify compliance by adhering to all testing and monitoring requirements.

AQ-1G Visible emissions shall not exceed the values listed below for more than three (3) minutes in any one (1) hour:

- Ringelmann 0.5 (10% opacity) for combustion emissions engine exhaust; and
- Ringelmann 1 (20% opacity) for road and construction dust emissions.

Verification: The project owner shall perform a Visible Emissions Evaluation or source test to determine compliance as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E1A All equipment shall be regularly maintained in good working order pursuant to manufacturer's guidelines and operated in a manner to prevent or minimize air emissions. The Lake County Air Quality Management District (LCAQMD) shall be notified pursuant to Rule 510, regarding equipment breakdown.

Verification: The project owner shall notify the CPM of breakdowns in the quarterly compliance reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E1B Visible emissions from E1 shall not exceed Ringelmann 0.5 (10% opacity) from the engine exhaust stack for more than three (3) minutes in any one (1) hour.

Verification: The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Facility Wide

AQ-F1A The total ROG, PM10, SOx or NOx emission rate for this facility shall not exceed 25 tons per 12-month period. The emission rate(s) determination shall be consistent with the methodology and assumptions used to evaluate the application(s) under which the LCAQMD permit(s) was/were issued.

Verification: The project owner shall perform a source test to verify compliance with the emission rate(s) upon request of the District. The project owner shall make the site

and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

~~CONDITION~~ 2: ADMINISTRATIVE

Power Plant and Abatement

AQ-2A ~~GST~~ **The project owner** shall maintain and operate the power plant, emissions abatement systems, and associated ancillary equipment as described in submitted specifications and drawings and subsequent permit modifications in accordance with good operating practices and procedures to meet the emissions limit in ~~Condition 1~~ **1: Emissions**. The power plant and abatement system components shall be adequately maintained and winterized.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2B ~~GST~~ **The project owner** shall coordinate plant operations with the steam supplier and follow the mutually developed plan to limit H_2S emissions during plant operation to the H_2S emission limitation in ~~Condition~~ 1**: Emissions**, and in the case of a power plant outage, to meet the limitation within 15 minutes or as near to 15 minutes as possible, but in no case longer than 60 minutes after the cessation of power generation. This plan, involving the operation of the turbine bypass system, shall be annually reviewed and modified as necessary with the approval of the APCO.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2C The Gland Steam Seal vent shall be directed upward and not be blocked from an upward trajectory by a rain cap or other means.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2D All seal water discharged from the vacuum pumps and separators shall be directed to and flashed in the main condenser or directly re-injected. A direct re-injection line for seal water may be incorporated upon request of ~~GST~~ **the project owner** with a written approval of the LCAQMD without further permit modification.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2E ~~GST~~ **The project owner** shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act (AB2588) as specified in Sections 44300 - 44394 of the California Health and Safety Code.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2F~~D~~ Within 180 days of commercial operation, ~~GST~~ **the project owner** shall apply for a Permit to Operate, and prove compliance with these conditions.

Verification: The project owner shall submit the Permit to Operate to the CPM as required in AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E2A E1 shall only operate to power emergency standby cooling tower wet-down pump use when commercial line power is not available because of an emergency or line maintenance outage. The project owner shall develop or utilize an engine maintenance plan per manufacturer's specifications and/or the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and New Source Performance Standards (NSPS).

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2B Testing and maintenance operations for E1 is allowed for up to 50 hours per 12-month period.

Verification: The project owner shall maintain logs as required in Records and Reporting. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2C Should total hours of operation for E1 exceed usage hours that result in a prioritization score of 10 or above, a Health Risk Assessment and/or additional emission reductions may be required.

Verification: The project owner shall perform a Health Risk Assessment or reduce emissions as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2D Diesel fuel utilized shall be California Low Sulfur Diesel containing less than 15 ppmw sulfur.

Verification: The project owner shall maintain logs as required in Records and Reporting. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2E The project owner shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act as specified in Sections 44300 - 44394 of the California Health and Safety Code as well as the ATCM for Stationary Compression Ignition Engines.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2F Within 180 days of initial operation, the project owner shall apply for a Permit to Operate, and prove compliance with these conditions.

Verification: The project owner shall submit the Permit to Operate to the CPM according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

~~**CONDITION 3: RECORDS AND REPORTING**~~

Power Plant and Abatement

AQ-3A **Notification ~~1.~~**

The LCAQMD shall be notified pursuant to Rule 510, upon breakdown and/or loss of emissions control from this facility.

~~2.~~ In the event that emissions exceed the allowable limit, ~~GST~~ **the project owner** shall notify the LCAQMD within one (1) hour and shall advise the LCAQMD**:**

1) the cause of the exceed**ance**;

2) actions taken or proposed to achieve compliance**;** and

3) estimate of emissions and duration of noncompliance.

Verification: In the event that emissions exceed the allowable limit, the project owner shall notify the CPM by the close of the next business day. The project owner shall report breakdowns to the CPM in the quarterly compliance reports.

AQ-3B **Reports**

~~1. GST~~ **The project owner** shall maintain records of the plant and abatement system operation, testing to show compliance with the emission limits, and provide a summary on a quarterly basis. The quarterly summary shall detail;

1) ~~a)~~ hours of operation;

2) ~~b)~~ any periods of abatement equipment malfunctions, reason for malfunction and corrective action;

3) ~~c)~~ types and amounts of chemicals used for condensate treatment;

4) ~~d)~~ periods of scheduled and unscheduled outages and the cause of outages, if known;

5) ~~e)~~ a summary of continuous emissions monitoring records for plant operation and monitor maintenance;

6) ~~f)~~ results of source tests, and

7) ~~g)~~ the dates and hours of any H_2S emissions in excess of the limitation in ~~Condition~~ 1**: Emissions**.

Verification: The project owner shall submit the quarterly reports to the CPM within 45 calendar days of the end of each quarter. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-E3A The project owner shall maintain a log for E1 (all logs can be hard copy or digital) meeting the requirements of the NESHAP for RICE and NSPS which contains at a minimum, the facility name, location, engine information, fuel used, emission control equipment, maintenance conducted on the engine, and documentation that the engine meets the emission standards.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3B The project owner shall maintain a log for E1 of usage that shall document hours of operation, and initial startup hours. The project owner shall maintain a log of engine maintenance to show compliance with maintenance plan and NSPS requirements.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3C The project owner shall document fuel usage by retention of fuel purchase records or by other methods that adequately show fuel use for this engine. Log entries shall be retained for a minimum of 36 months, with 24 months of the most recent entries retained / accessible on-site. The log shall meet all requirements of the ATCM for Stationary Compression Ignition Engines.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3D The project owner shall maintain a non-resettable hour meter for each engine capable of displaying 9,999 hours.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3E The project owner shall furnish an annual record of fuel use (gallons) and engine use (hours), breaking down hours of testing, maintenance, and emergency use, and in a format acceptable to the LCAQMD, within 15

days of request, and by October 31st of each year.

Verification: The content and format of the annual record submitted by the project owner to the LCAQMD shall be approved by the LCAQMD. The project owner shall provide the CPM a summary of the type of fuel used and engine use (hours) breaking down hours of testing, maintenance, and emergency use, to the CPM in the annual compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

~~CONDITION 4:~~ **MODIFICATION**

Power Plant and Abatement

AQ-4A ~~GST~~ **The project owner** shall submit an application for**,** and receive an**,** Authority to Construct Permit prior to any significant deletions, additions, modifications of, or operational changes to, the constructed power plant, automated (computerized) management system, and AECS equipment.

Verification: The project owner shall provide the CPM with applications and permits issued according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E4A The project owner shall apply for and receive an Authority to Construct permit prior to the addition of new equipment or modification of permitted equipment.

Verification: The project owner shall provide the CPM with applications and permits issued according to AQ-SC1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

~~CONDITION 5:~~ **TESTING AND MONITORING**

Power Plant and Abatement

AQ-5A Upon a determination by the APCO that continuous monitors or monitoring systems are available to quantify plant cooling tower emissions, ~~GST~~ **the project owner** shall install and operate a continuous emissions monitor system to verify compliance with emissions limits contained in ~~Condition~~ 1**: Emissions**. Until such time as continuous emissions monitors are installed and operational, ~~GST~~ **the project owner** shall conduct monthly H_2S source testing of the cooling tower stacks or as specified in an accepted performance plan under Section 655. The monthly test shall conform to source tests submitted to meet AFC Condition (K) and DOC Condition 11A.

Verification: The project owner shall submit the testing results to the CPM in the quarterly compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-5B ~~GST~~ **The project owner** shall maintain a continuous H2S monitor and record of gas flow on the Stretford treated gas stream. Such equipment shall be maintained in calibration and records of calibration shall be available to the LCAQMD upon request.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-5C ~~GST~~ **The project owner** shall annually conduct a comprehensive emissions test. The incoming steam, condensate, circulating water and cooling tower stack shall be tested for H2S, ammonia, arsenic, boron, hexavalent chrome, mercury, radon 222**,** and particulates as appropriate. The APCO **or CPM** may request analysis for additional components and testing at other process points upon reasonable request and in a manner necessary to comply with AB 2588 or other applicable law(s). The annual test plan shall be submitted for LCAQMD review and approval 45 days prior to the planned test. The results of the test shall be provided to the LCAQMD within 60 days of the completion of the test, or as soon as practicable.

Verification: The project owner shall provide the CPM a copy of the approved annual test plan. The project owner shall summarize compliance in the Annual Compliance Report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-5D ~~GST~~ **The project owner** shall fund, participate in, or cause to be performed ambient monitoring for H2S, wind speed and direction, temperature and rainfall at a location within the Anderson Springs area approved by the APCO for the operational life of the plant. ~~GST~~ **The project owner** shall participate in, fund, or cause to be performed, additional ambient monitoring as reasonably requested by the APCO upon determination that plant emissions are an air quality concern. The H2S and meteorological data shall be immediately available to the LCAQMD and data reports, in a format acceptable to the LCAQMD, shall be submitted on a quarterly basis. A joint monitoring effort on an equitable basis with other developers such as GAMP shall be acceptable. Upon written request of the APCO **or CPM**, ~~GST~~ **the project owner** shall install, operate and maintain a meteorological monitoring station at the power plant site. It shall be located, the results reported, and access to data provided as determined by the APCO.

Verification: If the project owner does not participate in GAMP, the project owner shall submit to the LCAQMD and CPM, for their review and approval, a detailed ambient monitoring plan.

AQ-5E Source testing of the Gland Steam Seal System, as approved by the APCO, shall be performed annually unless waived in writing by the APCO.

Verification: The project owner shall submit the annual testing results or waiver to the CPM in the following quarterly or annual periodic compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E5A The herein permitted facility shall not cause a public nuisance nor make a measurable contribution to any Ambient Air Quality Standard exceedance. Should this facility result in odor or health complaints, the LCAQMD may require under Sections 430 and 670, monitoring, testing, and mitigation by the project owner to abate said condition.

Verification: The project owner shall perform monitoring and testing as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~CONDITION 6:~~ IDENTIFICATION AND ACCESS

Power Plant and Abatement

AQ-6A ~~GST~~ **The project owner** shall provide safe access to the plant records, logbooks, equipment, and sampling ports, for the purpose of inspection and testing by the LCAQMD, its representatives**, the Energy Commission,** or the California Air Resources Board. Should the plant be secured by locks or gates, the LCAQMD shall be provided keys, combinations or other means to gain immediate access for purpose of testing or inspection.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E6A The permit for the emergency engine shall be posted at the equipment site and be available for the project owner's reference and LCAQMD staff inspection. If locks or unmanned gates are used to secure the project area, the LCAQMD or its representative will be given free access of entry for the purposes of monitoring or inspecting during normal business hours or periods of emergency engine use.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

APPENDIX A
Clean Conditions of Certification

(Assumes Energy Commission adopts all conditions as recommended by staff)

CONDITIONS OF CERTIFICATION

EQUIPMENT LIST:

One (1) 120 MW Geothermal Power Plant including:

- One (1) 120 MW Geothermal Steam Turbine/Generator Unit, ancillary piping, pumps and controls including a 50% capacity turbine bypass system;
- One (1) Primary H_2S Abatement System- Stretford sulfur recovery plant, surface condenser, gas handling system and process H_2S continuous emissions monitor;
- One (1) Secondary H_2S Abatement System- hydrogen peroxide and chelated Iron catalyst chemical storage and feed system;
- One (1) Circulating water system consisting of an 11 cell cooling tower with associated fans, 12 blade with drift elimination ratio at 0.001 %, circulating water pumps, piping, controls, reinjection sump, non-condensable gas distribution system, and Turbine Gland Seal System Modification.
- Mercury Adsorption Vessel
- E1: One (1) 2017 Cummins Model: CFP7VS-40 QSB6.7 Diesel Engine Powered Emergency Standby Cooling Tower Wetdown Pump, 204 HP, Tier III, Engine Family: HCEXL0409AAB.

LOCATION:

Section 35, T11N, R8W, MDB&M Lake County, CA

STAFF CONDITIONS:

AQ-SC1 The project owner shall provide the compliance project manager (CPM) copies of any Lake County Air Quality Management District- (LCAQMD or District) issued project air permit for the facility. The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM.

Verification: The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.

AQ-SC2 The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project.

Verification: The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.

AQ-SC3 The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.

Verification: The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.

Emergency Engine

AQ-E1A All equipment shall be regularly maintained in good working order pursuant to manufacturer's guidelines and operated in a manner to prevent or minimize air emissions. The Lake County Air Quality Management District (LCAQMD) shall be notified pursuant to Rule 510, regarding equipment breakdown.

Verification: The project owner shall notify the CPM of breakdowns in the quarterly compliance reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E1B Visible emissions from E1 shall not exceed Ringelmann 0.5 (10% opacity) from the engine exhaust stack for more than three (3) minutes in any one (1) hour.

Verification: The project owner shall perform a Visible Emissions Evaluation or source test to determine compliance as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

1: EMISSIONS

Power Plant and Abatement

AQ-1A The emissions limitations contained below shall apply during normal power plant operation, outages, and/or curtailments. All equipment shall be regularly maintained in good working order and operated in a manner to prevent or minimize air emissions.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-1B Hydrogen Sulfide (H_2S) emissions from the project shall not exceed five (5.0) pounds per hour on a combined basis, and meet an annual performance criterion not to exceed seven and one-half (7.5) pounds per hour for an aggregate of not more than 72 hours per year.

Verification: The project owner shall verify compliance by adhering to all testing and monitoring requirements.

AQ-1C The H_2S content in the sweet gas from the Stretford shall not exceed 10 ppmv, prior to dilution in the cooling tower or as specified in an LCAQMD-approved performance plan under Section 655.

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in AQ-5B.

AQ-1D The H_2S concentration from the Gland Steam Seal System vent shall not exceed 250 ppmw, and the H_2S emission rate shall not exceed 0.1 lbs/hr.

Verification: The project owner shall verify compliance by adhering to all testing and monitoring requirements.

AQ-1E The project owner shall install and maintain cooling tower drift elimination rated at 0.002 % or better. In the event of generalized atmospheric conditions or localized dangerous contamination of such a nature as to constitute an emergency creating a danger to the health and welfare of the citizens of Lake County, the Air Pollution Control Officer (APCO) will take immediate action by requiring the project owner to reduce H_2S or other emissions, or to discontinue emissions entirely. In the event emissions are discontinued entirely, the Lake County Air Quality Management District (LCAQMD) Hearing Board would hold a hearing as soon as practical after such action has been taken, to determine whether such discontinuance shall continue, and under what conditions.

Verification: The project owner shall verify compliance by adhering to all testing and monitoring requirements.

AQ-1G Visible emissions shall not exceed the values listed below for more than three (3) minutes in any one (1) hour:

- Ringelmann 0.5 (10% opacity) for combustion emissions engine exhaust; and
- Ringelmann 1 (20% opacity) for road and construction dust emissions.

Verification: The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Facility Wide

AQ-F1A The total ROG, PM10, SOx or NOx emission rate for this facility shall not exceed 25 tons per 12-month period. The emission rate(s) determination shall be consistent with the methodology and assumptions used to evaluate the application(s) under which the LCAQMD permit(s) was/were issued.

Verification: The project owner shall perform a source test to verify compliance with the emission rate(s) upon request of the District. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

2: ADMINISTRATIVE

Power Plant and Abatement

AQ-2A The project owner shall maintain and operate the power plant, emissions abatement systems, and associated ancillary equipment as described in submitted specifications and drawings and subsequent permit modifications in accordance with good operating practices and procedures to meet the emissions limit in 1: Emissions. The power plant and abatement system components shall be adequately maintained and winterized.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2B The project owner shall coordinate plant operations with the steam supplier and follow the mutually developed plan to limit H_2S emissions during plant operation to the H_2S emission limitation in1: Emissions, and in the case of a power plant outage, to meet the limitation within 15 minutes or as near to 15 minutes as possible, but in no case longer than 60 minutes after the cessation of power generation. This plan, involving the operation of the turbine bypass system, shall be annually reviewed and modified as necessary with the approval of the APCO.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2C The Gland Steam Seal vent shall be directed upward and not be blocked from an upward trajectory by a rain cap or other means.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2D All seal water discharged from the vacuum pumps and separators shall be directed to and flashed in the main condenser or directly re-injected. A direct re-injection line for seal water may be incorporated upon request of the project owner with a written approval of the LCAQMD without further permit modification.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2E The project owner shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act (AB2588) as specified in Sections 44300 - 44394 of the California Health and Safety Code.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-2D Within 180 days of commercial operation, the project owner shall apply for a Permit to Operate, and prove compliance with these conditions.

Verification: The project owner shall submit the Permit to Operate to the CPM as required in **AQ-SC1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E2A E1 shall only operate to power emergency standby cooling tower wet-down pump use when commercial line power is not available because of an emergency or line maintenance outage. The project owner shall develop or utilize an engine maintenance plan per manufacturer's specifications and/or the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines (RICE) and New Source Performance Standards (NSPS).

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2B Testing and maintenance operations for E1 are allowed for up to 50 hours per 12-month period.

Verification: The project owner shall maintain logs as required in Records and Reporting. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2C Should total hours of operation for E1 exceed usage hours that result in a prioritization score of 10 or above, a Health Risk Assessment and/or additional emission reductions may be required.

Verification: The project owner shall perform a Health Risk Assessment or reduce emissions as requested by the LCAQMD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2D Diesel fuel utilized shall be California Low Sulfur Diesel containing less than 15 ppmw sulfur.

Verification: The project owner shall maintain logs as required in Records and Reporting. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2E The project owner shall comply with the requirements of the Air Toxics "Hot Spots" Information and Assessment Act as specified in Sections 44300 - 44394 of the California Health and Safety Code as well as the ATCM for Stationary Compression Ignition Engines.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E2F Within 180 days of initial operation, the project owner shall apply for a Permit to Operate, and prove compliance with these conditions.

Verification: The project owner shall submit the Permit to Operate to the CPM according to **AQ-SC1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

3: RECORDS AND REPORTING

Power Plant and Abatement

AQ-3A Notification

The LCAQMD shall be notified pursuant to Rule 510, upon breakdown and/or loss of emissions control from this facility.

In the event that emissions exceed the allowable limit, the project owner shall notify the LCAQMD within one (1) hour and shall advise the LCAQMD:

1) the cause of the exceedance;

2) actions taken or proposed to achieve compliance; and

3) estimate of emissions and duration of noncompliance.

Verification: In the event that emissions exceed the allowable limit, the project owner shall notify the CPM by the close of the next business day. The project owner shall report breakdowns to the CPM in the quarterly compliance reports.

AQ-3B Reports

The project owner shall maintain records of the plant and abatement system operation, testing to show compliance with the emission limits, and provide a summary on a quarterly basis. The quarterly summary shall detail;

1) hours of operation;

2) any periods of abatement equipment malfunctions, reason for malfunction and corrective action;

3) types and amounts of chemicals used for condensate treatment;

4) periods of scheduled and unscheduled outages and the cause of outages, if known;

5) a summary of continuous emissions monitoring records for plant operation and monitor maintenance;

6) results of source tests, and

7) the dates and hours of any H_2S emissions in excess of the limitation in 1: Emissions.

Verification: The project owner shall submit the quarterly reports to the CPM within 45 days of the end of each quarter. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-E3A The project owner shall maintain a log for E1 (all logs can be hard copy or digital) meeting the requirements of the NESHAP for RICE and NSPS which contains at a minimum, the facility name, location, engine information, fuel used, emission control equipment, maintenance conducted on the engine, and documentation that the engine meets the emission standards.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3B The project owner shall maintain a log for E1 of usage that shall document hours of operation, and initial startup hours. The project owner shall maintain a log of engine maintenance to show compliance with maintenance plan and NSPS requirements.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3C The project owner shall document fuel usage by retention of fuel purchase records or by other methods that adequately show fuel use for this engine. Log entries shall be retained for a minimum of 36 months, with 24 months of the most recent entries retained / accessible on-site. The log shall meet all requirements of the ATCM for Stationary Compression Ignition Engines.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3D The project owner shall maintain a non-resettable hour meter for each engine capable of displaying 9,999 hours.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-E3E The project owner shall furnish an annual record of fuel use (gallons) and engine use (hours), breaking down hours of testing, maintenance, and emergency use, and in a format acceptable to the LCAQMD, within 15 days of request, and by October 31st of each year.

Verification: The content and format of the annual record submitted by the project owner to the LCAQMD shall be approved by the LCAQMD. The project owner shall provide the CPM a summary of the type of fuel used and engine use (hours) breaking down hours of testing, maintenance, and emergency use, to the CPM in the annual compliance report. The project

owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

4: MODIFICATION

Power Plant and Abatement

AQ-4A The project owner shall submit an application for, and receive an, Authority to Construct Permit prior to any significant deletions, additions, modifications of, or operational changes to, the constructed power plant, automated (computerized) management system, and AECS equipment.

Verification: The project owner shall provide the CPM with applications and permits issued according to **AQ-SC1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E4A The project owner shall apply for and receive an Authority to Construct permit prior to the addition of new equipment or modification of permitted equipment.

Verification: The project owner shall provide the CPM with applications and permits issued according to **AQ-SC1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

5:-TESTING AND MONITORING

Power Plant and Abatement

AQ-5A Upon a determination by the APCO that continuous monitors or monitoring systems are available to quantify plant cooling tower emissions, the project owner shall install and operate a continuous emissions monitor system to verify compliance with emissions limits contained in 1: Emissions. Until such time as continuous emissions monitors are installed and operational, the project owner shall conduct monthly H_2S source testing of the cooling tower stacks or as specified in an accepted performance plan under Section 655. The monthly test shall conform to source tests submitted to meet AFC Condition (K) and DOC Condition 11A.

Verification: The project owner shall submit the testing results to the CPM in the quarterly compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-5B The project owner shall maintain a continuous H2S monitor and record of gas flow on the Stretford treated gas stream. Such equipment shall be maintained in calibration and records of calibration shall be available to the LCAQMD upon request.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-5C The project owner shall annually conduct a comprehensive emissions test. The incoming steam, condensate, circulating water and cooling tower stack shall be tested for H2S, ammonia, arsenic, boron, hexavalent chrome, mercury, radon 222, and particulates as appropriate. The APCO or CPM may request analysis for additional components and testing at other process points upon reasonable request and in a manner necessary to comply with AB 2588 or other applicable law(s). The annual test plan shall be submitted for LCAQMD review and approval 45 days prior to the planned test. The results of the test shall be provided to the LCAQMD within 60 days of the completion of the test, or as soon as practicable.

Verification: The project owner shall provide the CPM a copy of the approved annual test plan. The project owner shall summarize compliance in the Annual Compliance Report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-5D The project owner shall fund, participate in, or cause to be performed ambient monitoring for H2S, wind speed and direction, temperature and rainfall at a location within the Anderson Springs area approved by the APCO for the operational life of the plant. The project owner shall participate in, fund, or cause to be performed, additional ambient monitoring as reasonably requested by the APCO upon determination that plant emissions are an air quality concern. The H2S and meteorological data shall be immediately available to the LCAQMD and data reports, in a format acceptable to the LCAQMD, shall be submitted on a quarterly basis. A joint monitoring effort on an equitable basis with other developers such as GAMP shall be acceptable. Upon written request of the APCO or CPM, the project owner shall install, operate and maintain a meteorological monitoring station at the power plant site. It shall be located, the results reported, and access to data provided as determined by the APCO.

Verification: If the project owner does not participate in GAMP, the project owner shall submit to the LCAQMD and CPM, for their review and approval, a detailed ambient monitoring plan.

AQ-5E Source testing of the Gland Steam Seal System, as approved by the APCO, shall be performed annually unless waived in writing by the APCO.

Verification: The project owner shall submit the annual testing results or waiver to the CPM in the following quarterly or annual periodic compliance report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E5A The herein permitted facility shall not cause a public nuisance nor make a measurable contribution to any Ambient Air Quality Standard exceedance. Should

this facility result in odor or health complaints, the LCAQMD may require under Sections 430 and 670, monitoring, testing, and mitigation by the project owner to abate said condition.

Verification: The project owner shall perform monitoring and testing as requested by the LCAQMD or CPM, the project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

6: IDENTIFICATION AND ACCESS

Power Plant and Abatement

AQ-6A The project owner shall provide safe access to the plant records, logbooks, equipment, and sampling ports, for the purpose of inspection and testing by the LCAQMD, its representatives, the Energy Commission, or the California Air Resources Board. Should the plant be secured by locks or gates, the LCAQMD shall be provided keys, combinations or other means to gain immediate access for purpose of testing or inspection.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

Emergency Engine

AQ-E6A The permit for the emergency engine shall be posted at the equipment site and be available for the project owner's reference and LCAQMD staff inspection. If locks or unmanned gates are used to secure the project area, the LCAQMD or its representative will be given free access of entry for the purposes of monitoring or inspecting during normal business hours or periods of emergency engine use.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

REFERENCES

ARB 2018a - California Air Resources Board. Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm Accessed May 2018.

ARB 2018b - California Air Resources Board. California Ambient Air Quality Data Standards available on ARB website. http://www.arb.ca.gov/research/aaqs/aaqs.htm Accessed May 2018

GPC 2017 – Geyser Power Company – PTA Geysers-16, Quicksilver, Diesel Generator for Cooling Tower Wetting System (TN 222036) December 21, 2017

GPC 2018a – Geyser Power Company – Consolidated Petition for Geysers Unit 16, Unit 18 and Unit 20 (TN 222333) January 23, 2018

GPC 2018b – Geyser Power Company – Air Quality and Emissions Impact Analysis (TN 222538) February 13, 2018

CEC 1981 – California Energy Commission – Quicksilver (Unit 16) 1981 Final Decision and Compliance Plan (TN 206749) November 24, 2015

CEC 2015a – California Energy Commission – Quicksilver (Unit 16) Executive Director's Approval of Expedited Processing for Cooling Tower Replacement (TN 206736) November 23, 2015

CEC 2015b – California Energy Commission – Geysers Power Quicksilver (Unit 16) Cooling Tower Replacement (TN 206731) November 23, 2015

CEC 2016 – California Energy Commission – Final Permission for Exec. Order B-36-16 Expedited Processing and Lake Co Air Quality Mgmt Dist Authority to Construct (ATC) (TN 210230) February 8, 2016

LCAQMD 2015 – Lake County Air Quality Management District – Authority to Construct A Modification Permitting Assessment Geysers Statutory Trust Unit 16 Geothermal Power Plant Cooling Tower Replacement – issued December 8, 2015

LCAQMD 2018 – Lake County Air Quality Management District – Authority to Construct Permitting Assessment Geysers Statutory Trust Unit 16 Geothermal Power Plant Diesel Engine Powered Emergency Standby Cooling Tower Wetdown Pump – Corrected issued January 3, 2018

U.S. EPA 2018a – United States Environmental Protection Agency. The Green Book Nonattainment Areas for Criteria Pollutants website. https://www.epa.gov/green-book Accessed May 2018.

U.S. EPA 2018b - United States Environmental Protection Agency. National Ambient Air Quality Data Standards available on U.S. EPA website. https://www.epa.gov/criteria-air-pollutants/naaqs-table Accessed May 2018.

Socrates Geothermal (PG&E Geysers 18)
(79-AFC-03C)
Request to Amend Final Commission Decision - Air Quality Analysis of Minor Improvements to Fire Protection Cooling Tower Wet-down Systems
Nancy Fletcher

INTRODUCTION AND SUMMARY

On December 21, 2017, the Geysers Power Company, LLC (petitioner or GPC) filed a petition (GPC 2017) with the California Energy Commission requesting an amendment to the Energy Commission license for the addition of a stationary emergency diesel engine at the Socrates Geothermal power plant project. On January 23, 2018, the petitioner updated the request (GPC 2018a). Socrates was formerly Pacific Gas & Electric Company's (PG&E) Geysers Unit 18 (Unit 18). Unit 18 was certified by the Energy Commission on May 7, 1980 and renamed to Socrates following the purchase of the facility by Calpine Corporation. Socrates consists of a nominal 119-megawatt (MW) turbine generator, turbine building, cross-flow mechanical draft cooling tower, electrical switchyard, and a hydrogen sulfide (H_2S) abatement system.

Socrates is located in eastern Sonoma County near the Lake County border, within the Northern Sonoma County Air Pollution Control District (NSCAPCD). The Energy Commission originally approved Socrates in May of 1980 for up to 110 MWs of base-load operation. Socrates began commercial operation in November 1985. Given degradation of the geothermal steam field, Socrates provides approximately 50 MWs of base-load electricity to northern California.

In 2015, the Valley Fire damaged the Socrates cooling tower. Governor Brown issued Executive Order B-36-15 to expedite demolition and reconstruction of fire-damaged assets such as the cooling tower. The Energy Commission approved the requested reconstruction to remediate the wildfire damage and directed the incorporation of the Authority to Construct (ATC) issued by the NSCAPCD into the Energy Commission's Unit 18 Final Decision. The resulting changes to the conditions of certification from the cooling tower reconstruction are included in this analysis.

In 2016, GPC began installation of cooling tower wet-down systems for several cooling towers at selected geothermal sites, including Socrates, to keep wetted side surfaces and the top deck wet when threatened by wildfire. The wet-down systems have been operating with temporary portable emergency diesel engines permitted by the California Air Resources Board (ARB) in the portable equipment registration program (PERP). GPC is proposing the addition of a permanent stationary emergency standby wet-down pump using a Tier-3 diesel-fueled drive engine rated at 204 horsepower (HP) for use in the event of an emergency plant evacuation due to the threat of an approaching wild land fire.

GPC submitted an application to the NSCAPCD to evaluate the addition of the emergency diesel fired engine. The NSCAPCD issued an ATC on December 6, 2017. The final Permit to Operate (PTO) is still pending. The final PTO will not be issued until the equipment has been installed and verified by the NSCAPCD.

Staff recommends additional California Environmental Quality Act (CEQA) mitigation measures described in this analysis to ensure air quality impacts from the proposed operation of the emergency diesel engine are mitigated to a less than significant level. Therefore, with the proposed mitigation, there would be no significant air quality impacts related to Socrates and no population, including the environmental justice (minority) population, would be significantly impacted.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE

The NSCAPCD reviewed the requested addition of the emergency diesel engine and determined the proposed changes would comply with their regulations. Energy Commission staff reviewed the permit evaluations which incorporate the proposed changes. Staff evaluated the proposed changes for consistency with all federal, state, and NSCAPCD laws, ordinances, regulations, and standards (LORS).

Air Quality Table 1 includes a summary of the LORS currently applicable to Socrates. The conditions of certification in the Energy Commission Decision and any and all amendments thereafter ensure that the facility would remain in compliance with all applicable LORS.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	*Description*
Federal	**U.S. Environmental Protection Agency (EPA)**
Title 40 Code of Federal Regulations (CFR) Part 50 (National Primary and Secondary Ambient Air Quality Standards)	National Ambient Air Quality Standards (NAAQS) are set in this part. NAAQS defines levels of air quality necessary to protect public health.
Title 40 CFR Part 51 (Requirements for Preparation Adoption and Submittal of Implementation Plans)	Requires emission reporting and control strategies for the attainment and maintenance of national standards.
Title 40 CFR Part 52 (Approval and Promulgation of Implementation Plans)	Prevention of Significant Deterioration (PSD) requires review and facility permitting for construction of new or modified major stationary sources of pollutants at locations where ambient concentrations attain the NAAQS. The NSCAPCD does not require PSD provisions for the addition of the emergency wet-down engine as emissions would not exceed levels of significance.
Title 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)	Outlines requirements for stationary diesel engines. The proposed stationary emergency diesel engine is a certified Tier 3 engine. Compliance is expected.

Applicable Law	*Description*
Title 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)	Establishes National Emission Standards for Hazardous Air Pollutants (NESHAPS) for both major and area sources of Hazardous Air Pollutants (HAPs) emissions. Establishes emission and operating limitations for applicable internal combustion engines. Compliance with Part 60, Subpart IIII satisfies Part 63 Subpart ZZZZ requirements.
State	**California Air Resources Board and Energy Commission**
California Health & Safety Code (H&SC) §41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.
H&SC §40910-40930 (District Plans to Attain State Ambient Air Quality Standards)	State Ambient Air Quality Standards should be achieved and maintained. The permitting of the source needs to be consistent with the approved clean air plan. The NSCAPCD New Source Review (NSR) program needs to be consistent with regional air quality management plans.
Title 17 CCR, §93115 Airborne Toxic Control Measure for Stationary Compression Ignition Engines.	The Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines limits fuels, establishes maximum emission rates, and establishes recordkeeping requirements for stationary compression ignition engines. Diesel-fueled emergency engines are subject to the regulations.
Local	**Northern Sonoma County Air Pollution Control District**
Regulation I Chapter 1 General Provisions	Rule 100 series— General provisions establishing the NSCAPCD ability to adopt and enforce rules and regulations that achieve and maintain state and federal AAQS.
Regulation I Chapter 2 Permits Rule 200	Permit Requirements— Establishes requirements for obtaining permits for stationary sources with the potential to be the source of air contaminants. The NSCAPCD issues an ATC for the emergency engine. The NSCAPCD will issue a PTO once the engine is installed and ready to operate.
Regulation I Chapter 2 Permits Rule 220	New Source Review Standards (Including PSD Evaluations)— General provisions from reviewing new and modified stationary sources. The emergency engine was evaluated for compliance with NSR requirements.
Regulation I Chapter 2 Permits Rule 225	Toxics Review Standards (Including PSD Evaluations)— Provides a framework for the review of toxic or hazardous emission from stationary sources of air pollution. Diesel exhaust is classified as a toxic air contaminant in California. The facility will comply with the ATCM through installation of Tier 3 diesel-fueled engine and operating restrictions.

Applicable Law	*Description*
Regulation I Chapter 4 Prohibitions Rule 400(a)	General Limitations— Establishes public nuisance prohibitions. The discharge of air contaminants or other material which could detrimentally impact the public are not permitted. Nuisance problems are not expected. NSCAPCD reported the diesel engine has the potential to create a public nuisance due to the odorous nature of diesel emissions. However, engine operation will be limited and the source is remotely located.
Regulation I Chapter 4 Prohibitions Rule 410	Visible Emissions— Prohibits the discharge of visible emissions to no greater than a Ringelmann 2 for a period or periods aggregating more than 3 minutes in any one hour. The operation will have conditions to ensure compliance.
Regulation I Chapter 4 Prohibitions Rule 420(a)	Particulate Matter— Specifies standards for particulate matter emission rates for general combustion sources. The requirements specify 0.46 grams of particulate matter per standard cubic meter (0.20 grains per standard cubic foot) of exhaust gas calculated to 12 percent carbon dioxide. The engine is not expected to exceed the grain loading standard.
Regulation I Chapter 4 Prohibitions Rule 430	Fugitive Dust Emissions— Specifies requirements for controlling fugitive dust. The provisions apply to handling, transporting or open storage of material that allow particulate matter to become airborne. Significant fugitive dust emissions are not expected from the emergency diesel engine. Facility operations are already required to comply with these requirements. The area around the power plant has been paved to minimize dust from vehicular activity.
Regulation I Chapter 4 Prohibitions Rule 440	Sulfur Oxide Emissions— Limits the emissions of sulfur oxides calculated as sulfur dioxide to 1,000 ppm. Compliance with the fuel type limitation in the ATCM for stationary diesel engines will ensure the diesel engine is compliance.
Regulation I Chapter 4 Prohibitions Rule 455(a)	Geothermal Emission Standards— Limits the emissions of sulfur compounds calculated as sulfur dioxide to 1,000 ppm. The facility uses a continuous monitoring system to measure H_2S concentrations leaving the Stretford adsorber. The treated gas is less than 10 parts per million by volume (ppmv) H_2S. The gas is vented to the cooling tower. Source tests from the cooling tower indicate the H_2S concentrations released to the atmosphere are compliant.
Regulation I Chapter 4 Prohibitions Rule 455(b)	Geothermal Emission Standards— Limits emissions of hydrogen sulfide based on the facility. Socrates is subject to a H_2S emission limitation of 6.0 kilograms per hour (kg/hr). The license limits the plant H_2S emissions to 5.2 kg/hr. A monthly source test of the cooling tower verifies compliance.
Regulation V Chapters 1 - 6	Procedures For Issuing Permits to Operate For Sources—This regulation implements the requirements of Title V of the federal Clean Air Act. Additionally, Regulation 5 implements Phase II acid deposition control provisions of Title IV. Socrates operates under a Title V operating permit.

SETTING

Ambient Air Quality Standards

The U.S. EPA and the California Air Resources Board (ARB) have both established allowable maximum ambient concentrations of criteria air pollutants. Ambient air quality standards are designed to protect people who are most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The ambient air quality standards are also set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The California Ambient Air Quality Standards, established by ARB, are typically lower (more stringent) than the federally established NAAQS. See **Air Quality Table 2.** The averaging time for the various ambient air quality standards (the duration of time the measurements are taken and averaged) ranges from one hour to one year. The standards are read as a concentration, in parts per million (ppm), parts per billion (ppb), or as a weighted mass of material per unit volume of air, in milligrams (mg) or micrograms (µg) of pollutant in a cubic meter (m^3) of ambient air, drawn over the applicable averaging period.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)[a]	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	53 ppb (100 µg/m^3)	30 ppb (57 µg/m^3)
	1 Hour	100 ppb (188 µg/m^3)[b]	180 ppb (339 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	—	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	75 ppb (196 µg/m^3)[c]	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [b]	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2018b, U.S. EPA 2018 b
Notes: [a] Fourth- highest maximum 8 – hour concentration, averaged over 3 years.
[b] 98th percentile of daily maximum value, averaged over 3 years
[c] 99th percentile of daily maximum value, averaged over 3 years

Ambient Air Quality Attainment Status

Federal and state ambient air quality attainment status designations have been revised since the Energy Commission Decision. Socrates is located within the North Coast Air Basin (NCAB). The NCAB comprises three air districts, the North Coast Unified Air Quality Management District, the Mendocino County Air Quality Management District, and the NSCAPCD.

Socrates is located on the west slope of the Mayacamas Mountains, above Big Sulphur Creek in the Known Geothermal Resource Area (KGRA). The KGRA includes portions of the NSCAPCD and the Lake County Air Basin. A special air monitoring program referred to as the Geyser Air Monitoring Program (GAMP), monitors air quality in the residential communities adjacent to large scale geothermal operations. The program monitors hydrogen

sulfide and other air contaminants to document long-term air quality trends in the KGRA. There are currently five operating air monitors in the GAMP program. The various monitors measure H_2S, PM10, and radon and provide meteorological data. The KGRA is considered in attainment or unclassified with all state and federal ambient air quality standards (AAQS).

For convenience, staff includes **Air Quality Table 3**, which summarizes the area's current attainment status for AAQS for the NSCAPCD.

Air Quality Table 3
NSCAPCD Attainment Status

Pollutants	Attainment Status	
	Federal Classification	**State Classification**
Ozone	Unclassified/Attainment	Attainment
CO	Unclassified/Attainment	Unclassified/Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Unclassified	Attainment
PM2.5	Unclassified/Attainment	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified/Attainment*
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particulates	No Federal Standard	Unclassified

Source: ARB 2018a, U.S. EPA 2018a
Notes: Geyser Geothermal portion of the NSCAPCD is classified as attainment for hydrogen sulfide. The remainder is considered unclassified.

ANALYSIS

Operation Summary and Emissions Analysis

The emergency standby wet-down pump diesel drive engine is proposed to provide emergency suppression water pumping for the Socrates cooling tower in the event of a wild fire. The emergency diesel engine would be manually started if a wildfire approaches the facility. The wet-down pump would be used to wet the cooling tower. The wet-down pump would be expected to provide 24 hours or longer of wet-down capability in the case of an emergency. The engine would also be operated for maintenance and readiness testing.

Cooling tower wet-down systems are used to keep normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation. Wet-down systems are different from fire suppression systems. The wet-down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to suppress internal fires.

In 2016, GPC began installation of cooling tower wet-down systems for several cooling towers at selected geothermal sites. The wet-down systems have been operated with temporary portable emergency diesel-fueled engines permitted by the ARB through the portable equipment registration program (PERP).

The California Code of Regulations Title 17 establishes requirements for the PERP program. The regulation establishes the definition of the term “portable” and outlines circumstances for which equipment is not considered portable and circumstances where a district stationary permit is required. Per the regulation, portable engines cannot operate as a stationary source. The regulation places limitations on the duration a portable engine is permitted to operate or reside at a site. A portable engine is not allowed to reside onsite for 12 consecutive months regardless of operation. In addition, per Section 2452(dd), equipment does not meet the definition of portable if any of the following are true:

a. *the engine or equipment unit or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. The period during which the engine or equipment unit is maintained at a storage facility shall be excluded from the residency time determination. Any engine or equipment unit such as back-up or stand-by engines or equipment units, that replace engine(s) or equipment unit(s) at a location, and is intended to perform the same or similar function as the engine(s) or equipment unit(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s) or equipment unit(s), including the time between the removal of the original engine(s) or equipment unit(s) and installation of the replacement engine(s) or equipment unit(s), will be counted toward the consecutive time period; or*

b. *the engine or equipment unit remains or will reside at a location for less than 12 consecutive months if the engine or equipment unit is located at a seasonal source and operates during the full annual operating period of the seasonal source, where a seasonal source is a stationary source that remains in a single location on a permanent basis (at least two years) and that operates at that single location at least three months each year; or*

c. *the engine or equipment unit is moved from one location to another in an attempt to circumvent the portable residence time requirements.*

Therefore, an engine performing the intended function for an extended period of time would not be considered portable. A stationary permit is required from the air district in order to operate the emergency wet-down diesel engine. The project owner submitted an application to the NSCAPCD to evaluate the addition of the emergency diesel-fueled engine. The NSCAPCD issued an ATC on December 6, 2017. The final Permit to Operate (PTO) is still pending. The final PTO will not be issued until the equipment has been installed and verified by the NSCAPCD.

The proposed engine is typically referred to as an ‘emergency fire pump’. However, GPC is proposing to operate the engine for emergency purposes not classified as fire protection services. Fire pump engines classified for fire protection services are subject to additional National Fire Protection Association and California Building and Fire Code requirements. The ATCM for stationary diesel engines applies to emergency standby diesel engines. Applicable ATCM requirements were incorporated in the ATC issued by the NSCAPCD. Maintenance and readiness testing is limited to 50 hours per year for emergency engines.

According to the updated PTA, the proposed permanent stationary standby wet-down pump is driven by a skid-mounted diesel-fueled engine all contained on a single skid. Fuel lines would not extend off the skid. Above ground piping would be utilized to connect the unit to the cooling tower wetting system header. Excavation for the skid and piping foundations would be on existing asphalt-covered, previously disturbed ground. Potential construction emissions from this scope of work are expected to be minimal and short term. Therefore, no significant construction emissions are expected form the installation of the proposed equipment.

Air Quality Table 4 includes the emission rates, and the estimated potential emissions for the maintenance and readiness testing of the proposed emergency diesel engine. The NSCAPCD evaluated and permitted the engine to operate on a limited 50 hours per year for testing and maintenance purposes. This limit is consistent with operation restrictions established for diesel-fueled emergency use engines in the ATCM. The emissions rates for NOx, CO, VOC and PM10 used to calculate the potential emissions are from the manufacturer's specification sheet for the proposed engine. The PM2.5 emission rate is conservatively assumed to be equivalent to the PM10 emission rate. The SOx emission rate is based on the use of ultra-low sulfur diesel. Staff calculated CO_2 and carbon dioxide equivalent (CO_2e) emissions using emission factors from the U.S. EPA greenhouse gas inventory and global warming potentials from the Intergovernmental Panel on Climate Change (IPCC). Staff included emissions for hourly and potential 24-hour operation scenarios for informational purposes. The NSCAPCD does not evaluate the emergency engines based on potential hours of operation during emergencies.

Air Quality Table 4
Socrates Unit 18 Estimated Diesel Engine Emissions

	NOx	CO	VOC	SOx	PM10/2.5	CO_2e [a]
Emission Rate (g/bhp-hr)	2.475	1.193	0.062	0.0055	0.111	NA
Potential Hourly [b] (pounds/hour)	1.113	0.537	0.028	0.002	0.050	239
Potential 24-hour [b] (pounds/hour)	27.4	12.9	0.7	0.1	1.2	5,744
Estimated Annual [c] (pounds/year)	56	27	1.4	0.12	2.5	11,967
Estimated Annual [c] (tons/year)	0.0278	0.0134	0.0007	0.0001	0.0012	6

Source: NSCAPCD 2017a, staff analysis

Notes: [a.] Based on CO_2e emissions rates from the U.S. EPA emission factors for greenhouse gas inventories and global warming potentials from Table A-1 of 40 CFR Part 98, Subpart A: CO_2 = 73.96 kilograms per million British thermal units (kg/MmmBtu) and 1, CH_4 = 3.0 grams per million British thermal units (g/mmBtu) and 25, N_2O = 0.60 g/mmBtu and 298.

[b.] Potential maximum hour operation.

[c.] Based on 50 hours per year operation limitation for testing and maintenance.

Significant emissions of hydrogen sulfide associated with the proposed emission units are not expected. Essentially all sulfur in the fuel is oxidized to SO_2.

The ATC issued by the NSCAPCD includes eleven conditions specific to the proposed emergency diesel engine and five general administrative conditions. The conditions are standard conditions for emergency engines and limit operations to maintenance and testing and emergency use. These conditions ensure the emissions from the emergency engine would not cause a significant increase in criteria pollutants.

Multiple administrative conditions included in the emergency diesel engine ATC are general conditions already included in the current operating permits for the facility. Some of the administrative conditions are specific to the Authority to Construct/Temporary Permit to operate and would not be included in the final operating permits issued by the NSCAPCD. Considering the permit conditions are standard conditions for emergency diesel engines, staff does not expect any changes to these conditions in the final Permit to Operate issued by the NSCAPCD. The NSCAPCD indicated they would issue the final Permit to Operate for the emergency diesel engine after the engine is installed and operation of the equipment is verified.

The NSCAPCD currently has delegated authority over PSD requirements. Any facility modification triggering a PSD review would be processed by the NSCAPCD. The addition of the emergency wet-down engine does not trigger a PSD review. The Socrates permits do not include PSD requirements issued by the U.S. EPA or NSCAPCD.

Staff is proposing to update the conditions of certification for consistency with changes incorporated into the NSCAPCD permits since Socrates was originally licensed. The changes clarify operational and reporting requirements. Socrates operates under a federal Title V operating permit and separate NSCAPCD operating permits, PTO #79-25A and PTO #79-25B. The NSCAPCD-issued permits require detailed reporting requirements including the submittal of quarterly and annual reports. Staff reviewed the updated NSCAPCD permit operating limits and reporting requirements. Staff is proposing to streamline the Energy Commission requirements where possible.

Staff is proposing to incorporate the quarterly and annual reporting requirements from the NSCAPCD permits. Minor differences in the Energy Commission reporting requirements and NSCAPCD requirements would remain. For example, staff is proposing that the project owner submit the proposed engine operating hour logs to the Energy Commission's compliance project manager (CPM) on a quarterly basis (logging the engine operating hours is already a NSCAPCD permit requirement). Staff is proposing language specifying the reports and notices required for submittal to the Energy Commission. Staff is also requesting the inclusion of a statement of compliance pertaining to the conditions of certification, including staff conditions, in the annual periodic report to ensure Socrates continues to operate in compliance with Energy Commission requirements.

Staff-proposed changes would replace the existing requirement for the project owner to submit an annual letter from the NSCAPCD verifying compliance with the conditions, quarterly reports, testing/monitoring plans, and testing/monitoring summary reports submitted to the NSCAPCD. The Additional Proposed Condition Changes section includes additional detail on the proposed reporting requirements.

Staff incorporated the provisions of the NSCAPCD ATC from the Socrates cooling tower reconstruction into the proposed conditions of certification below. On December 22, 2015, GPC formerly requested Energy Commission authorization for the reconstruction of the cooling tower (GPC 2015). GPC 2015 included a request for the addition of an air quality condition of certification limiting emissions from the cooling tower. On January 5, 2016, the Energy Commission approved the requested reconstruction to remediate the wildfire damage and restore power plant operations. The approval included direction for staff to incorporate the ATC into the Energy Commission's Unit 18 Final Decision.

The NSCAPCD made administrative changes to the cooling tower replacement conditions when the ATC was converted to a PTO. The changes are outlined in the Proposed and Amended Conditions of Certification section.

California Environmental Quality Act (CEQA) Mitigation

As documented in **Air Quality Table 3**, the NSCAPCD is in attainment or unclassified with the state and federal AAQS. Staff evaluated the proposed changes taking into consideration the attainment status and potential populations surrounding the facility. The proposed mitigation measures would minimize emissions associated with the proposed equipment.

The staff-proposed CEQA mitigation measures noted as conditions of certification would ensure potential direct and cumulative air quality impacts from the proposed facility modifications would be less than significant, including impacts to the environmental justice population. There are no air quality environmental justice issues related to the proposed facility modifications and no minority population would be significantly or adversely impacted.

Additional Conditions of Certification for the Engine

Staff is proposing the addition of several conditions of certification pertaining to the emergency standby wet-down pump diesel engine. These are standard conditions from the NSCAPCD-issued ATC for emergency diesel engines. The conditions limit the operation of the emergency engine to be consistent with restrictions imposed by the ATCM for stationary diesel engines.

Staff is proposing to denote these conditions of certification with an "E" following the section subset letter. The proposed emergency engine conditions of certification with emission limitations are **AQ-AE1** through **AQ-AE4**. The proposed emergency engine conditions of certification with operational limits and requirements are **AQ-BE1** through **AQ-BE5**. The proposed emergency engine condition of certification with monitoring, testing, and analysis requirements is **AQ-CE1**. The proposed emergency engine condition of certification with recordkeeping provisions is **AQ-DE1**.

Staff is proposing to include an additional reporting provision for the proposed emergency engine in Condition of Certification **AQ-E1**. The NSCAPCD does not require the submittal of the records required in Condition of Certification **AQ-DE1** for the proposed diesel-fueled emergency engine. The NSCAPCD performs periodic inspections of the facility and can inspect the records at those times. The proposed engine records are not as easily accessed by Energy Commission staff. Staff is requesting the project owner report the hours the engine

operates and purpose of operation as part of the quarterly reports. This would allow staff to verify that the engines operate for emergency purposes as requested, and not for other functions that the temporary portable engines performed.

The proposed emergency engine would be subject to the general requirements for the facility. The NSCAPCD has not yet incorporated the emergency engines requirements into the Title V operating permit. Staff is proposing to incorporate administrative and plant-wide requirements from the NSCAPCD Title V operating permit into the conditions of certification.

Additional Proposed Condition Changes

Staff is proposing additional changes to update the air quality conditions of certification with current requirements to ensure the facility operates in compliance with all LORS. These changes include incorporating the provisions of the NSCAPCD ATC for the Socrates Cooling Tower Reconstruction and additional changes made to the NSCAPCD-issued operating permits over the years.

The NSCAPCD numbering for permit conditions does not match the Energy Commission's numbering for the conditions of certification. In addition, the NSCAPCD's operating permits for the power plant, abatement equipment, and the Title V operating permit have different numbering systems. Therefore, requirements that are included on multiple permits can have different numbers assigned. In order to provide clarity and to avoid confusion between the NSCAPCD numbering and Energy Commission numbering, staff is proposing to re-order the air quality conditions of certification.

Staff is proposing to include the following condition subcategories: (A) Emission Limits, (B) Operational Limits and Requirements, (C) Monitoring, Testing, and Analysis, (D) Recordkeeping, (E) Reporting, (F) Administrative Requirements and (G) Plant Wide Conditions, to organize the requirements for clarity and consistency with NSCAPCD permits. Staff is proposing to include the conditions of certification specific to the emergency engine in a subsection of each category. This way, changes to the number of conditions specific to the power plant would not result in numbering changes for the conditions specific to the engine. Additionally, this approach provides clarity in determining the requirements for the separate equipment units.

Staff is proposing to add the glossary included in the Title V operating permit to the beginning of the conditions of certification. The glossary clarifies the terms used in the conditions and are considered part of the requirements.

Staff is proposing to include the equipment list at the beginning of the condition section. Including the list at the beginning of the permit clarifies the equipment subject to air quality requirements. Staff is proposing corrections to the equipment list. The NSCAPCD operating permit for the turbine and the facility Title V operating permit include different turbine ratings. The NSCAPCD confirmed the rating listed on the Title V operating permit is the updated rating. Staff is also proposing the addition of the abatement equipment to the list. The Socrates abatement equipment is already included in the NSCAPCD permits. NSCAPCD PTO #79-25b and the Title V operating permit include details on the required systems. The

abatement system details were not fully known at the time of the original Energy Commission Decision. Updating the list clarifies the equipment used to achieve compliance with LORS.

Staff is proposing to change the Applicable Laws, Ordinances, Standards and Practices section to Plant Wide Conditions. Staff is proposing to update the language to match the language in the NSCAPCD Title V operating permit. The language in this section is general language for operations at the facility. Staff is also proposing to move this section to the end of the air quality conditions of certification for consistency with the NSCAPCD permits.

Staff is proposing to rename the Requirements Section to Staff Conditions. Staff is proposing to delete Condition of Certification **1-1**. Conditions of Certification **1-1** is a general condition clarifying the NSCAPCD would continue to perform all duties they usually perform for facilities holding permits outside of Energy Commission jurisdiction. The verification includes language regarding ongoing reporting requirements. The existing language in the verification is vague and does not adequately define project owner responsibilities especially considering the subsequent amendments made to the reporting requirements in the NSCAPCD-issued operating permits. In addition, the Condition of Certification **1-2** verification requires the annual submittal of a letter of compliance from the NSCAPQMD. Staff is proposing the addition of Conditions of Certification **AQ-SC1**, **AQ-SC2, and AQ-SC3** and the addition of a reporting requirement section to clarify ongoing reporting and submittal requirements.

Proposed Condition of Certification **AQ-SC1** includes language requiring the project owner provide the Energy Commission with copies of all project permits issued and proposals for new project permits or existing project permit amendments. Condition of Certification **AQ-SC2** includes clarifications on submittals required to demonstrate compliance with the conditions of certification. Condition of Certification **AQ-SC2** would specify the project owner is required to submit specified reports to the CPM within the timeframes outlined in the conditions of certification.

Proposed Condition of Certification **AQ-SC3** clarifies the project owner is required to submit annual compliance reports as stated in the general provisions for the facilities compliance plan. The annual compliance report required in this section is separate from the annual compliance reports required by the NSCAPCD operating permits. The project owner would need to demonstrate compliance with all air quality conditions of certification, including staff conditions, to satisfy the requirements of the Energy Commission annual compliance report. The submittals required by the NSCAPCD include comprehensive reporting requirements to demonstrate compliance with the majority of the requirements. The proposed conditions outlines additional information needed to demonstrate compliance.

Staff is proposing to delete Condition of Certification **1-2**. The initial paragraph in Condition of Certification **1-2** contains general language requiring compliance with the requirements listed in the finding and general provisions of the compliance plan for the facility. The condition also outlines requirements for the project owner to identify monitoring and test procedures used. The proposed updates would include detailed requirements for demonstrating compliance with ongoing operations.

Staff is proposing to delete Condition of Certification **1-2** subpart **16**. Condition of Certification **1-2** subpart **16** requirements are obsolete and no longer needed.

Staff is proposing to replace identical Condition of Certification **1-2** subparts **24A** and **52** with updated language in Condition of Certification **AQ-A1**. Condition of Certification **AQ-A1** includes the same emission limit expressed in different units of measure. Condition of Certification **AQ-A1** includes additional language clarifying the power plant and associated abatement equipment are subject to the requirement.

Staff is proposing to replace Condition of Certification **1-2** subparts **24B** and **53** with updated language in Condition of Certification **AQ-A3**. Condition of Certification **AQ-A3** references the same emission limit and requirements from the NSCAPCD rules and regulations as Condition of Certification **1-2** subparts **24B** and **53**.

Staff is proposing to delete Condition of Certification **1-2** subparts **24C** and **52**. Condition of Certification **1-2** subparts **24C** and **52** establish separate emission requirements during downwash conditions. The NSCAPCD operating permits do not contain separate emission limits and requirements for downwash conditions. During downwash conditions, the project owner is required to comply with stricter emission limitations included in Conditions of Certification **AQ-A1**, **AQ-A2**, and **AQ-A3**.

Staff is proposing to replace Condition of Certification **1-2** subpart **24D** with updated language in Condition of Certification **AQ-C9**. Condition of Certification **AQ-C9** includes detailed requirements for continuously monitoring H_2S concentrations in the exhaust stream from the Stretford adsorber to verify compliance with Conditions of Certification **AQ-A1** and **AQ-A2.**

Staff is proposing to replace Condition of Certification **1-2** subparts **24E** and **56** with updated language in Condition of Certification **AQ-B8**. Condition of Certification **1-2** subparts **24E** and **55** include operational requirements for the abatement system. Condition of Certification **1-2** subpart **24E** and **56** also allow for the use of an alternative plan to meet emission requirements. Updated language in Condition of Certification **AQ-B8** allows the project owner to propose an Alternative Compliance Plan to meet the emission requirements. This update will still allow the project owner flexibility in operation to meet the emission requirements.

Staff is proposing to delete Condition of Certification **1-2** subparts **24F**, **24G** and **24H**. Conditions of Certification **1-2** subpart **24F**, **24G**, and **24H** requirements are obsolete and no longer needed.

Staff is proposing to replace Condition of Certification **1-2** subparts **24I** and **58** with updated source testing requirements in proposed Conditions of Certification **AQ-C1** through **AQ-C8.** Condition of Certification **1-2** subparts **24I** and **58** include initial source testing requirements and do not specify the requirements for ongoing testing. Conditions of Certification **AQ-C1** through **AQ-C8** include applicable ongoing testing requirements adequately demonstrating compliance with emission limit.

Staff is proposing to replace Condition of Certification **1-2** subpart **55a** with the operational requirements included Condition of Certification **AQ-B5.** Condition of Certification **AQ-B5** outlines requirements for vent gas. The project owner is only allowed to release untreated vent gas under upset/breakdown situations pursuant to NSCAPCD Regulation 1 Rule 540.

Staff is proposing to replace Condition of Certification **1-2** subparts **55b**, **55e**, **55f**, and **55g** with the updated monitoring, recordkeeping, and reporting requirements. The updated conditions of certification in proposed **subsections Monitoring, Testing, and Analysis, Recordkeeping, Reporting** include updated requirements for continuous monitoring and reporting to ensure compliance with emission limits and operational requirements.

Staff is proposing to replace Condition of Certification **1-2** subpart **55c** with the updated source testing requirements. Condition of Certification **1-2** subpart **55c** includes outdated requirements for testing prior to the installation of a continuous emission monitoring system. The condition does not include the source testing plan for after the installation of continuous monitoring system. Proposed Conditions of Certification **AQ-C1** through **AQ-C8** outline adequate source testing requirements to ensure compliance with the emission limits.

Staff is proposing to replace Condition of Certification **1-2** subpart **55d** with the updated reporting requirements. Condition of Certification **1-2** subpart **55d** includes requirements for reporting monitoring and source test data from the facility. Detailed requirements for reporting is included in the proposed modifications. The proposed condition modifications also include provisions to develop alternative compliance plans to provide the project owner with flexibility depending on need and circumstance.

Staff is proposing to replace Condition of Certification **1-2** subpart **55h** with the updated requirements in the proposed **Administrative Requirement** subsection. Condition of Certification **1-2** subpart **55f** includes procedures for settling disputes with the NSCAPCD.

Staff is proposing to replace Condition of Certification **1-3** with updated language in Condition of Certification **AQ-B8**. Condition of Certification **1-3** states the project is required to obtain written approval from the NSCAPCD prior to using alternative abatement equipment. Updated language in Condition of Certification **AQ-B8** outlines procedures for obtaining approval. This updates will still allow the project owner flexibility in operation.

Staff is proposing to delete Condition of Certification **1-4**. Condition of Certification **1-4** requirements are obsolete and no longer needed.

Staff is proposing to replace Condition of Certification **1-5** with the updated administrative requirements. Condition of Certification **1-5** includes requirements for the project owner to obtain a PTO. Proposed Condition of Certification **AQ-F11** includes requirements for ongoing permit modifications. As discussed, proposed Condition of Certification **AQ-SC1** includes language requiring the project owner to provide the Energy Commission with copies of all project permits issued and proposals for new project permits or existing project permit amendments.

Staff is proposing the addition of Condition of Certification **AQ-A2**. Condition of Certification **AQ-A2** establishes a H_2S emission concentration limit. The compliance verification for Condition of Certification **AQ-A2** requires continuous monitoring established in Condition of Certification **AQ-C9.**

Staff is proposing the addition of Condition of Certification **AQ-A4**. Condition of Certification **AQ-A4** establishes a particulate emission concentration for non-combustion sources. Socrates is not expected to have particulate emissions with concentrations close to this limit. The minimal particulate emissions from the cooling tower are limited on a mass basis in Condition of Certification **AQ-A6.** Compliance with the particulate emission limit is established with the monitoring, testing and analysis requirements outlined in Condition of Certification **AQ-C4.** If compliance with the limit in Condition of Certification **AQ-A4** is of concern, the verification permits the NSCAPCD or CPM to request a source test to verify compliance.

Staff is proposing the addition of Conditions of Certification **AQ-B1, B2, B3,** and **B4.** Conditions of Certification **AQ-B1, B2, B3,** and **B4** outline updated operational requirements for the abatement systems to ensure compliance with emission limits. These requirements are already included in NSCAPCD permits.

Staff is proposing the addition of Condition of Certification **AQ-B6.** Condition of Certification **AQ-B6** outlines the NSCAPCD fugitive dust requirement to match that already included in NSCAPCD permits.

Staff is proposing the addition of Condition of Certification **AQ-B7**. Condition of Certification **AQ-B7** establishes procedures to minimize emissions from fugitive leaks. These procedures are already required in NSCAPCD permits.

Staff is proposing the addition of ambient air monitoring requirements in Condition of Certification **AQ-C10**. Condition of Certification **AQ-C10** includes ambient air monitoring provisions. The provisions require the project owner to maintain and operate monitoring stations. The conditions allow the participation in GAMP to satisfy ambient air monitoring requirements. These procedures are already required in NSCAPCD permits.

Staff is proposing the addition of monitoring and testing requirements for the gland seal leak off system in Condition of Certification **AQ-C11**. Condition of Certification **AQ-C11** also specifies the H_2S emission from the gland leak off system shall be included in total emissions calculations from the plant. These requirements are already included in NSCAPCD permits.

The recordkeeping provisions would be included as Conditions of Certification **AQ-D1** through **AQ-D7** and the reporting requirements would be included as Conditions of Certification **AQ-E1** through **AQ- E3.** As discussed above, staff is proposing an additional reporting requirement to be included in Condition of Certification **AQ-E1**. Staff is proposing to require the project owner to submit the engine operating hours including the reason for use. The project owner is already required to maintain these records on site. Staff is proposing to consolidate administrative requirements into Conditions of Certification **AQ-F1** through **AQ-F11**.

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission staff recommends approving the addition of the proposed emergency diesel-fueled engine. Staff recommends the addition of eleven conditions specific to the engine and five general administrative conditions:

1. Four conditions establishing emission limits: Conditions of Certification **AQ-AE1**, **AQ-AE2**, **AQ-AE3**, and **AQ-AE4**;

2. Five conditions establishing operational limits and requirements, Conditions of Certification **AQ-BE1**, **AQ-BE2**, **AQ-BE3**, **AQ-BE4**, and **AQ-BE5**;

3. One condition with monitoring, testing and analysis requirements, Condition of Certification **AQ-CE1**; and

4. One condition with recordkeeping provisions, Condition of Certification **AQ-DE1**.

Energy Commission staff recommends incorporating the five general administrative conditions in the Administrative Requirement section. These conditions overlap with the requirements in the ATC and PTO issued by the NSCAPCD for the cooling tower reconstruction.

Staff recommends restructuring and updating the existing air quality conditions of certification. Staff proposes to group the conditions of certifications into sections organized by type and equipment. Staff proposes to update the conditions and requirements to meet current LORS. These updates include incorporating the current requirements in the NSCAPCD operating permits.

Staff recommends replacing vague existing reporting language with more specific updated requirements. Staff is proposing to streamline periodic reporting requirements already required by the NSCAPCD with a few additional requirements. Staff is also proposing to replace the existing requirement to obtain a letter of compliance from the NSCAPCD with specific reporting requirements to the Energy Commission. Reporting requirements include:

1. Submitting the required quarterly and annual reports;

2. Submitting the proposed emergency diesel fired engine operating hours noting the reason for operation in the quarterly reports;

3. Submitting summaries of any notices of violation and associated report(s), and notice of complaints;

4. A demonstration of compliance with the conditions of certification in the annual compliance report; and

5. Submitting proposals for new projects or project modifications, and new or modifies permits issued.

With the additional conditions requested by staff, the proposed changes will conform with the applicable LORS related to air quality and will not result in significant air quality impacts.

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

The proposed conditions of certification include staff-recommended conditions of certification and the applicable NSCAPCD operating permit conditions. Staff conditions are additional conditions of certification recommended to provide CEQA mitigation for the project. Staff recommended conditions of certification make-up the '**AQ-SCx**' series of conditions. Staff recommends identifying conditions of certification pertaining to the emergency diesel fired engine as the '**AQ-E**' series.

Bold underline is used to indicate new language. ~~Strikethrough~~ is used to indicate deleted language. The conditions of certification from the ATC issued by the NSCAPCD for the cooling tower reconstruction are regular text as they appeared in the Energy Commission approval for the cooling tower repair. The Energy Commission order added these conditions into the license. Updates to the conditions contained in the cooling tower replacement ATC are indicated using **bold underline** and ~~strikethrough~~.

For convenience, a clean version of the conditions of certification reflecting the proposed changes that would become applicable to Socrates is included in Appendix A.

CONDITIONS OF CERTIFICATION

~~Section 1: Air Quality~~

GLOSSARY

Abatement Solution: Iron chelate or any other District approved compound used to chemically treat hydrogen sulfide in the steam condensate

ACP: Alternative Compliance Plan. A list of all parametric monitoring data to be collected and recorded as a means of determining compliance with the H_2S emission limits.

APCO: Air Pollution Control Officer

BACT: Best Available Control Technology

CAA: The federal Clean Air Act

CCM: Continuous Compliance Monitor

CCM Availability: Hours CCM is in operation divided by the hours the primary abatement system is in service.

CEQA: California Environmental Quality Act

CFR: The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

Cold Startup: Starting the power plant from inactive status

NSCAPCD or District: The Northern Sonoma County Air Pollution Control District

U.S. EPA: The United States Environmental Protection Agency

Federally Enforceable, FE: All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain).

GPH: Gallons per hour

HAP: Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

Irregularity: Period of time a CCM monitor reading is not consistent with other verifiable data or information.

Low Flow: The flowrate below 10% of the required flowrate of the back-up caustic scrubber pumps.

Major Facility: A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity as determined by the EPA administrator.

MW: Megawatts

N/A: Not Applicable

NESHAPs: National Emission Standards for Hazardous Air Pollutants contained in 40 CFR Part 61

NSCAPCD: Northern Sonoma County Air Pollution Control District

NMHC: Non-methane Hydrocarbons

NSR: New Source Review. A federal program for preconstruction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 1, Rule 220.

PM: Total Particulate Matter

PM10: Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns.

PM2.5: Particulate matter with aerodynamic equivalent diameter of less than or equal to 2.5 microns.

Primary Pressure Gauges and Flowmeters: All pressure gauges and flow meters used for parametric compliance verification.

Prolonged Outage: The scheduled shutdown of a unit lasting longer than 1 week.

PSD: Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 1, Rule 220.

SIP: State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Ambient Air Quality Standards. Mandated by Title I of the Act.

Standby Spare: A back-up piece of equipment available for use in the event the primary piece of equipment fails.

Sulfur Compounds: Any inorganic compound containing sulfur

Sulfur Oxides calculated as Sulfur Dioxide: Oxides of sulfur normalized to the molecular weight of sulfur dioxide.

Title V: Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOG: Total Organic Gasses

TDS: Total Dissolved Solids

TRS: Total Reduced Sulfur

TSS: Total Suspended Solids

Unit of measure:	**ft3 = cubic feet**	**g = grams**	**gal = gallon**	**hr = hour**
	lb = pound	**in = inches**	**yr = year**	

ppmv = parts per million volume

scfm = standard cubic feet per minute

ppmw = parts per million weight

psia = pounds per square inch absolute

VEE: Visible Emissions Evaluation

EQUIPMENT DESCRIPTION

Geothermal Power Plant, Unit 18 Consisting of:

Power Plant		
S-#	Description	Nominal Capacity
1	Steam Turbine	1,968,900 lb steam/hr maximum plant gross steam flow
2	Generator	119.95 Megawatt gross nameplate capacity
3	Surface Condenser with Steam Operated Two and Three Stage Gas Ejector System	1,750,000,000 BTU/Hr Design Heat Load
4	Cooling Tower, Cross-Flow, Mechanical Draft Type with 0.001% rated drift eliminators with eleven fans	165,000 GPM, Fans 200 hp each
	Two 100% Condensate Pumps	200 HP and 4,700 gpm each
	Three Auxiliary Condensate Pumps	15 HP each
	Two 50% Circulating Water Pumps	2,500 hp and 84,000 gpm each
5	Gland Seal Leak Off System	
Hydrogen Sulfide Control System		
A-#	Description	Nominal Capacity
1	Stretford Air Pollution Control System consisting of:	598 lb/hr H_2S
A	Two Venturi Scrubbers	1,120 gallons per minute (gpm) each
B	H_2S Absorber, 5' 6" diameter (D) x 38' height (H)	560 gpm
C	Two Oxidizer Tanks, 19” D x 20' H, with four Oxidizer Air Blowers each 100 HP	790 SCFM air per Blower
D	Reaction Tank, 19” D x 20' H	42,000 gallon
E	Balance Tank, 24' D x 18' H	60,000 gallon
F	Froth Tank, 12' D x 12' H	15,000 gallon
G	Caustic Tank, 12' D x 12' H	9,300 gallon
H	Condensate Tank, 4' D x 5' H	450 gallon
I	Belt Wash Spray Collection Tank 9' D x 8' H	3,500 gallon

J	Heat Exchangers consisting of:	
a	Stretford Heater	3.0 million British thermal units per hour (mmBtu/hr)
b	Stretford Cooling Tower, 0.002% drift	5.3 mmBtu/hr
L	Main Pumps consisting of:	
a	Three Stretford Circulating Pumps	1,560 gpm each
b	Two Stretford Cooler Circulating Pumps	1,100 gpm each
c	Caustic Additive Pump	15-100 gpm
M	Stretford Treated Gas Analyzer and Alarm System	
N	One Sulfur Vacuum Filter Belt	
2	Circulating Water H_2S Abatement System consisting of:	
A	Abatement Solution Storage Tank	5,400 gallon
B	One Abatement Solution Feed Pump and one Spare Pump	0-100 gph range
C	Mass Flow Meter and Flow Alarm	
3	Mercury Removal System consisting of	
A	Vapor Liquid Separator Assembly	
B	Mercury Adsorption Vessel	
Emergency Engine		
S-#	Description	Nominal Capacity
S-1	Emergency Standby Wet-Down Pump Diesel Drive Engine, Cummins Model CFP7E-F40, (Tier 3, Manufactured 2017)	204 HP

~~1. Turbine, 1,905,550 lb steam/hr maximum~~

~~2. Generator, 119 Megawatt~~

~~3. Condenser with Steam Operated Two and Three Stage Gas Ejector System~~

~~4. Cooling Tower, Cross Flow, Mechanical Draft Type with 0.001% rated mist eliminators and with eleven 200 HP fans~~

~~5. Two 100% Condensate Pumps, each 200 HP and each 4,700 gpm~~

~~6. Three Auxiliary Condensate Pumps, each 15 HP~~

~~7. Two 50% Circulating Water Pumps, each 2,500 hp and each 84,000 gpm~~

~~8. Circulating water H_2S abatement system consisting of:~~

~~A. Abatement Solution Storage Tank, 5400 gallon~~

~~B. One 100% Pump and one 100% Spare Pump~~

~~C. Mass Flow Meter and Flow Alarm~~

~~9. Gland Steam Leak Off Condenser~~

~~10. Gland Leak Off Exhauster~~

~~11. Gland Leak off Exhauster Separator~~

~~**B. APPLICABLE LAWS, ORDINANCES, STANDARDS, AND PRACTICES**~~

- ~~NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT (NSCAPCD) RULES 400(A), 410(A), 420(D), 430 AND 455 (A) AND (B), 220 AND 230 (NEW SOURCE REVIEW), AND 540 (UPSET/BREAKDOWN)~~
- ~~CLEAN AIR ACT AND IMPLEMENTING FEDERAL REGULATIONS.~~
- ~~CALIFORNIA HEALTH AND SAFETY CODE, AND IMPLEMENTING STATE REGULATIONS.~~

G. PLANT-WIDE CONDITION

AQ-G1 The project owner shall comply with the following District regulations:

a. Regulation 1 Rule 400-General Limitations

b. Regulation 1 Rule 410-Visible Emissions

c. Regulation 1 Rule 430-Fugitive Dust Emissions

d. Regulation 1 Rule 492 (40 CFR part 6 Subpart M)-Asbestos

e. Regulation 1 Rule 540- Equipment Breakdown

f. Regulation 2- Open Burning

g. 40 CFR Part 82- Chlorinated Fluorocarbons

If in the event this stationary source as defined in 40 CFR Part 68.3, becomes subject to Part 68, this stationary source shall submit a risk management plan (RMP) by the date specified in Part 68.10. As specified in Parts 68, 70, and 71, this stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification required by 40 CFR Part 70 or 71.

If in the event this stationary source as defined in 40 CFR Part 63, becomes subject to Part 63, this stationary source shall notify the District and CPM within 90 days of becoming subject to the regulation. The stationary source shall identify all applicable requirements of Part 63 and submit a plan for complying with all applicable requirements.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA and Energy Commission upon request. The project owner shall submit required reports to the CPM (see AQ-SC2).

~~B. REQUIREMENTS~~ STAFF CONDITIONS

~~**1-1** The NSCAPCD shall perform all duties and functions normally conducted by the APCD, and shall have authority to issue a Permit to Operate, collect the permit fees, levy fines, order correction of operational or mechanical procedures or functions, and perform compliance tests. The established NSCAPCD appeal procedures shall apply for all contested NSCAPCD actions.~~

~~**Verification:** PGandE shall summarize in a periodic compliance report any interactions with the NSCAPCD. PGandE shall within 30 days inform the CEC and ARB in writing of any formal appeals filed with the NSCAPCD.~~

AQ-SC1 The project owner shall provide the compliance project manager (CPM) copies of any Northern Sonoma County Air Pollution Control District (NSCAPCD or District) issued project air permit for the facility. The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM.

Verification: The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.

AQ-SC2 The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District, U.S. EPA, or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project.

Verification: The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.

AQ-SC3 The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.

Verification: The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.

PERMIT CONDITIONS:

~~**1-2** PGandE shall comply with the requirements specified in the "Stipulated Findings, Conclusions and Conditions on Air Quality," dated April 18, 1980, (specifically~~

Findings 16 and 24) and in Appendix A of the Final Decision, conditions 52 through 58. The relevant conditions of these documents are listed below. Unless otherwise specified in the above documents, PGandE shall provide to NSCAPCD, ARB, and CEC a report identifying the monitoring or test procedures being used. NSCAPCD shall advise PGandE, ARB, and CEC on the acceptability of the plan and procedures (including recommendations on how to improve the plan) within 30 days of the receipt of the plan. PGandE shall implement the NSCAPCD recommendations unless a mutually agreed upon alternative is developed.

Relevant findings of the "Stipulates Findings, Conclusions and Conditions on Air Quality" dated April 18, 1980

16. In the event of any unscheduled outage at Unit 18 once it is operational, PGandE agrees to immediately notify the steam supplier for Unit 18.

24. Based upon the review of the PGandE's amendment to the AFC, the NSCAPCD and the ARB have determined the following conditions to be necessary to assure compliance with applicable air quality standards.

    A. Hydrogen sulfide emissions from the power plant shall be no greater than 44.0 gm/gMW-hr.

    B. PGandE shall return all untreated steam and/or condensate to injection points such that hydrogen sulfide will be treated up to the standards of Rule 455 (a) during normal power plant operation, plant start-up, and plant shut-down.

    C. During downwash conditions, emissions of H2S shall not exceed 75 lbs H2S/hr. An excess of 75 lbs/hr, such as occurs during certain hydrogen sulfide control equipment failures, shall be avoided by means approvable by the district. Downwash conditions for the purpose of the condition shall be neutral stability winds between 5.0 to 10.0 meters/second from the west (270ø + 11.25ø). PGandE with concurrence from the district shall establish and maintain a meteorological station and appropriate system to properly implement this 75 lb/hr limitation.

        PGandE may propose an increase in the allowable emission rate for H2S during downwash conditions. Such proposal shall be submitted with supporting data to the NSCAPCD and the ARB.

        No increase in the allowable emission rate for H2S may be permitted unless the written concurrence of the NSCAPCD and ARB is obtained.

        o Downwash conditions for the purpose of this requirement shall be maintained for an average period of 15 minutes.

    D. PGandE shall install and operate a continuous H2S monitoring device in the off-gas vent to the atmosphere and the off-gas vent to the cooling tower. The gas analyzer shall have an accuracy of + 10 percent of full scale for the 1,000 -

5,000 ppmv range. The flow meter shall have an accuracy of + 10 percent of full scale for the appropriate acfm range. Data shall be logged on a strip chart or other similar device which will be available for inspection on site upon request. PGandE shall design for a target data capture of 85 percent on an annual basis.

E. Although Unit 18 may be licensed on the basis of a hydrogen peroxide/catalyst and Stretford/surface condenser system, PGandE may use other means to comply with the hydrogen sulfide emissions limitation of 44.0 gm/gMW-hr. PGandE will submit, no later than two years prior to the scheduled commercial operation date of Unit 18 project, the conceptual design of the finally selected abatement system, including data demonstrating that compliance with the emissions limitation 44.0 gm/gMW hr can be met. Such data shall be submitted to the CEC, the ARB, and the NSCAPCD at least 30 days prior to the date intended for commencement of the design of the proposed system. Design shall not proceed until the NSCAPCD APCO determines that the material submitted is adequate to demonstrate compliance with the H2S emissions limitation. The APCO shall render a determination no later than 15 days following the receipt of the material from PGandE

F. PGandE approved-for-construction drawings of the secondary abatement system shall be submitted to the CEC, ARB and the NSCAPCD at least 30 days prior to the date intended for the commencement of the system. Construction shall not proceed until the NSCAPCD APCO determines that the drawings submitted are adequate to demonstrate compliance with the applicable limitations. The APCO shall render a determination no later than 15 days following the receipt of the material from PGandE.

G. PGandE shall:

(1) By September 1, 1980, determine the feasibility of a continuous condensate monitoring system for H2S, including estimated costs, which is capable of + 20 percent accuracy and which requires reasonable maintenance. PGandE shall also provide test data substantiating the proper system to ensure compliance with Rule 455 and the 44.0 gm/gMW-hr limitation. PGandE shall submit quarterly reports to the APCD, the ARB, and the CEC on its efforts toward these determinations.

(2) In the event that a continuous monitoring system is infeasible or requires unreasonable maintenance, PGandE shall be required to install an alternative system approved by APCO.

H. PGandE shall operate or participate in operating an ambient H2S monitoring station at Whispering Pines (SRI #5) for the three-year period from May 1, 1981, through April 30, 1984, unless an alternative method of ambient monitoring mutually agreed upon by PGandE, the ARB, and the NSCAPCD is

~~implemented, or monitoring at Whispering Pines (SRI #5) is performed by another party.~~

~~l. PGandE, within 60 days of commercial operation, shall demonstrate that the applicable emissions limitations of NSCAPCD rules are being maintained during normal power plant operations. PGandE shall submit a detailed performance test plan to the NSCAPCD at least 30 days prior to such tests. PGandE's proposed test plan must receive NSCAPCD approval before such tests may be conducted to achieve compliance. During performance of the compliance testing a representative of the NSCAPCD shall have the right to be present.~~

~~For purposes of these conditions, "normal" operation is defined as operation of the facility with all abatement equipment installed and operating to specifications enumerated herein.~~

~~Relevant Conditions of the Final Decision Appendix A~~

~~52. Hydrogen sulfide emissions from the power plant shall be no greater than 44.0 gm/gMW-hr.~~

~~53. PGandE shall return all untreated steam and/or condensate to injection points such that hydrogen sulfide will be treated up to the standards of Rule 455(a) during normal power plant operation, plant start-up, and plant shut-down.~~

~~54. During downwash conditions, emissions of H2S shall not exceed 75 lbs H2S/hr. Excess of 75 lbs/hr, such as occurs during certain hydrogen sulfide control equipment failures, shall be avoided by means approvable by the district. Downwash conditions for the purpose of the condition shall be neutral stability winds between 5.0 and 10.0 meters/second from the west (270ø + 11.25ø). PGandE shall establish and maintain a meteorological station and appropriate system to properly implement this 75 lb/hr limitation.~~

A. EMISSION LIMITS

Power Plant and Abatement Systems

AQ-A1 The ~~maximum cumulative~~ **The project and associated abatement systems shall comply with Regulation 1 Rule 455(b) –Geothermal Emission Standards. Total emissions of** hydrogen sulfide (H_2S) ~~emissions from the plant~~ shall not exceed **5.2 kilograms averaged over any one hour period** ~~11.46 pounds per hour (5.2 kg/hr)~~. **Total H_2S emissions shall be the cumulative emissions to the atmosphere from the power plant and associated abatement equipment. [ref. Rule 455(b), PTO 79-25A Cond. 19.A]**

Verification: The project owner shall verify compliance by conducting a monthly source test on the cooling tower as indicated in AQ-C1, weekly determinations of the

H_2S content in the main steam supply as required in AQ-C5, or as required in an approved Alternative Compliance Plan.

AQ-A2 **The exit concentration in the process piping leading from the Stretford system shall not exceed 10 ppmv H_2S, averaged over any consecutive 60-minute period, unless operating under a District approved Alternative Compliance Plan (ACP). [ref. PTO 79-25B Cond. 18.B.]**

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in AQ-C9.

AQ-A3 **The project owner shall comply with Regulation 1 Rule 455 (a)-Geothermal Emission Standards; no person shall discharge into the atmosphere from any geothermal operation sulfur compounds, calculated as sulfur dioxide, in excess of 1,000 ppmv. [ref. Rule 455(a)]**

Verification: The project owner shall verify compliance by adhering to all monitoring and testing requirements.

AQ-A4 **The project owner shall operate the power plant and associated abatement systems in compliance with Regulation 1 Rule 420 (d) Non-Combustion Sources- Particulate Matter; no person shall discharge particulate matter into the atmosphere from a non-combustion source in excess of 0.2 grains per cubic foot of exhaust gas or in total quantities in excess of the amount shown in Table I. (40 lb/hr) whichever is the more restrictive condition. [ref. Rule 420(d)]**

Verification: The project owner shall perform a source test to determine compliance as requested by the NSCAPCD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-A5~~2~~ Annual emissions from the cooling tower shall not exceed, on a calendar year basis, 24.4 tons per year of ~~hydrogen sulfide (H_2S)~~**.**

Verification: The project owner shall maintain records of total H_2S as indicated in AQ-D7 and submit reports as indicated in AQ-E2. Records shall be based on required source testing in Condition AQ-C1, and an annual summation from January through the end of December.

AQ-A6 **Annual emissions from the cooling tower shall not exceed, on a calendar year basis,** 15.9 tons per year particulate matter less than 10 microns in diameter (PM-10) and 11.0 tons per year particulate matter less than 2.5 microns in diameter (PM-2.5).

Verification: The project owner shall verify compliance through monitoring as indicated in AQ-C4. The project owner shall maintain records according to AQ-D6 and

AQ-D7 and submit reports as indicated in AQ-E2. Records shall be based on required sampling and an annual summation from January to December.

Emergency Engine

AQ-AE1 Visible particulate emissions shall not exceed an opacity as to obscure an observer's view to a degree equal to or greater than Ringelmann 2.0 or 40 percent opacity for a period or periods exceeding 3 minutes in any one hour [ref. PTO 17-10 Cond. B1]

Verification: The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the NSCAPCD or CPM, The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE2 Particulate emissions shall not exceed an emission rate of 0.15 g/bhp-hr. [ref. PTO 17-09 Cond. B2]

Verification: The project owner shall verify compliance according to Condition AQ-CE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE3 Combined non-methane hydrocarbons and nitrogen oxide emissions shall not exceed an emission rate of 3.0 g/bhp-hr. [ref. PTO 17-09 Cond. B3]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE4 Carbon monoxide emissions shall not exceed an emission rate of 2.6 g/bhp-hr. [ref. PTO 17-09 Cond. B4]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~55. Since the concentration of H2S in the off gas stream is in excess of 1,000 ppm, the following conditions are required in order to ensure compliance with NSCAPCD Rule 455(a):~~

~~a. The H2S control system shall be operated to preclude the release of untreated off gases to the atmosphere or the cooling tower during normal power plant operation, plant start-up, and plant shutdown;~~

~~b. Until such time as a continuous emission compliance monitor (CEM) is installed, PGandE shall install and operate a computer based alarm system (CBAS) as follows:~~

1. PGandE shall install and have operational, commencing as of unit start-up, a computer based system which monitors the following critical equipment on or about the Stretford facility and the secondary abatement:

   (a) Position of the Stretford bypass valve,

   (b) Circulation of the Stretford.chemicals,

   (c) Operation of oxidizer blowers, and

   (d) Chemical feed pumps of secondary system.

2. The CBAS shall be operated during power plant operations, power plant start-up, and power plant shutting down procedures and shall detect alarm and log failures or operation of the above equipment or systems which could lead to a significant loss of abatement. Each time this CBAS system indicates a malfunction or other change in equipment operations, PGandE shall immediately commence: (1) an investigation to determine the cause of the alarm system tripping, (2) manual H2S concentration tests of the Stretford exhaust, and (3) any necessary corrective actions. All such investigation, testing, and corrective action shall be logged by the plant operator. The computer system shall be logged, along with the actions taken. For purposes of this interim requirement, the Air Pollution Control Officer deems this system a monitoring system under District Rule 540.

3. PGandE plant personnel shall inspect the operating Stretford and secondary abatement facilities no less than once per shift, checking for proper operation. Stretford solution chemistry and off gas H2S concentration will be checked weekly when the system is in operation.

4. Computer system alarm logs and operator logs shall be prepared and maintained, recording all normal checks, abnormal or alarm conditions, responses, and corrective actions, and shall be available for inspection on site upon request.

5. Quarterly reports on the performance of the CBAS shall be submitted in writing to the Air Pollution Control Officer

c. Until such time that a continuous emission monitoring system is installed or in the event that the Control Officer determines upon PGandE's completion of the program requirements of subsection "e" below that appropriate continuous emissions monitors are not available, PGandE shall conduct source testing no less than once every thirty (30) operating days to ensure compliance with Determination of Compliance (DOC) conditions. The testing procedures to determine compliance shall be submitted November 30, 1982, for District approval. A log of such testing shall be maintained and made available to the district upon request.

d. A summary Or CBAS or monitoring data and source test data shall be forwarded to the District every thirty days. This summary is subject to the requirements of Rule 455(c). The Air Pollution Control Officer may consider reducing the frequency of this required reporting if he finds it to be warranted based on his review of monitoring data and operational records covering at least one calendar year.

e. On or before January 14, 1983, PGandE shall submit to the district for approval a proposal that outlines an "in-house" program which PGandE shall implement, upon receiving District approval, to develop appropriate continuous compliance H2S monitoring devices to meet the requirements below. Upon approval, the program requirements shall become part of the terms and conditions of the DOC and the AFC. Within 30 days of receipt of the proposal, the Air Pollution Control Officer shall approve it or shall notify PGandE of deficiencies in the proposal which shall be corrected within 30 days after notice and the proposal resubmitted for Air Pollution Control Officer

1. H2S emissions shall be monitored by measuring the following parameters: (a) Total process mass or volume flow rates, and (b) H2S concentrations within those proposed streams.

2. The following process streams are to be sampled: (a) the treated gas outlet of the Stretford Unit; (b) the main condenser condensate prior to any secondary abatement chemical injection or the condensate upstream of the cooling tower after chemical injection; and (c) the cooling tower. It is allowed that item "c" can serve in lieu of "a" and "b;" therefore, PGandE can pursue item "c" first. However, if "c" proves infeasible, then items "a" and "b" would have to be pursued as a means of overall unit compliance monitoring.

3. As a development goal the H2S monitoring devices should strive for a relative accuracy of +-10 of full scale (as compared to a standard reference method or reference analysis acceptable to the District), an average weekly calibration drift of +-10 percent (assumes weekly calibrations averaged over a 30 day period), and provide measurements at least every 15 minutes. Monthly data capture should be 80 percent or better of the operational hours, and the monitor should not require more than 16 hours of maintenance per month. The Air Pollution Control Officer say for good cause change the specifications above.

4 .Flow rate measuring devices must have accuracies of +-15 percent at 40 percent to 120 percent of total flow rate and calibrations must be performed as necessary and at least quarterly. The Air Pollution Control Officer may for good cause change the specifications above.

5. Quarterly written progress reports on the operation of the development program shall be submitted to the Air Pollution Control Officer. All

monitoring records and calibration information must be made readily accessible to district staff upon request.

6. The proposed program shall include a milestone schedule for CEM development.

7. The development and testing program must be completed within two years of its approval by the Air Pollution Control Officer.

f. Participation by PGandE in an approved cooperative continuous emission monitor development program may be deemed acceptable in place of Finding 55e above, provided the goals and requirements set forth are the same as those identified in 55e.1 through 55e.4, and a proposed program is submitted to the Air Pollution Control Officer on or before January 14, 1933. Within 30 days of receipt of a proposal, the Air Pollution Control Officer shall approve the program or shall notify PGandE of deficiencies which must be corrected prior to approval. Such a cooperative program must obtain NSCAPCD approval prior to being implemented. If PGandE elects to pursue a cooperative program pursuant to this provision and complies with the deadline to submit an appropriate program, the time for program completion may be extended by the Air Pollution Control Officer by up to 60 days if made necessary by the time required for the preparation of final documents by the program participants.

g. Within 60 days after completion of the program described in 55.e or 55.f, PGandE shall submit a final report to the district on the availability of acceptable continuous monitors which satisfy criteria 55.e.1 through 55.e.4. Within 30 days of receipt of the report, the Control Officer shall determine whether or not such monitors are available and shall be installed on Unit 18.

h. Any dispute relative to this Finding 55 may be heard before the Hearing Board of the NSCAPCD.

56. Although Unit 18 may be licensed on the basis of a hydrogen peroxide/catalyst and Stretford/surface condenser system, the Applicant may use other means to comply with the hydrogen sulfide emissions limitation of 44.0 gm/gMW-hr. PGandE will submit, no later than two years prior to the scheduled commercial operation date of Unit 18 project, the conceptual design of the finally selected abatement system, including data demonstrating that compliance with the emissions limitation of 44.0 gm/gMW-hr can be met. Design shall not proceed until it is determined that the material submitted is adequate to demonstrate compliance with the H2S emissions limitation. Such data shall be submitted at least 30 days prior to the date intended for commencement of design of the proposed system.

57. PGandE approved-for-construction drawings of the secondary abatement system shall be submitted at least 30 days prior to the date intended for commencement of the system. Construction shall not proceed until it is determined that the drawings submitted are adequate to demonstrate compliance with the applicable limitations.

58. PGandE, within 60 days of commercial operation, shall demonstrate that the applicable emissions limitations of NSCAPCD rules are being maintained during normal plant operations. PGandE shall submit a detailed performance test plan at least 30 days prior to such tests. PGandE's proposed test plan must receive approval before such tests may be conducted to achieve compliance. During performance of the compliance testing the NSCAPCD shall have the right to be present. For purposes of these conditions, "normal" operation is defined as operation of the facility with all abatement equipment installed and operating to specifications enumerated herein.

Verification: PGandE shall annually request a letter from the NSCAPCD verifying PGandE's compliance with the conditions of the Stipulated Findings, Conclusions and Conditions on Air Quality and the conditions of Appendix A of the Final Decision. PGandE shall provide CEC with a copy of this letter in the annual compliance report. In addition, PGandE shall provide the CEC with a copy of all quarterly reports, testing/monitoring plans, and testing/ monitoring summary reports submitted to the NSCAPCD.

1-3. PGandE shall obtain NSCAPCD and CEC written approval before using any equipment other than the hydrogen peroxide/catalyst and Stretford/surface condenser system as approved in the CEC Decision, to control H2S emissions.

Verification: PGandE shall file a copy of the written approval from the NSCAPCD with the CEC prior to beginning construction of the system.

1-4. PGandE shall submit approved-for-construction drawings of the power plant secondary H2S control system, to the CEC only if requested by the CEC.

Verification: If requested, such drawings shall be submitted by PGandE to the CEC at least 30 days prior to commencing construction of the system.

1-5. PGandE will apply for a permit to operate in accordance with NSCAPCD rules and regulations.

Verification: PGandE shall submit a copy of the application for a Permit to Operate with the CEC within 90 days of submittal to NSCAPCD. PGandE shall submit to the CEC a copy of the Permit to Operate within 30 days of its receipt from the district.

B. OPERATIONAL LIMITS AND REQUIREMENTS

1 The permit holder shall install drift eliminators rated at 0.001 % or less at the cooling tower.

Power Plant and Abatement Systems

AQ-B1 The project owner shall not operate the plant unless emissions are vented to the Stretford Air Pollution Control System. The condensate H_2S abatement chemical feed system and the Stretford abatement system shall be kept in good working order and operated as necessary in order to limit H_2S and particulate emissions on a continuous basis from the power plant as specified in conditions AQ-A1, AQ-A2, AQ-A3, and AQ-A4. [ref. Rule 240.d,

PTO 79-25A Cond. 18]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B2 The abatement solution storage tank shall have a minimum of 1,000 gallons of abatement solution at all times when the plant is in operation. All continuously operated abatement solution feed pumps shall have a standby spare available, a readily accessible flowmeter readable in appropriate units and equipped with alarms signaling no or low flow. Flowmeter accuracy shall be plus or minus 10% of flow. [ref. PTO 79-25A Cond. 18]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B3 Except for justifiable reasons during performance testing or under operation of an ACP, for which the project owner has received prior District written approval, the circulating water shall be kept to the following specification: Circulating water iron chelate concentration shall be maintained at or above the ppmw concentration recommended in the power plant operating guidelines as necessary to abate H_2S emissions from the power plant to the emission limit specified in Condition AQ-A1. [ref. PTO 79-25A Cond. 14]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B4 All the abatement systems shall be properly winterized and maintained to ensure proper and reliable functioning. All primary pressure gauges and flow meters associated with abatement equipment shall be readily identified, maintained in good operating condition and calibrated on a quarterly basis. Alarm systems associated with abatement equipment shall be tested on a quarterly basis. Calibration and maintenance shall be performed according to manufacturer's recommendations or per the project owner's maintenance schedule as needed to maintain the equipment in good working order. [ref. PTO 79-25A Cond. 14]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B5 Untreated vent gas shall be directed through the vent to the atmosphere only during upset/breakdown situations pursuant to Regulation 1 Rule 540. During periods of cold startups, the vent gas H_2S treatment system shall be operated as necessary to preclude the release of untreated vent gases to the atmosphere above the permitted emission limits specified in Conditions AQ-

A1 and AQ-A5. [ref. PTO 79-25A Cond. 15]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B6 All areas in the immediate vicinity and under the project owner's responsibility shall be properly treated to control fugitive dust. [ref. PTO 79-25A Cond. 17]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B7 Fugitive Leaks

A. **Non-condensable gas leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of non-condensable gases to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere.**

Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1,000 ppmv H_2S nor 10,000 ppmv methane nor (ii) exceed emission limits of Rule 455. Such leaks shall be repaired within 24 hours, unless the leak is from essential equipment. If the leak is from essential equipment, the leak must be minimized within 24 hours using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices.

B. **Steam and Condensate leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems, shall be inspected, maintained and repaired to prevent the emission of steam and condensate to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere. Valves, flanges, drip legs, threaded fittings, and seals on pipelines shall be maintained to prevent or reduce the emission of steam and condensate to the atmosphere as noted below:**

Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minutes. Liquid leak rates in excess of 20 ml in 3 minutes shall be repaired within 15 calendar days, excepting those leaks from essential equipment. If the leak is from essential equipment, the leak must be minimized within 15 days using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices

The project owner shall check the power plant for fugitive leaks at least once per quarter. [ref. PTO 79-25A Cond. 17]

Verification: The project owner shall keep records according to Condition AQ-D5. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B8 Alternative Compliance Plan

A. **The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions AQ-A3 and AQ-A5. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions AQ-A3 and AQ-A5. The ACP shall list the specific operating conditions the ACP will supersede.**

B. **The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions AQ-A1 and AQ-A2. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions AQ-A1 and AQ-A2. The ACP shall list the specific operating conditions the ACP will supersede.**

Verification: The project owner shall submit any ACP to the CPM for review at the time it is submitted to the District. The project owner shall submit the District's approval, disapproval or plan modification to the CPM in the quarterly report.

AQ-B9 All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this license shall at all times be maintained in good working order. The equipment shall be operated in a manner necessary to meet all emission limits of the permit. [Ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B10 The cooling tower shall be maintained in good operating condition. The project owner shall conduct an integrity inspection of the cooling tower during each scheduled plant overhaul and carry out any repairs necessary to correct all deficiencies encountered. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-BE1 S-1, emergency standby wet-down pump diesel drive engine, shall only be used because of a failure or loss of all or part of normal electrical power service, except for testing and maintenance as defined in CA HSC 93115.4 (30). [ref. PTO 17-09 Cond. B2]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE2 S-1, emergency standby wet-down pump diesel drive engine, shall be equipped with a non-resettable hour counting meter to indicate the number of hours the engine is operated. [ref. PTO 17-09 Cond. C2]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE3 S-1, emergency standby wet-down pump diesel drive engine, shall be operated exclusively on California Air Resources Board (CARB) Diesel Fuel. [ref. PTO 17-09 Cond. C3]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE4 S-1, emergency standby wet-down pump diesel drive engine, shall be operated according to manufacturer specifications [ref. PTO 17-09 Cond. C4]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE5 Total operating hours used for testing and maintenance of S-1, emergency standby wet-down pump diesel drive engine, shall not exceed 50 hours in any consecutive 12-month period. The total hours of operation do not include use during emergencies. [ref. PTO 17-09 Cond. A1]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

C. MONITORING, ~~AND~~ TESTING, AND ANALYSIS

Power Plant and Abatement Systems

~~1 Within 30 days of start-up the permit holder shall conduct a performance evaluation of the new cooling tower, including particulate matter and H2S emission rates.~~

AQ-C1 The project owner shall, on a monthly basis, conduct a source test of the cooling tower to determine the H_2S emission rate to verify compliance with condition AQ-A1. District Method 102 shall be utilized to determine the H_2S emission rate. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including periods when accessing the cooling tower is not possible, while maintaining compliance with all applicable emission limits of Condition AQ-A1. The ACP shall list operating parameters such as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO-approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Condition AQ-A1. The ACP shall list the specific operating conditions the ACP will supersede. [ref. PTO 79-25A Cond. 22]

Verification: The project owner shall submit source test results according to Condition AQ-E1. The project owner shall submit any ACP to the CPM for review. The project owner shall submit the District's approval, disapproval, or plan modification to the CPM in the following quarterly report.

AQ-C2 The project owner shall conduct or cause to be conducted performance tests on the turbine exhaust system to determine the H_2S emission rate to verify

compliance with Condition AQ-A2. Performance tests shall be conducted in accordance with Northern Sonoma County APCD Method 102, unless otherwise specified by the U.S. EPA. The project owner shall furnish the Northern Sonoma County APCD, the ARB, and the U.S EPA, a written report of such tests. All performance tests shall be conducted at the maximum operating capacity of the plant. Performance tests shall be conducted at least on a yearly basis and at such times as shall be specified by the U.S. EPA. [ref. PSD SFB 81-03 Cond. 1X.E]

Verification: The project owner shall submit source test results according to Condition AQ-E1.

~~2 The operator shall submit to the District, for prior approval, a performance evaluation test plan at least 15 days prior to conducting the tests.~~

AQ-C3 The project owner, as requested by the Air Pollution Control Officer or CPM, shall conduct a requestor-approved performance test for particulate matter (PM), H_2S, other species (i.e. benzene, mercury, arsenic, TRS, mercaptans, radon, other nitrogen compounds (amines) and compounds listed under NESHAPS and/or AB2588 from the power plant evaporative cooling tower and/or the Stretford evaporative cooling tower. Upon written request, the project owner shall submit to the Requestor at least 45 days prior to testing a detailed performance test plan. The requestor shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The project owner shall incorporate the requestor's comments or modifications to the plan which are required to assure compliance with the requestor's regulations. The Air Pollution Control Officer shall be notified 15 days prior to the test date in order to arrange for an observer to be present for the test. The test results shall be provided to the District and CPM within 45 days of the test date unless a different submittal schedule is approved in advance. [ref. PTO 79-25a Cond. 9 and 10]

Verification: The project owner shall conduct performance tests as requested by the Air Pollution Control Officer or CPM. The project owner shall submit results to the CPM within 45 days if the test was requested by the CPM or in the quarterly reports according to Condition AQ-E1.

AQ-C4~~3~~ Compliance with the particulate mass emission limitation ~~from the cooling tower~~ shall be based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.001 percent **for the main cooling tower and 0.005% for the Stretford cooling tower,** multiplied by the circulating water rate and, total dissolved solids (TDS) and total suspended solids (TSS). A circulating water sample shall be collected and analyzed for TDS and TSS on a monthly basis. **[ref. PTO 79-25A Cond. 21]**

Verification: The project owner shall maintain records according to Conditions AQ-D6 and AQ-D7 and submit reports as indicated in Condition AQ-E2.

AQ-C5 Main steam supply H_2S concentrations shall be determined minimally on a weekly basis and any additional times as required by the operating protocol or ACP. [ref. PTO 79-25A Cond. 19]

Verification: The project owner shall maintain records according to Conditions AQ-D6 and AQ-D7 and submit reports as indicated in Conditions AQ-E1 and AQ-E2.

AQ-C6 The project owner shall perform an abatement solution concentration test of the cooling tower circulating water once per operating shift when abatement solution is necessary in order to achieve compliance with Condition AQ-A1. The testing equipment shall be kept calibrated per the manufacturer's specifications. [ref. PTO 79-25A Cond. 19]

Verification: The project owner shall maintain records according to Conditions AQ-D6 and AQ-D7 and submit reports as indicated in Conditions AQ-E1 and AQ-E2. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C7 Instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations shall receive District approval prior to use. Test plans shall be submitted for District approval of instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations. [ref. Rule 240(d)]

Verification: The project owner shall submit any District approvals to the CPM in the quarterly reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C8 All sampling protocols, chemical feed charts, targets and operational guidelines for using said charts and targets, necessary to abate H_2S emissions from the power plant to the emission limits specified in Conditions AQ-A1 and AQ-A2 must be developed using good engineering judgment and supporting data. The APCO or CPM may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO or CPM determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions AQ-A1 and AQ-A2, the APCO or CPM shall require the project owner to develop revised protocols, feed charts, targets and guidelines. [ref. Rule 240(d)]

Verification: The project owner shall submit any revised protocol, feed charts, targets and guidelines or summary to the CPM in the annual reports required by Condition AQ-E2. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C9 Continuous Compliance Monitoring (CCM)

The project owner shall operate a continuous compliance monitor capable of measuring the concentrations of H_2S in the exhaust stream from the

Stretford absorber in order to verify compliance with Conditions AQ-A1 and AQ-A3. The monitoring system must alarm the operator when H_2S in the treated gas is in excess of 10 ppmv. The project owner shall respond to the alarm with appropriate mitigation measures. Mitigation measures taken shall be logged in the power plant abatement log book. In the event H_2S concentrations are in excess of 10 ppmv and the range of the CCM is exceeded, the project owner shall test for H_2S using an approved alternative method (ex Draeger tester, wet chemical tests) once every hour during the excess. The monitor shall have a full range of at least 50 ppmv. The monitor shall meet the following operational specifications: an accuracy of plus or minus 10% of full scale, provide measurements at least every 3 minutes, provide a continuous strip chart record or a District-approved alternative, and provide monthly data capture of at least 90%. The District must be notified when the concentration of H_2S exceeds the hourly average limit of 10 ppmv.

A one-point calibration shall be performed at least once per week. A three-point calibration shall be performed at least once per quarter.

The Air Pollution Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the project owner as long as emissions from the power plant do not exceed the "total" H_2S emission limitations of Condition AQ-A1. Written notification from the Air Pollution Control Officer must be received by the project owner prior to any change in monitoring specifications.

[ref. PTO 79-25B Cond. 19]

Verification: The project owner shall provide the District and CPM with a summary of the monitor's availability and any irregularities that occurred with the continuous monitor. The summary shall be provided to the CPM in the quarterly reports required by Condition AQ-E1.

AQ-C10 Ambient Air Monitoring

The project owner shall maintain and operate one H_2S/meteorological monitoring station, PM10 high volume station at a location approved in advance by the Air Pollution Control Officer for the life of the facility. The project owner shall install and operate additional monitoring stations, such as a PM2.5 monitoring station, if required by the Air Pollution Control Officer, Energy Commission, California Air Resources Board, or U.S. EPA. Participation by the project owner in a joint air monitoring program, such as the Geysers Air Quality Monitoring Program (GAMP), shall be deemed to satisfy all ambient air quality monitoring requirements of this license provided the term of monitoring is equivalent. The Air Pollution Control Officer can alter, suspend, or cancel this requirement provided no ambient air quality standard applicable to this facility is threatened or that sufficient

other monitoring is available by the District, Lake County AQMD, or other third party. [ref. PTO 79-25A Cond. 22]

Verification: If the project owner does not participate in GAMP, the project owner shall submit to the NSCAPCD, ARB, and CPM, for their review and approval, a detailed ambient monitoring plan.

AQ-C11 Gland Seal Leak Off Air

The project owner shall test, on a monthly basis, the emissions from the Gland Steam Separator Exhauster. H_2S emissions from the Gland Leak Off Separator shall be included as part of the "total" H_2S emissions calculated from the plant. The project owner may request that the monitoring frequency be changed based upon monitoring data gathered. Written approval from the District must be received by the project owner prior to a change in testing frequency.

Verification: The project owner shall submit any changes to the testing plan to the CPM with a copy of the approval from the NSCAPCD in the quarterly reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-CE1 At any time as specified by the Air Pollution Control Officer or CPM, the operator of this source shall conduct a requestor-approved source test to determine NOx and particulate emissions from the diesel powered generator. The test results shall be provided to the District and CPM within 30 days of the test [ref. PTO 17-09 Cond. D1]

Verification: The project owner shall perform an approved source test upon request of the District or CPM. Test results shall be submitted to the District and CPM.

D. RECORDKEEPING

Power Plant and Abatement Systems

AQ-D1 All records and logs shall be retained for a period of at least 5 years from the date the record or log was made and shall be submitted to the NSCAPCD or CPM upon request.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D2 The project owner shall maintain a weekly abatement solution inventory log available for on-site inspection. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D3 The project owner shall maintain a strip chart or other District-approved data recording device of H_2S readings measured by the CCM. All measurements, records, and data shall be maintained by the project owner for at least five (5) years. The project owner shall report all exceedances of Condition AQ-A2 in the quarterly report as required in AQ-E1. The report shall include a description of all measures taken to bring the Stretford system back into compliance with Condition AQ-A2. The project owner shall include in the report a copy of the output from the H_2S CCM or alternative District-approved data during the upset condition. [ref. Rule 240(d)]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D4 The project owner shall maintain copies of the source test results as required in Condition AQ-C1 for a minimum of 5 years. [ref. PTO 88-62 Cond. 22]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D5 Fugitive Leak Records

A. Any non-condensable gas leak in excess of the limitations of Condition AQ-B7 which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition AQ-B7 and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

B. Any valve, flange, drip leg threaded fitting or seal on a pipeline or condensate collection system with a leak in excess of the limitations of Condition AQ-B7 which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition AQ-B7 and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of

such leaks awaiting repair and shall make this list available to the District and CPM upon request.

[ref. PTO 79-25A Cond. 20]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall report all deviations to the CPM as required in Condition AQ-F4. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D6 The project owner shall maintain records detailing:

a. **Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action.**
b. **The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions AQ-A3 and AQ-A4.**
c. **Fugitive steam and non-condensable gas emission source inspections, leak rates, repairs, and maintenance.**
d. **Total dissolved solids and total suspended solids in the circulating water.**

[ref. Rule 240 (d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D7~~1~~ ~~In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following information summarized on a monthly basis~~ **The project owner shall maintain records detailing:**

a. **Hours of operation**
b. **Types, concentrations, and amounts of chemicals used for Stretford absorbing solution and used for condensate treatment, including target levels for abatement solution concentration in the circulating water.**
c. **A summary of any irregularities that occurred with a continuous compliance monitor.**
d. **The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions AQ-A1, and AQ-A2.**
e. **Periods of scheduled and unscheduled outages and the cause of the outages.**
f. **Time and date of all pump and flowmeter calibrations required by this permit.**

g. **Time and date of all alarm system tests**

h. **Leaking equipment awaiting repair; time and date of detection and final repair.**

i. ~~a.~~ Total H_2S, PM-10 and PM 2.5 annual emissions to date**.**

[ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-DE1 In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District-approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following information summarized on a monthly basis:

a. **Total engine operating hours**

b. **Emergency use hours of operation**

c. **Maintenance and testing hours of operation.**

d. **Type and amount of fuel purchased.**

[ref. PTO 17-09 Cond. E1]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request. The project owner shall report hours of operation, identifying the reason for operation, to the CPM in the quarterly reports required by Condition AQ-E1.

E. REPORTING

~~1 Within 30 days of conducting the performance tests pursuant to Condition A. l. the permit holder shall submit to the District the test results from the performance tests as outlined in the performance evaluation plan.~~

AQ-E1 A quarterly report shall be submitted to the District which contains the following information:

a. **CCM availability for the given quarter.**

b. **Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action taken.**

c. **Time and date of any monitor indicating an hourly average exceedance of 10 ppmv of H_2S.**

d. **Source test results.**

Additional requirement for reports submitted to the Energy Commission:

e. **Hours of operation for the emergency engine. The hours of operation shall be reported according to total use, emergency use, and maintenance and testing.**

The quarterly report shall be submitted to the District and CPM within 30 days of the end of each quarter. The reports are due by May 1, August 1, November 1 and February 1 for each corresponding quarter.

[ref. Rule 240(d)]

Verification: The project owner shall submit the quarterly reports to the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E2 An annual report shall be submitted to the District and CPM which contains the following information:

a. **Average mainsteam H_2S and ammonia concentrations.**
b. **Average total dissolved and suspended solids and average flowrate of the cooling tower water.**
c. **Annual ammonia emissions.**
d. **Gross megawatt hours generated.**
e. **Steaming rate, gross average (gross steam flow; lb/ gross MW).**
f. **Update to any changes in operating protocols used to determine plant chemical feed charts and targets; calibration and maintenance programs.**
g. **Total organic gasses emitted as methane.**
h. **Hours of plant operation.**
i. **Annual carbon dioxide equivalent (CO_2e) emissions**
j. **Annual H_2S, PM-10 and PM-2.5 emissions.**

The annual report shall be submitted to the District within 45 days of the end of each calendar year.

[ref. Rule 240(d)]

Verification: The project owner shall submit the annual reports to the CPM within 45 days of the end of each calendar year or another timeframe approved by the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E3 The project owner shall submit reports to the California Air Resources Board

in accordance with the provisions of CCR Title 17, Division 3, Chapter 1, Subchapter 10, Article 2, Regulation for Mandatory Reporting of Greenhouse Gas Emissions.

Verification: The project owner shall provide a statement of compliance in the annual report regarding the submittal of greenhouse gas emissions reporting to the ARB. The greenhouse gas emissions report is not required to be submitted to the CPM in the periodic compliance reports. The project owner shall make the reports available to the CPM upon request.

F. ADMINISTRATIVE REQUIREMENTS

AQ-F12 ~~Permit Expiration~~**Payment of Fees**
~~This Authority to Construct~~ **The operating permits shall remain valid as long as** ~~is valid for one year and may be extended by an additional year with the payment of~~ the annual renewal fee**s are paid in accordance with the District Rules and Regulations and permit conditions are met.** ~~After construction of the listed equipment, the permit to operate shall remain valid provided the annual renewal fees are paid in accordance with District Rule 300 and all Permit conditions are met. [NSCAPCD Rule 300.5.1]~~

Verification: No verification needed.

AQ-F25 Right to Entry **and Inspection**
The **Air Pollution** Control Officer, ~~T~~**t**he Chairman of the California Air Resources Board, ~~T~~**t**he Regional Administrator of U**.**S**.** EPA, **the CPM,** and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

a. To enter ~~upon~~ the premises where the source is located or in which any records are required to be kept under the terms and conditions of ~~this PERMIT~~ **the operating permits**; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of ~~this PERMIT~~ **the operating permits**; and

c. To inspect any equipment, operation, or method required in ~~this PERMIT~~ **the operating permits**; and

d. To sample emissions from the source.

[NSCAPCD Rule 240.e **and Reg. 5.610(e)**]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F3 Compliance with Permit Conditions

The project owner shall submit a complete application for renewal of the Title V operating permit in accordance with the District deadlines. [ref. Reg 5.660]

The project owner shall comply with all conditions of the Title V operating permit. Any non-compliance with the terms and conditions of the Title V operating permit will constitute a violation of the law and may be grounds for enforcement action, including monetary civil penalties, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [ref. Reg 5.610(f)(3)]

In the event any enforcement action is brought as a result of a violation of any term or condition of the Title V operating permit, the fact that it would have been necessary for the project owner to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. [ref. Reg 5. 610(f)(4)]

The filing of a request by the facility for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. [ref. Reg 5. 610(f)(5)]

The Title V operating permit does not convey any property rights of any sort, nor any exclusive privilege. [ref. Reg 5. 610(f)(2)]

The project owner shall supply in writing within 30 days any information that the District requests to determine whether cause exists, per Regulation 5.570, for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. [ref. Reg 5. 610(f)(4)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F4 Reporting

All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District and CPM at least once every six months. For emissions of a hazardous air pollutant (HAP) or a toxic air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of the permit requirements, the report must be made within 24 hours of the occurrence. For emissions of any regulated air pollutant, excluding those HAP emission requirements listed above, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours. All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventative or corrective action taken. A progress report shall be made on a compliance schedule at least semi-annually and shall include the date when compliance will be achieved, an explanation of why compliance was not, or will not be, achieved by the scheduled date, and a log of any preventative or corrective action taken. The reports shall be certified by the responsible official as true, accurate and complete. [ref. Reg 5.625]

Verification: The project owner shall submit deviation reports to the CPM according to the outlined timeframes. The project owner make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F5~~3~~ Severability

~~This p~~**P**rovisions of ~~this PERMIT~~ **the operating permits** are severable, and, if any provision of ~~this PERMIT~~ **the operating permits** is held invalid, the remainder of ~~this PERMIT~~ **the operating permits** shall not be affected. **[ref. Reg 5.610]**

Verification: No verification needed.

AQ-F6~~4~~ Transfer of Ownership

~~c. Transfer of Ownership -~~ In the event of any changes in control or ownership of facilities to be ~~constructed or~~ modified **and/or operated**, ~~this PERMIT~~ **the operating permits are transferable and** ~~together with its terms and conditions~~ shall be binding on all subsequent owners and operators. The ~~Applicant~~ **project owner** shall notify the succeeding owner and operator of the existence of ~~this PERMIT~~ **the operating permits** and ~~it's~~ **the** conditions by letter, a copy of which shall be forwarded to the **Air Pollution** Control Officer. [NSCAPCD Rule 240~~.j.~~]

Verification: The project owner shall provide a copy of the letter of notification to the CPM in the following quarterly report.

AQ-F7 Records

Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of entry and shall include: date, place, and time of sampling, operating conditions at the time of sampling, date, place, and method of analysis and the results of the analysis. [ref. Reg 5.615]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F8~~4~~ ~~Notification Requirements~~ **Emergency Provisions**

~~a. Applicant shall notify the District at least 3 days prior to the start-up of this source~~

~~b. Upsets and Breakdowns - In the event of any failure of process or abatement equipment to operate in a normal manner which results in an increase in emissions above any allowable emissions limit stated in District Rules or in conditions to this PERMIT the Operator shall notify the District as provided by Rule 540 regarding upset breakdown conditions to petition for shelter from enforcement actions. In order to qualify for such shelter an initial notification of the equipment failure must be reported to the District Office no later than one (I) hour after its detection during normal office hours (8:00 am to 4:30 pm) or one~~

~~(1) hour after the start of the next regular business day, whichever is sooner. [NSCAPCD Rule 540]:~~

The project owner may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, by following the procedures contained in Regulation 1, rule 540 (b). the District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1, Rule 540 (b)(3).

The project owner may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond the project owner's reasonable control by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. Any variance granted by the Hearing Board from any term or condition of this permit which lasts longer than 90 days will be subject to EPA approval. [ref. Reg 1 Rule 600]

Notwithstanding the foregoing, the granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement unless the Title V Operating Permit has been modified pursuant to Regulation 5 or other EPA-approved process. [ref. Reg 1 Rule 600]

Verification: The project owner shall notify the CPM of any breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, within the timeframes outlined in Regulation 1 Rule 540 of the District's Rules and Regulations. The project owner shall submit the required breakdown reports and report any variance to the CPM in the next quarterly report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F9~~1~~ ~~Facilities Operation~~ **Permit Posting**

~~a.~~ Operation**s** under ~~this~~ **the operating** permit**s** must be conducted in compliance with all data and specifications included in the application which attest to the operator's ability to comply with District Rules and Regulations. Th**e**~~is~~ permit**s** must be posted in ~~a conspicuous place nearby or, as per rule 240.~~ **such a manner as to be clearly visible and accessible at a location near the source. In the event that the permits cannot be so placed, the permits shall be maintained readily available at all times on the operating premises. [ref. Rule 240]**

~~b. All equipment of this PERMIT shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions. [NSCAPCD Rule 420.d]~~

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F10 Compliance Certification

Compliance reports and certifications shall be submitted annually by the project owner of the facility to the Northern Sonoma County Air Pollution Control District and CPM. Each compliance certification shall be accompanied by a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report. [ref. Regulation 5 Rule 650]

Permits shall not authorize the emissions of air contaminants in excess of those allowed by the Health and Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. Permits shall not be considered as permissions to violate existing laws, ordinances, regulations or statutes of other governmental agencies. [Rule 240(d)]

Verification: The project owner shall submit the annual compliance reports and certification to the CPM.

AQ-F11 Permit Modification

The project owner shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. [ref. Regulation 1 Rule 200]

Verification: No verification needed.

APPENDIX A

CONDITIONS OF CERTIFICATION

CLEAN COPY

(Assumes Energy Commission adopts all conditions as recommended by staff)

GLOSSARY

Abatement Solution: Iron chelate or any other District approved compound used to

chemically treat hydrogen sulfide in the steam condensate

ACP: Alternative Compliance Plan. A list of all parametric monitoring data to be collected and recorded as a means of determining compliance with the H_2S emission limits.

APCO: Air Pollution Control Officer

BACT: Best Available Control Technology

CAA: The federal Clean Air Act

CCM: Continuous Compliance Monitor

CCM Availability: Hours CCM is in operation divided by the hours the primary abatement system is in service.

CEQA: California Environmental Quality Act

CFR: The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

Cold Startup: Starting the power plant from inactive status

NSCAPCD or District: The Northern Sonoma County Air Pollution Control District

U.S. EPA: The United States Environmental Protection Agency

Federally Enforceable, FE: All limitations and conditions which are enforceable by the Administrator of the EPA, including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain).

GPH: Gallons per hour

HAP: Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

Irregularity: Period of time a CCM monitor reading is not consistent with other verifiable data or information.

Low Flow: The flowrate below 10% of the required flowrate of the back-up caustic scrubber pumps.

Major Facility: A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity as determined by the EPA administrator.

MW: Megawatts

N/A: Not Applicable

NESHAPs: National Emission Standards for Hazardous Air Pollutants contained in 40 CFR Part 61

NSCAPCD: Northern Sonoma County Air Pollution Control District

NMHC: Non-methane Hydrocarbons

NSR: New Source Review. A federal program for preconstruction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 1, Rule 220.

PM: Total Particulate Matter

PM10: Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns.

PM2.5: Particulate matter with aerodynamic equivalent diameter of less than or equal to 2.5 microns.

Primary Pressure Gauges and Flowmeters: All pressure gauges and flow meters used for parametric compliance verification.

Prolonged Outage: The scheduled shutdown of a unit lasting longer than 1 week.

PSD: Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 1, Rule 220.

SIP: State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Ambient Air Quality Standards. Mandated by Title I of the Act.

Standby Spare: A back-up piece of equipment available for use in the event the primary piece of equipment fails.

Sulfur Compounds: Any inorganic compound containing sulfur

Sulfur Oxides calculated as Sulfur Dioxide: Oxides of sulfur normalized to the molecular weight of sulfur dioxide.

Title V: Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOG: Total Organic Gasses

TDS: Total Dissolved Solids

TRS: Total Reduced Sulfur

TSS: Total Suspended Solids

Unit of measure:

ft3 = cubic feet	g = grams	gal = gallon	hr = hour
lb = pound	in = inches	yr = year	
ppmv = parts per million volume		scfm = standard cubic feet per minute	
ppmw = parts per million weight		psia = pounds per square inch absolute	

VEE: Visible Emissions Evaluation

EQUIPMENT DESCRIPTION

Geothermal Power Plant, Unit 18 Consisting of:

Power Plant	
Description	**Nominal Capacity**
Steam Turbine	1,968,900 lb steam/hr maximum plant gross steam flow
Generator	119.95 Megawatt gross nameplate capacity
Surface Condenser with Steam Operated Two and Three Stage Gas Ejector System	1,750,000,000 BTU/Hr Design Heat Load
Cooling Tower, Cross-Flow, Mechanical Draft Type with 0.001% rated drift eliminators with eleven fans	165,000 GPM, Fans 200 hp each
Two 100% Condensate Pumps	200 HP and 4,700 gpm each
Three Auxiliary Condensate Pumps	15 HP each
Two 50% Circulating Water Pumps	2,500 hp and 84,000 gpm each
Gland Seal Leak Off System	
Hydrogen Sulfide Control System	
Description	**Nominal Capacity**
Stretford Air Pollution Control System consisting of:	598 lb/hr H_2S
Two Venturi Scrubbers	1,120 gallons per minute (gpm) each
H_2S Absorber, 5' 6" diameter (D) x 38' height (H)	560 gpm

Two Oxidizer Tanks, 19” D x 20' H, with four Oxidizer Air Blowers each 100 HP	790 SCFM air per Blower
Reaction Tank, 19” D x 20' H	42,000 gallon
Balance Tank, 24' D x 18' H	60,000 gallon
Froth Tank, 12' D x 12' H	15,000 gallon
Caustic Tank, 12' D x 12' H	9,300 gallon
Condensate Tank, 4' D x 5' H	450 gallon
Belt Wash Spray Collection Tank 9' D x 8' H	3,500 gallon
Heat Exchangers consisting of:	
Stretford Heater	3.0 million British thermal units per hour (mmBtu/hr)
Stretford Cooling Tower, 0.002% drift	5.3 mmBtu/hr
Main Pumps consisting of:	
Three Stretford Circulating Pumps	1,560 gpm each
Two Stretford Cooler Circulating Pumps	1,100 gpm each
Caustic Additive Pump	15-100 gpm
Stretford Treated Gas Analyzer and Alarm System	
One Sulfur Vacuum Filter Belt	
Circulating Water H_2S Abatement System consisting of:	
Abatement Solution Storage Tank	5,400 gallon
One Abatement Solution Feed Pump and one Spare Pump	0-100 gph range
Mass Flow Meter and Flow Alarm	
Mercury Removal System consisting of	
Vapor Liquid Separator Assembly	
Mercury Adsorption Vessel	
Emergency Engine	
Description	**Nominal Capacity**
Emergency Standby Wet-Down Pump Diesel Drive Engine, Cummins Model CFP7E-F40, (Tier 3, Manufactured 2017)	204 HP

STAFF CONDITIONS

AQ-SC1 The project owner shall provide the compliance project manager (CPM) copies of any Northern Sonoma County Air Pollution Control District (NSCAPCD or District) issued project air permit for the facility. The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM.

Verification: The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.

AQ-SC2 The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District, U.S. EPA, or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project.

Verification: The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.

AQ-SC3 The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.

Verification: The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.

PERMIT CONDITIONS:

A. EMISSION LIMITS

Power Plant and Abatement Systems

AQ-A1 The project and associated abatement systems shall comply with Regulation 1 Rule 455(b) –Geothermal Emission Standards. Total emissions of hydrogen sulfide (H_2S) shall not exceed 5.2 kilograms averaged over any one-hour period. Total H_2S emissions shall be the cumulative emissions to the atmosphere from the power plant and associated abatement equipment. [Ref. Rule 455(b), PTO 79-25A Cond. 19.A]

Verification: The project owner shall verify compliance by conducting a monthly source test on the cooling tower as indicated in **AQ-C1**, weekly determinations of the H_2S content in the main steam supply as required in **AQ-C5**, or as required in an approved Alternative Compliance Plan.

AQ-A2 The exit concentration in the process piping leading from the Stretford system shall not exceed 10 ppmv H_2S, averaged over any consecutive 60-minute period, unless operating under a District approved Alternative Compliance Plan (ACP). [ref. PTO 79-25B Cond. 18.B.]

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in AQ-C9.

AQ-A3 The project owner shall comply with Regulation 1 Rule 455 (a)-Geothermal Emission Standards; no person shall discharge into the atmosphere from any geothermal operation sulfur compounds, calculated as sulfur dioxide, in excess of 1,000 ppmv. [ref. Rule 455(a)]

Verification: The project owner shall verify compliance by adhering to all monitoring and testing requirements.

AQ-A4 The project owner shall operate the power plant and associated abatement systems in compliance with Regulation 1 Rule 420 (d) Non-Combustion Sources-Particulate Matter; no person shall discharge particulate matter into the atmosphere from a non-combustion source in excess of 0.2 grains per cubic foot of exhaust gas or in total quantities in excess of the amount shown in Table I. (40 lb/hr) whichever is the more restrictive condition. [ref. Rule 420(d)]

Verification: The project owner shall perform a source test to determine compliance as requested by the NSCAPCD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-A5 Annual emissions from the cooling tower shall not exceed, on a calendar year basis, 24.4 tons per year of H_2S.

Verification: The project owner shall maintain records of total H_2S as indicated in AQ-D7 and submit reports as indicated in **AQ-E2**. Records shall be based on required source testing in Condition **AQ-C1**, and an annual summation from January through the end of December.

AQ-A6 Annual emissions from the cooling tower shall not exceed, on a calendar year basis, 15.9 tons per year particulate matter less than 10 microns in diameter (PM-10) and 11.0 tons per year particulate matter less than 2.5 microns in diameter (PM-2.5).

Verification: The project owner shall verify compliance through monitoring as indicated in AQ-C4. The project owner shall maintain records according to AQ-D6 and AQ-D7 and submit reports as indicated in AQ-E2. Records shall be based on required sampling and an annual summation from January to December.

Emergency Engine

AQ-AE1 Visible particulate emissions shall not exceed an opacity as to obscure an observer's view to a degree equal to or greater than Ringelmann 2.0 or 40 percent opacity for a period or periods exceeding 3 minutes in any one hour [ref. PTO 17-10 Cond. B1]

Verification: The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the NSCAPCD or CPM, the project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE2 Particulate emissions shall not exceed an emission rate of 0.15 g/bhp-hr. [ref. PTO 17-09 Cond. B2]

Verification: The project owner shall verify compliance according to Condition **AQ-CE1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE3 Combined non-methane hydrocarbons and nitrogen oxide emissions shall not exceed an emission rate of 3.0 g/bhp-hr. [ref. PTO 17-09 Cond. B3]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE4 Carbon monoxide emissions shall not exceed an emission rate of 2.6 g/bhp-hr. [ref. PTO 17-09 Cond. B4]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

B. OPERATIONAL LIMITS AND REQUIREMENTS

Power Plant and Abatement Systems

AQ-B1 The project owner shall not operate the plant unless emissions are vented to the Stretford Air Pollution Control System. The condensate H_2S abatement chemical feed system and the Stretford abatement system shall be kept in good working order and operated as necessary in order to limit H_2S and particulate emissions on a continuous basis from the power plant as specified in conditions **AQ-A1**, **AQ-A2**, **AQ-A3**, and **AQ-A4**. [ref. Rule 240.d, PTO 79-25A Cond. 18]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B2 The abatement solution storage tank shall have a minimum of 1,000 gallons of abatement solution at all times when the plant is in operation. All continuously operated abatement solution feed pumps shall have a standby spare available, a readily accessible flowmeter readable in appropriate units and equipped with alarms signaling no or low flow. Flowmeter accuracy shall be plus or minus 10% of flow. [ref. PTO 79-25A Cond. 18]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B3 Except for justifiable reasons during performance testing or under operation of an ACP, for which the project owner has received prior District written approval, the circulating water shall be kept to the following specification: Circulating water iron chelate concentration shall be maintained at or above the ppmw concentration recommended in the power plant operating guidelines as necessary to abate H_2S emissions from the power plant to the emission limit specified in Condition AQ-A1. [ref. PTO 79-25A Cond. 14]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B4 All the abatement systems shall be properly winterized and maintained to ensure

proper and reliable functioning. All primary pressure gauges and flow meters associated with abatement equipment shall be readily identified, maintained in good operating condition and calibrated on a quarterly basis. Alarm systems associated with abatement equipment shall be tested on a quarterly basis. Calibration and maintenance shall be performed according to manufacturer's recommendations or per the project owner's maintenance schedule as needed to maintain the equipment in good working order. [ref. PTO 79-25A Cond. 14]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B5 Untreated vent gas shall be directed through the vent to the atmosphere only during upset/breakdown situations pursuant to Regulation 1 Rule 540. During periods of cold startups, the vent gas H_2S treatment system shall be operated as necessary to preclude the release of untreated vent gases to the atmosphere above the permitted emission limits specified in Conditions **AQ-A1** and **AQ-A5**. [ref. PTO 79-25A Cond. 15]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B6 All areas in the immediate vicinity and under the project owner's responsibility shall be properly treated to control fugitive dust. [ref. PTO 79-25A Cond. 17]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B7 Fugitive Leaks

A. Non-condensable gas leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of non-condensable gases to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere.

   Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1,000 ppmv H_2S nor 10,000 ppmv methane nor (ii) exceed emission limits of Rule 455. Such leaks shall be repaired within 24 hours, unless the leak is from essential equipment. If the leak is from essential equipment, the leak must be minimized within 24 hours using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

   Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices.

B. Steam and Condensate leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of steam and condensate to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere. Valves, flanges, drip legs, threaded fittings and seals on pipelines shall be maintained to prevent or reduce the emission of steam and condensate to the atmosphere as noted below:

Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minutes. Liquid leak rates in excess of 20 ml in 3 minutes shall be repaired within 15 calendar days, excepting those leaks from essential equipment. If the leak is from essential equipment, the leak must be minimized within 15 days using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices

The project owner shall check the power plant for fugitive leaks at least once per quarter. [ref. PTO 79-25A Cond. 17]

Verification: The project owner shall keep records according to Condition AQ-D5. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B8 Alternative Compliance Plan

A. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions **AQ-A3** and **AQ-A5**. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance

with Conditions **AQ-A3** and **AQ-A5**. The ACP shall list the specific operating conditions the ACP will supersede.

B. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions **AQ-A1** and **AQ-A2**. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions **AQ-A1** and **AQ-A2**. The ACP shall list the specific operating conditions the ACP will supersede.

Verification: The project owner shall submit any ACP to the CPM for review at the time it is submitted to the District. The project owner shall submit the District's approval, disapproval or plan modification to the CPM in the quarterly report.

AQ-B9 All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this license shall at all times be maintained in good working order. The equipment shall be operated in a manner necessary to meet all emission limits of the permit. [Ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B10 The cooling tower shall be maintained in good operating condition. The project owner shall conduct an integrity inspection of the cooling tower during each scheduled plant overhaul and carry out any repairs necessary to correct all deficiencies encountered. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-BE1 S-1, emergency standby wet-down pump diesel drive engine, shall only be used because of a failure or loss of all or part of normal electrical power service, except for testing and maintenance as defined in CA HSC 93115.4 (30). [ref. PTO 17-09 Cond. B2]

Verification: The project owner shall maintain records according to Condition **AQ-DE1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE2 S-1, emergency standby wet-down pump diesel drive engine, shall be equipped with a non-resettable hour counting meter to indicate the number of hours the engine is operated. [ref. PTO 17-09 Cond. C2]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE3 S-1, emergency standby wet-down pump diesel drive engine, shall be operated exclusively on California Air Resources Board (CARB) Diesel Fuel. [ref. PTO 17-09 Cond. C3]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE4 S-1, emergency standby wet-down pump diesel drive engine, shall be operated according to manufacturer specifications [ref. PTO 17-09 Cond. C4]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE5 Total operating hours used for testing and maintenance of S-1, emergency standby wet-down pump diesel drive engine, shall not exceed 50 hours in any consecutive 12-month period. The total hours of operation do not include use during emergencies. [ref. PTO 17-09 Cond. A1]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

C. MONITORING, TESTING, AND ANALYSIS

Emergency Engine

AQ-CE1 At any time as specified by the Air Pollution Control Officer or CPM, the operator of this source shall conduct a requestor-approved source test to determine NOx and particulate emissions from the diesel powered generator. The test results shall be provided to the District and CPM within 30 days of the test [ref. PTO 17-09 Cond. D1]

Verification: The project owner shall perform an approved source test upon request of the District or CPM. Test results shall be submitted to the District and CPM.

D. RECORDKEEPING

Power Plant and Abatement Systems

AQ-D1 All records and logs shall be retained for a period of at least 5 years from the date the record or log was made and shall be submitted to the NSCAPCD or CPM upon request**.**

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D2 The project owner shall maintain a weekly abatement solution inventory log

available for on-site inspection. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D3 The project owner shall maintain a strip chart or other District-approved data recording device of H_2S readings measured by the CCM. All measurements, records, and data shall be maintained by the project owner for at least five (5) years. The project owner shall report all exceedances of Condition **AQ-A2** in the quarterly report as required in **AQ-E1**. The report shall include a description of all measures taken to bring the Stretford system back into compliance with Condition **AQ-A2**. The project owner shall include in the report a copy of the output from the H_2S CCM or alternative District-approved data during the upset condition. [ref. Rule 240(d)]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D4 The project owner shall maintain copies of the source test results as required in Condition **AQ-C1** for a minimum of 5 years. [ref. PTO 88-62 Cond. 22]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D5 Fugitive Leak Records

A. Any non-condensable gas leak in excess of the limitations of Condition **AQ-B7** which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition **AQ-B7** and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

B. Any valve, flange, drip leg threaded fitting or seal on a pipeline or condensate collection system with a leak in excess of the limitations of Condition **AQ-B7** which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition **AQ-B7** and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

[ref. PTO 79-25A Cond. 20]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall report all deviations to the CPM as required in Condition **AQ-F4**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request

AQ-D6 The project owner shall maintain records detailing:

a. Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action.

b. The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions **AQ-A3** and **AQ-A4**.

c. Fugitive steam and non-condensable gas emission source inspections, leak rates, repairs, and maintenance.

d. Total dissolved solids and total suspended solids in the circulating water.

[ref. Rule 240 (d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D7 The project owner shall maintain records detailing:

a. Hours of operation

b. Types, concentrations, and amounts of chemicals used for Stretford absorbing solution and used for condensate treatment, including target levels for abatement solution concentration in the circulating water.

c. A summary of any irregularities that occurred with a continuous compliance monitor.

d. The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions **AQ-A1**, and **AQ-A2**.

e. Periods of scheduled and unscheduled outages and the cause of the outages.

f. Time and date of all pump and flowmeter calibrations required by this permit.

g. Time and date of all alarm system tests

h. Leaking equipment awaiting repair; time and date of detection and final repair.

i. Total H_2S, PM-10 and PM 2.5 annual emissions to date.

[ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-DE1 In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District-approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following information summarized on a monthly basis:

a. Total engine operating hours

b. Emergency use hours of operation

c. Maintenance and testing hours of operation.

d. Type and amount of fuel purchased.

[ref. PTO 17-09 Cond. E1]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request. The project owner shall report hours of operation, identifying the reason for operation, to the CPM in the quarterly reports required by Condition **AQ-E1**.

E. REPORTING

AQ-E1 A quarterly report shall be submitted to the District which contains the following information:

a. CCM availability for the given quarter.

b. Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action taken.

c. Time and date of any monitor indicating an hourly average exceedance of 10 ppmv of H_2S.

d. Source test results.

Additional requirement for reports submitted to the Energy Commission:

e. Hours of operation for the emergency engine. The hours of operation shall be reported according to total use, emergency use, and maintenance and testing.

The quarterly report shall be submitted to the District and CPM within 30 days of the end of each quarter. The reports are due by May 1, August 1, November 1 and February 1 for each corresponding quarter.

[ref. Rule 240(d)]

Verification: The project owner shall submit the quarterly reports to the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E2 An annual report shall be submitted to the District and CPM which contains the following information:

a. Average mainsteam H_2S and ammonia concentrations.

b. Average total dissolved and suspended solids and average flowrate of the cooling tower water.

c. Annual ammonia emissions.

d. Gross megawatt hours generated.

e. Steaming rate, gross average (gross steam flow; lb/ gross MW).

f. Update to any changes in operating protocols used to determine plant chemical feed charts and targets; calibration and maintenance programs.

g. Total organic gasses emitted as methane.

h. Hours of plant operation.

i. Annual CO_2e emissions

j. Annual H_2S, PM-10 and PM-2.5 emissions.

The annual report shall be submitted to the District within 45 days of the end of each calendar year.

[ref. Rule 240(d)]

Verification: The project owner shall submit the annual reports to the CPM within 45 days of the end of each calendar year or another timeframe approved by the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E3 The project owner shall submit reports to the California Air Resources Board in accordance with the provisions of CCR Title 17, Division 3, Chapter 1, Subchapter 10, Article 2, Regulation for Mandatory Reporting of Greenhouse Gas Emissions.

Verification: The project owner shall provide a statement of compliance in the annual report regarding the submittal of greenhouse gas emissions reporting to the ARB. The greenhouse gas emissions report is not required to be submitted to the CPM in the periodic compliance reports. The project owner shall make the reports available to the CPM upon request.

F. ADMINISTRATIVE REQUIREMENTS

AQ-F1 Payment of Fees

The operating permits shall remain valid as long as the annual renewal fees are paid in accordance with the District Rules and Regulations and permit conditions are met.

Verification: No verification needed.

AQ-F2 Right to Entry and Inspection

The Air Pollution Control Officer, the Chairman of the California Air Resources Board, the Regional Administrator of U.S. EPA, the CPM, and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

a. To enter the premises where the source is located or in which any records are required to be kept under the terms and conditions of the operating permits; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of the operating permits; and

c. To inspect any equipment, operation, or method required in the operating permits; and

d. To sample emissions from the source.

[NSCAPCD Rule 240.e and Reg. 5.610(e)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F3 Compliance with Permit Conditions

The project owner shall submit a complete application for renewal of the Title V operating permit in accordance with the District deadlines. [ref. Reg 5.660]

The project owner shall comply with all conditions of the Title V operating permit. Any non-compliance with the terms and conditions of the Title V operating permit will constitute a violation of the law and may be grounds for enforcement action, including monetary civil penalties, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [ref. Reg 5.610(f)(3)]

In the event any enforcement action is brought as a result of a violation of any term or condition of the Title V operating permit, the fact that it would have been necessary for the project owner to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. [ref. Reg 5. 610(f)(4)]

The filing of a request by the facility for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. [ref. Reg 5. 610(f)(5)]

The Title V operating permit does not convey any property rights of any sort, nor any exclusive privilege. [ref. Reg 5. 610(f)(2)]

The project owner shall supply in writing within 30 days any information that the District requests to determine whether cause exists, per Regulation 5.570, for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. [ref. Reg 5. 610(f)(4)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F4 Reporting

All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District and CPM at least once every six months. For emissions of a hazardous air pollutant (HAP) or a toxic air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of the permit requirements, the report must be made within 24 hours of the occurrence. For emissions of any regulated air pollutant, excluding those HAP emission requirements listed above, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours. All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventative or corrective action taken. A progress report shall be made on a compliance schedule at least semi-annually and shall include the date when compliance will be achieved, an explanation of why compliance was not, or will not be, achieved by the scheduled date, and a log of any preventative or corrective action taken. The reports shall be certified by the responsible official as true, accurate and complete. [ref. Reg 5.625]

Verification: The project owner shall submit deviation reports to the CPM according to the outlined timeframes. The project owner makes the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F5 Severability

Provisions of the operating permits are severable, and, if any provision of the operating permits is held invalid, the remainder of the operating permits shall not be affected. [ref. Reg 5.610]

Verification: No verification needed.

AQ-F6 Transfer of Ownership

In the event of any changes in control or ownership of facilities to be modified and/or operated, the operating permits are transferable and shall be binding on all subsequent owners and operators. The project owner shall notify the succeeding owner and operator of the existence of the operating permits and the conditions by letter, a copy of which shall be forwarded to the Air Pollution Control Officer. [NSCAPCD Rule 240]

Verification: The project owner shall provide a copy of the letter of notification to the CPM in the following quarterly report.

AQ-F7 Records

Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of entry and shall include: date, place, and time of sampling, operating conditions at the time of sampling, date, place, and method of analysis and the results of the analysis. [ref. Reg 5.615]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F8 Emergency Provisions

The project owner may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, by following the procedures contained in Regulation 1, rule 540 (b). the District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1, Rule 540 (b)(3).

The project owner may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond the project owner's reasonable control by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. Any variance granted by the Hearing Board from any term or condition of this permit which lasts longer than 90 days will be subject to EPA approval. [ref. Reg 1 Rule 600]

Notwithstanding the foregoing, the granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement unless the Title V Operating Permit has been modified pursuant to Regulation 5 or other EPA-approved process. [ref. Reg 1 Rule 600]

Verification: The project owner shall notify the CPM of any breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, within the timeframes outlined in Regulation 1 Rule 540 of the District's Rules and Regulations. The project owner shall

submit the required breakdown reports and report any variance to the CPM in the next quarterly report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F9 Permit Posting

Operations under the operating permits must be conducted in compliance with all data and specifications included in the application which attest to the operator's ability to comply with District Rules and Regulations. The permits must be posted in such a manner as to be clearly visible and accessible at a location near the source. In the event that the permits cannot be so placed, the permits shall be maintained readily available at all times on the operating premises. [ref. Rule 240]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F10 Compliance Certification

Compliance reports and certifications shall be submitted annually by the project owner of the facility to the Northern Sonoma County Air Pollution Control District and CPM. Each compliance certification shall be accompanied by a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report. [ref. Regulation 5 Rule 650]

Permits shall not authorize the emissions of air contaminants in excess of those allowed by the Health and Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. Permits shall not be considered as permissions to violate existing laws, ordinances, regulations or statutes of other governmental agencies. [Rule 240(d)]

Verification: The project owner shall submit the annual compliance reports and certification to the CPM.

AQ-F11 Permit Modification

The project owner shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. [ref. Regulation 1 Rule 200]

Verification: No verification needed.

Power Plant and Abatement Systems

AQ-C1 The project owner shall, on a monthly basis, conduct a source test of the cooling tower to determine the H_2S emission rate to verify compliance with condition **AQ-A1**. District Method 102 shall be utilized to determine the H_2S emission rate. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including periods when accessing the cooling tower is not possible, while maintaining compliance with all applicable emission limits of Condition **AQ-A1**. The ACP shall list operating parameters such

as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO-approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Condition **AQ-A1**. The ACP shall list the specific operating conditions the ACP will supersede. [ref. PTO 79-25A Cond. 22]

Verification: The project owner shall submit source test results according to Condition **AQ-E1**. The project owner shall submit any ACP to the CPM for review. The project owner shall submit the District's approval, disapproval, or plan modification to the CPM in the following quarterly report.

AQ-C2 The project owner shall conduct or cause to be conducted performance tests on the turbine exhaust system to determine the H_2S emission rate to verify compliance with Condition **AQ-A2**. Performance tests shall be conducted in accordance with Northern Sonoma County APCD Method 102, unless otherwise specified by the U.S. EPA. The project owner shall furnish the Northern Sonoma County APCD, the ARB, and the U.S EPA, a written report of such tests. All performance tests shall be conducted at the maximum operating capacity of the plant. Performance tests shall be conducted at least on a yearly basis and at such times as shall be specified by the U.S. EPA. [ref. PSD SFB 81-03 Cond. 1X.E]

Verification: The project owner shall submit source test results according to Condition **AQ-E1**.

AQ-C3 The project owner, as requested by the Air Pollution Control Officer or CPM, shall conduct a requestor-approved performance test for particulate matter (PM), H_2S, other species (i.e. benzene, mercury, arsenic, TRS, mercaptans, radon, other nitrogen compounds (amines) and compounds listed under NESHAPS and/or AB2588 from the power plant evaporative cooling tower and/or the Stretford evaporative cooling tower. Upon written request, the project owner shall submit to the requestor at least 45 days prior to testing a detailed performance test plan. The requestor shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The project owner shall incorporate the Requestor's comments or modifications to the plan which are required to assure compliance with the requestor's regulations. The Air Pollution Control Officer shall be notified 15 days prior to the test date in order to arrange for an observer to be present for the test. The test results shall be provided to the District and CPM within 45 days of the test date unless a different submittal schedule is approved in advance. [ref. PTO 79-25a Cond. 9 and 10]

Verification: The project owner shall conduct performance tests as requested by the Air Pollution Control Officer or CPM. The project owner shall submit results to the CPM within 45 days if the test was requested by the CPM or in the quarterly reports according to Condition **AQ-E1**.

AQ-C4 Compliance with the particulate mass emission limitation shall be based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.001 percent for the main cooling tower and 0.005% for the Stretford cooling tower, multiplied by the circulating water rate and, total dissolved solids (TDS) and total suspended solids (TSS). A circulating water sample shall be collected and analyzed for TDS and TSS on a monthly basis. [ref. PTO 79-25A Cond. 21]

Verification: The project owner shall maintain records according to Conditions **AQ-D6** and **AQ-D7** and submit reports as indicated in Condition **AQ-E2**.

AQ-C5 Main steam supply H_2S concentrations shall be determined minimally on a weekly basis and any additional times as required by the operating protocol or ACP. [ref. PTO 79-25A Cond. 19]

Verification: The project owner shall maintain records according to Conditions **AQ-D6** and **AQ-D7** and submit reports as indicated in Conditions **AQ-E1** and **AQ-E2**.

AQ-C6 The project owner shall perform an abatement solution concentration test of the cooling tower circulating water once per operating shift when abatement solution is necessary in order to achieve compliance with Condition **AQ-A1**. The testing equipment shall be kept calibrated per the manufacturer's specifications. [ref. PTO 79-25A Cond. 19]

Verification: The project owner shall maintain records according to Conditions **AQ-D6** and **AQ-D7** and submit reports as indicated in Conditions **AQ-E1** and **AQ-E2**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C7 Instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations shall receive District approval prior to use. Test plans shall be submitted for District approval of instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations. [ref. Rule 240(d)]

Verification: The project owner shall submit any District approvals to the CPM in the quarterly reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C8 All sampling protocols, chemical feed charts, targets and operational guidelines for using said charts and targets, necessary to abate H_2S emissions from the power plant to the emission limits specified in Conditions **AQ-A1** and **AQ-A2** must be developed using good engineering judgment and supporting data. The APCO or CPM may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO or CPM determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions **AQ-A1** and **AQ-A2**, the APCO or CPM shall require the project owner to develop revised protocols, feed charts, targets and guidelines. [ref. Rule 240(d)]

Verification: The project owner shall submit any revised protocol, feed charts, targets and guidelines or summary to the CPM in the annual reports required by Condition **AQ-E2**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C9 Continuous Compliance Monitoring (CCM)

The project owner shall operate a continuous compliance monitor capable of measuring the concentrations of H_2S in the exhaust stream from the Stretford absorber in order to verify compliance with Conditions **AQ-A1** and **AQ-A3**. The monitoring system must alarm the operator when H_2S in the treated gas is in excess of 10 ppmv. The project owner shall respond to the alarm with appropriate mitigation measures. Mitigation measures taken shall be logged in the power plant abatement log book. In the event H_2S concentrations are in excess of 10 ppmv and the range of the CCM is exceeded, the project owner shall test for H_2S using an approved alternative method (ex Draeger tester, wet chemical tests) once every hour during the excess. The monitor shall have a full range of at least 50 ppmv. The monitor shall meet the following operational specifications: an accuracy of plus or minus 10% of full scale, provide measurements at least every 3 minutes, provide a continuous strip chart record or a District-approved alternative, and provide monthly data capture of at least 90%. The District must be notified when the concentration of H_2S exceeds the hourly average limit of 10 ppmv.

A one-point calibration shall be performed at least once per week. A three-point calibration shall be performed at least once per quarter.

The Air Pollution Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the project owner as long as emissions from the power plant do not exceed the "total" H_2S emission limitations of Condition **AQ-A1**. Written notification from the Air Pollution Control Officer must be received by the project owner prior to any change in monitoring specifications.

[ref. PTO 79-25B Cond. 19]

Verification: The project owner shall provide the District and CPM with a summary of the monitor's availability and any irregularities that occurred with the continuous monitor. The summary shall be provided to the CPM in the quarterly reports required by Condition **AQ-E1**.

AQ-C10 Ambient Air Monitoring

The project owner shall maintain and operate one H_2S/meteorological monitoring station, PM10 high volume station at a location approved in advance by the Air Pollution Control Officer for the life of the facility. The project owner shall install and operate additional monitoring stations, such as a PM2.5 monitoring station, if required by the Air Pollution Control Officer, Energy Commission, California Air Resources Board, or U.S. EPA. Participation by the project owner in a joint air monitoring program, such as the Geysers Air Quality Monitoring Program (GAMP),

shall be deemed to satisfy all ambient air quality monitoring requirements of this license provided the term of monitoring is equivalent. The Air Pollution Control Officer can alter, suspend, or cancel this requirement provided no ambient air quality standard applicable to this facility is threatened or that sufficient other monitoring is available by the District, Lake County AQMD, or other third party. [ref. PTO 79-25A Cond. 22]

Verification: If the project owner does not participate in GAMP, the project owner shall submit to the NSCAPCD, ARB, and CPM, for their review and approval, a detailed ambient monitoring plan.

AQ-C11 Gland Seal Leak Off Air

The project owner shall test, on a monthly basis, the emissions from the Gland Steam Separator Exhauster. H_2S emissions from the Gland Leak Off Separator shall be included as part of the "total" H_2S emissions calculated from the plant. The project owner may request that the monitoring frequency be changed based upon monitoring data gathered. Written approval from the District must be received by the project owner prior to a change in testing frequency.

Verification: The project owner shall submit any changes to the testing plan to the CPM with a copy of the approval from the NSCAPCD in the quarterly reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

G. PLANT-WIDE CONDITION

AQ-G1 The project owner shall comply with the following District regulations:

a. Regulation 1 Rule 400-General Limitations

b. Regulation 1 Rule 410-Visible Emissions

c. Regulation 1 Rule 430-Fugitive Dust Emissions

d. Regulation 1 Rule 492 (40 CFR part 6 Subpart M)-Asbestos

e. Regulation 1 Rule 540- Equipment Breakdown

f. Regulation 2- Open Burning

g. 40 CFR Part 82- Chlorinated Fluorocarbons

If in the event this stationary source as defined in 40 CFR Part 68.3, becomes subject to Part 68, this stationary source shall submit a risk management plan (RMP) by the date specified in Part 68.10. As specified in Parts 68, 70, and 71, this stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification required by 40 CFR Part 70 or 71.

If in the event this stationary source as defined in 40 CFR Part 63, becomes subject to Part 63, this stationary source shall notify the District and CPM within 90 days of becoming subject to the regulation. The stationary source shall identify all applicable requirements of Part 63 and submit a plan for complying with all applicable requirements.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA and Energy Commission upon request. The project owner shall submit required reports to the CPM (see **AQ-SC2**).

REFERENCES

ARB 2018a - California Air Resources Board. Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm Accessed May 2018.

ARB 2018b - California Air Resources Board. California Ambient Air Quality Data Standards available on ARB website. http://www.arb.ca.gov/research/aaqs/aaqs.htm Accessed May 2018

GPC 2015 – Geyser Power Company – Socrates (Unit 18) Cooling Tower Replacement Project Description and Request for Expedited Processing (TN 206732) November 23, 2015

GPC 2017 – Geyser Power Company – PTA Geysers-16, Quicksilver, Diesel Generator for Cooling Tower Wetting System (TN 222037) December 21, 2017

GPC 2018a – Geyser Power Company – Consolidated Petition for Geysers Unit 16, Unit 18 and Unit 20 (TN 222334) January 23, 2018

GPC 2018b – Geyser Power Company – Air Quality and Emissions Impact Analysis (TN 222537) February 13, 2018

CEC 1980a – California Energy Commission – Socrates (Unit 18) 1980 Final Decision (TN 206756) November 24, 2015

CEC 1983b – California Energy Commission – Socrates (Unit 18) Compliance Plan (TN 206755) November 24, 2015

CEC 2016a – California Energy Commission –Expedited Processing Pursuant to Order B-36-15 (TN 207191) January 5, 2016

NSCAPCD 2014 – Northern Sonoma County Air Pollution Control District – Title V Operating Permit issued March 24, 2014

NSCAPCD 2017a – Northern Sonoma County Air Pollution Control District – Evaluation Report Geysers Power Company Emergency Standby Diesel Generator issued December 6, 2017

NSCAPCD 2017b – Northern Sonoma County Air Pollution Control District – Authority to Construct and Temporary Permit to Operate #17-09 issued December 6, 2017

NSCAPCD 2018 – Northern Sonoma County Air Pollution Control District – Permit to Operate #79-25A current 2018

NSCAPCD 2018 – Northern Sonoma County Air Pollution Control District – Permit to Operate #79-25B current 2018

U.S. EPA 2018a – United States Environmental Protection Agency. The Green Book Nonattainment Areas for Criteria Pollutants website. https://www.epa.gov/green-book Accessed May 2018.

U.S. EPA 2018b - United States Environmental Protection Agency. National Ambient Air Quality Data Standards available on U.S. EPA website. https://www.epa.gov/criteria-air-pollutants/naaqs-table Accessed May 2018.

Grant Geothermal (PG&E Geysers 20)
(82-AFC-01C)
Request to Amend Final Commission Decision - Air Quality Analysis of Minor Improvements to Fire Protection Cooling Tower Wet-down Systems
Nancy Fletcher

INTRODUCTION AND SUMMARY

On December 21, 2017, the Geysers Power Company, LLC (petitioner or GPC) filed a petition (GPC 2017) with the California Energy Commission (Energy Commission) requesting an amendment to the Energy Commission license for the addition of a stationary emergency diesel engine at the Grant geothermal power plant project. On January 23, 2018, the petitioner updated the request (GPC 2018a). Grant was formerly Pacific Gas & Electric Company's (PG&E) Geysers Unit 20 (Unit 20). Unit 20 was certified by the Energy Commission on February 9, 1983 and renamed to Grant following the purchase of the facility by Calpine Corporation. Grant consists of a nominal 119-megawatt (MW) turbine generator, condensate and circulating water systems, a multiple cell mechanically induced crossflow cooling tower, a transmission switchyard, and a hydrogen sulfide (H_2S) abatement system.

Grant is located in eastern Sonoma County near the Lake County border, within the Northern Sonoma County Air Pollution Control District (NSCAPCD). The Energy Commission originally approved Grant for up to 110 MWs of base-load operation. Grant began commercial operation on October 1, 1985. Given degradation of the geothermal steam field, Grant provides approximately 41 MWs of base-load electricity to northern California.

In 2015, the Valley Fire damaged the Grant cooling tower. Governor Brown issued Executive Order B-36-15 to expedite demolition and reconstruction of fire-damaged assets such as the cooling tower. The Energy Commission approved the requested reconstruction to remediate the wildfire damage and directed the incorporation of the Authority to Construct (ATC) issued by the NSCAPCD into the Energy Commission's Unit 20 Final Decision. The resulting changes to the conditions of certification from the cooling tower reconstruction are included in this analysis.

In 2016, GPC began installation of cooling tower wet-down systems for several cooling towers at selected geothermal sites, including Grant, to keep side surfaces and the top deck wet when the cooling tower is not in operation. The wet-down systems have been operating with temporary portable emergency diesel engines permitted by the California Air Resources Board (ARB) in the portable equipment registration program (PERP). GPC is proposing the addition of a permanent stationary emergency standby wet-down pump using a Tier-3 diesel-fueled drive engine rated at 204 horsepower (HP) for use in the event of an emergency plant evacuation due to the threat of an approaching wild land fire.

GPC submitted an application to the NSCAPCD to evaluate the addition of the emergency diesel fired engine. The NSCAPCD issued an ATC on December 6, 2017. The final Permit to Operate (PTO) is still pending. The final PTO will not be issued until the equipment has been installed and verified by the NSCAPCD.

Staff recommends additional California Environmental Quality Act (CEQA) mitigation measures described in this analysis to ensure potential air quality impacts from the proposed operation of the emergency diesel engine are mitigated to a less than significant level. Therefore, with the proposed mitigation, there would be no significant air quality impacts related to Grant and no population, including the environmental justice (minority) population, would be significantly impacted.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS COMPLIANCE

The NSCAPCD reviewed the requested addition of the emergency diesel engine and determined the proposed changes would comply with their regulations. Energy Commission staff reviewed the permit evaluations which incorporate the proposed changes. Staff evaluated the proposed changes for consistency with all federal, state, and NSCAPCD laws, ordinances, regulations, and standards (LORS).

Air Quality Table 1 includes a summary of the LORS currently applicable to Grant. The conditions of certification in the Energy Commission Decision and any and all amendments thereafter ensure that the facility would remain in compliance with all applicable LORS.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	*Description*
Federal	**U.S. Environmental Protection Agency (EPA)**
Title 40 Code of Federal Regulations (CFR) Part 50 (National Primary and Secondary Ambient Air Quality Standards)	National Ambient Air Quality Standards (NAAQS) are set in this part. NAAQS defines levels of air quality necessary to protect public health.
Title 40 CFR Part 51 (Requirements for Preparation Adoption and Submittal of Implementation Plans)	Requires emission reporting and control strategies for the attainment and maintenance of national standards.
Title 40 CFR Part 52 (Approval and Promulgation of Implementation Plans)	Prevention of Significant Deterioration (PSD) requires review and facility permitting for construction of new or modified major stationary sources of pollutants at locations where ambient concentrations attain the NAAQS. The NSCAPCD does not require PSD provisions for the addition of the emergency wet-down engine as emissions would not exceed levels of significance.
Title 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines)	Outlines requirements for stationary diesel engines. The proposed stationary emergency diesel engine is a certified Tier 3 engine. Compliance is expected.

Applicable Law	*Description*
Title 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines)	Establishes National Emission Standards for Hazardous Air Pollutants (NESHAPS) for both major and area sources of Hazardous Air Pollutants (HAPs) emissions. Establishes emission and operating limitations for applicable internal combustion engines. Compliance with Part 60, Subpart IIII satisfies Part 63 Subpart ZZZZ requirements.
State	**California Air Resources Board and Energy Commission**
California Health & Safety Code (H&SC) §41700 (Nuisance Regulation)	Prohibits discharge of such quantities of air contaminants that cause injury, detriment, nuisance, or annoyance.
H&SC §40910-40930 (District Plans to Attain State Ambient Air Quality Standards)	State Ambient Air Quality Standards should be achieved and maintained. The permitting of the source needs to be consistent with the approved clean air plan. The NSCAPCD New Source Review (NSR) program needs to be consistent with regional air quality management plans.
Title 17 CCR, §93115 Airborne Toxic Control Measure for Stationary Compression Ignition Engines.	The Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines limits fuels, establishes maximum emission rates, and establishes recordkeeping requirements for stationary compression ignition engines. Diesel-fueled emergency engines are subject to the regulations.
Local	**Northern Sonoma County Air Pollution Control District**
Regulation I Chapter 1 General Provisions	Rule 100 series— General provisions establishing the NSCAPCD ability to adopt and enforce rules and regulations that achieve and maintain state and federal AAQS.
Regulation I Chapter 2 Permits Rule 200	Permit Requirements— Establishes requirements for obtaining permits for stationary sources with the potential to be the source of air contaminants. The NSCAPCD issues an ATC for the emergency engine. The NSCAPCD will issue a PTO once the engine is installed and ready to operate.
Regulation I Chapter 2 Permits Rule 220	New Source Review Standards (Including PSD Evaluations)— General provisions from reviewing new and modified stationary sources. The emergency engine was evaluated for compliance with NSR requirements.
Regulation I Chapter 2 Permits Rule 225	Toxics Review Standards (Including PSD Evaluations)— Provides a framework for the review of toxic or hazardous emission from stationary sources of air pollution. Diesel exhaust is classified as a toxic air contaminant in California. The facility will comply with the ATCM through installation of Tier 3 diesel-fueled engine and operating restrictions.

Applicable Law	*Description*
Regulation I Chapter 4 Prohibitions Rule 400(a)	General Limitations— Establishes public nuisance prohibitions. The discharge of air contaminants or other material which could detrimentally impact the public are not permitted. Nuisance problems are not expected. NSCAPCD reported the diesel engine has the potential to create a public nuisance due to the odorous nature of diesel emissions. However, engine operation will be limited and the source is remotely located.
Regulation I Chapter 4 Prohibitions Rule 410	Visible Emissions— Prohibits the discharge of visible emissions to no greater than a Ringelmann 2 for a period or periods aggregating more than 3 minutes in any one hour. The operation will have conditions to ensure compliance.
Regulation I Chapter 4 Prohibitions Rule 420(a)	Particulate Matter— Specifies standards for particulate matter emission rates for general combustion sources. The requirements specify 0.46 grams of particulate matter per standard cubic meter (0.20 grains per standard cubic foot) of exhaust gas calculated to 12 percent carbon dioxide. The engine is not expected to exceed the grain loading standard.
Regulation I Chapter 4 Prohibitions Rule 430	Fugitive Dust Emissions— Specifies requirements for controlling fugitive dust. The provisions apply to handling, transporting or open storage of material that allow particulate matter to become airborne. Significant fugitive dust emissions are not expected from the emergency diesel engine. Facility operations are already required to comply with these requirements. The area around the power plant has been paved to minimize dust from vehicular activity.
Regulation I Chapter 4 Prohibitions Rule 440	Sulfur Oxide Emissions— Limits the emissions of sulfur oxides calculated as sulfur dioxide to 1,000 ppm. Compliance with the fuel type limitation in the ATCM for stationary diesel engines will ensure the diesel engine is compliance.
Regulation I Chapter 4 Prohibitions Rule 455(a)	Geothermal Emission Standards— Limits the emissions of sulfur compounds calculated as sulfur dioxide to 1,000 ppm. The facility uses a continuous monitoring system to measure H_2S concentrations leaving the Stretford adsorber. The treated gas is less than 10 parts per million by volume (ppmv) H_2S. The gas is vented to the cooling tower. Source tests from the cooling tower indicate the H_2S concentrations released to the atmosphere are compliant.
Regulation I Chapter 4 Prohibitions Rule 455(b)	Geothermal Emission Standards— Limits emissions of hydrogen sulfide based on the facility. Grant is subject to a H_2S emission limitation of 6.0 kilograms per hour (kg/hr). The license limits the plant H_2S emissions to 5.2 kg/hr. A monthly source test of the cooling tower verifies compliance.
Regulation V Chapters 1 - 6	Procedures For Issuing Permits to Operate For Sources—This regulation implements the requirements of Title V of the federal Clean Air Act. Additionally, Regulation 5 implements Phase II acid deposition control provisions of Title IV. Grant operates under a Title V operating permit.

SETTING

Ambient Air Quality Standards

The U.S. EPA and the California Air Resources Board (ARB) have both established allowable maximum ambient concentrations of criteria air pollutants. Ambient air quality standards are designed to protect people who are most susceptible to respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The ambient air quality standards are also set to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The California Ambient Air Quality Standards, established by ARB, are typically lower (more stringent) than the federally established NAAQS. See **Air Quality Table 2.** The averaging time for the various ambient air quality standards (the duration of time the measurements are taken and averaged) ranges from one hour to one year. The standards are read as a concentration, in parts per million (ppm), parts per billion (ppb), or as a weighted mass of material per unit volume of air, in milligrams (mg) or micrograms (µg) of pollutant in a cubic meter (m^3) of ambient air, drawn over the applicable averaging period.

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)[a]	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	53 ppb (100 µg/m^3)	30 ppb (57 µg/m^3)
	1 Hour	100 ppb (188 µg/m^3)[b]	180 ppb (339 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	—	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1300 µg/m^3)	—
	1 Hour	75 ppb (196 µg/m^3)[c]	0.25 ppm (655 µg/m^3)
Respirable Particulate Matter (PM10)	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter (PM2.5)	Annual	12 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3 [b]	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Rolling 3-Month Average	1.5 µg/m^3	—
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction

Pollutant	Averaging Time	Federal Standard	California Standard
			coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: ARB 2018b, U.S. EPA 2018 b
Notes: [a] Fourth- highest maximum 8 – hour concentration, averaged over 3 years.
[b] 98th percentile of daily maximum value, averaged over 3 years
[c] 99th percentile of daily maximum value, averaged over 3 years

Ambient Air Quality Attainment Status

Federal and state ambient air quality attainment status designations have been revised since the Energy Commission Decision. Grant is located within the North Coast Air Basin (NCAB). The NCAB comprises three air districts, the North Coast Unified Air Quality Management District, the Mendocino County Air Quality Management District, and the NSCAPCD.

Grant is located on a spur west of the main ridge of the Mayacamas Mountains, east of Cloverdale in the Known Geothermal Resource Area (KGRA). The KGRA includes portions of the NSCAPCD and the Lake County Air Basin. A special air monitoring program referred to as the Geyser Air Monitoring Program (GAMP), monitors air quality in the residential communities adjacent to large scale geothermal operations. The program monitors hydrogen sulfide and other air contaminants to document long-term air quality trends in the KGRA. There are currently five operating air monitors in the GAMP program. The various monitors measure H_2S, PM10, and radon and provide meteorological data. The KGRA is considered in attainment or unclassified with all state and federal ambient air quality standards (AAQS).

For convenience, staff includes **Air Quality Table 3**, which summarizes the area's current attainment status for AAQS for the NSCAPCD.

Air Quality Table 3
NSCAPCD Attainment Status

Pollutants	Attainment Status	
	Federal Classification	**State Classification**
Ozone	Unclassified/Attainment	Attainment
CO	Unclassified/Attainment	Unclassified/Attainment
NO_2	Unclassified/Attainment	Attainment
SO_2	Unclassified/Attainment	Attainment
PM10	Unclassified	Attainment
PM2.5	Unclassified/Attainment	Attainment
Lead	Unclassified/Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified/Attainment*
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particulates	No Federal Standard	Unclassified

Source: ARB 2018a, U.S. EPA 2018a
Notes: *Geyser Geothermal portion of the NSCAPCD is classified as attainment for hydrogen sulfide. The remainder is considered unclassified.

ANALYSIS

Operation Summary and Emissions Analysis

The emergency standby wet-down pump diesel drive engine is proposed to provide emergency suppression water pumping for the Grant cooling tower in the event of a wildfire. The emergency diesel engine would be manually started if a wildfire approaches the facility. The wet-down pump would be used to wet the cooling tower. The wet-down pump would be expected to provide 24 hours or longer of wet-down capability in the case of an emergency. The engine would also be operated for maintenance and readiness testing.

Cooling tower wet-down systems are used to keep normally wetted surfaces of the cooling tower structure wet when the cooling tower is not in operation. Wet-down systems are different from fire suppression systems. The wet-down system prevents the ignition of vulnerable surfaces while fire suppression systems are designed to suppress internal fires.

In 2016, GPC began installation of cooling tower wet-down systems for several cooling towers at selected geothermal sites. The wet-down systems have been operated with temporary portable emergency diesel-fueled engines permitted by the ARB through the portable equipment registration program (PERP).

The California Code of Regulations Title 17 establishes requirements for the PERP program. The regulation establishes the definition of the term “portable” and outlines circumstances for which equipment is not considered portable and circumstances where a district stationary permit is required. Per the regulation, portable engines cannot operate as a stationary source. The regulation places limitations on the duration a portable engine is permitted to operate or reside at a site. A portable engine is not allowed to reside onsite for 12 consecutive months regardless of operation. In addition, per Section 2452(dd), equipment does not meet the definition of portable if any of the following are true:

a. *the engine or equipment unit or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. The period during which the engine or equipment unit is maintained at a storage facility shall be excluded from the residency time determination. Any engine or equipment unit such as back-up or stand-by engines or equipment units, that replace engine(s) or equipment unit(s) at a location, and is intended to perform the same or similar function as the engine(s) or equipment unit(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s) or equipment unit(s), including the time between the removal of the original engine(s) or equipment unit(s) and installation of the replacement engine(s) or equipment unit(s), will be counted toward the consecutive time period; or*

b. *the engine or equipment unit remains or will reside at a location for less than 12 consecutive months if the engine or equipment unit is located at a seasonal source and operates during the full annual operating period of the seasonal source, where a seasonal source is a stationary source that remains in a single location on a*

permanent basis (at least two years) and that operates at that single location at least three months each year; or

c. *the engine or equipment unit is moved from one location to another in an attempt to circumvent the portable residence time requirements.*

Therefore, an engine performing the intended function for an extended period of time would not be considered portable. A stationary permit is required from the air district in order to operate the emergency wet down diesel engine. The project owner submitted an application to the NSCAPCD to evaluate the addition of the emergency diesel-fueled engine. The NSCAPCD issued an ATC on December 6, 2017. The final Permit to Operate (PTO) is still pending. The final PTO will not be issued until the equipment has been installed and verified by the NSCAPCD.

The proposed engine is typically referred to as an 'emergency fire pump'. However. GPC is proposing to operate the engine for emergency purposes not classified as fire protection services. Fire pump engines classified for fire protection services are subject to additional National Fire Protection Association and California Building and Fire Code requirements. The ATCM for stationary diesel engines applies to emergency standby diesel engines. Applicable ATCM requirements were incorporated in the ATC issued by the NSCAPCD. Maintenance and readiness testing is limited to 50 hours per year for emergency engines.

According to the updated PTA, the proposed permanent stationary standby wet-down pump is driven by a skid-mounted, diesel-fueled engine all contained on a single skid. Fuel lines would not extend off the skid. Above ground piping would be utilized to connect the unit to the cooling tower wetting system header. Excavation for the skid and piping foundations would be on existing asphalt-covered, previously disturbed ground. Potential construction emissions from this scope of work are expected to be minimal and short term. Therefore, no significant construction emissions are expected form the installation of the proposed equipment.

Air Quality Table 4 includes the emission rates, and the estimated potential emissions for the maintenance and readiness testing of the proposed emergency diesel engine. The NSCAPCD evaluated and permitted the engine to operate on a limited 50 hours per year for testing and maintenance purposes. This limit is consistent with operation restrictions established for diesel-fueled emergency use engines in the ATCM. The emissions rates for NOx, CO, VOC and PM10 used to calculate the potential emissions are from the manufacturer's specification sheet for the proposed engine. The PM2.5 emission rate is conservatively assumed to be equivalent to the PM10 emission rate. The SOx emission rate is based on the use of ultra-low sulfur diesel. Staff calculated CO_2 and carbon dioxide equivalent (CO_2e) emissions using emission factors from the U.S. EPA greenhouse gas inventory and global warming potentials from the Intergovernmental Panel on Climate Change (IPCC). Staff included emissions for hourly and potential 24-hour operation scenarios for informational purposes. The NSCAPCD does not evaluate the emergency engines based on potential hours of operation during emergencies.

Air Quality Table 4
Grant Unit 20 Estimated Diesel Engine Emissions

	NOx	CO	VOC	SOx	PM10/2.5	CO_2e [a]
Emission Rate (g/bhp-hr)	2.475	1.193	0.062	0.0055	0.111	NA
Potential Hourly [b] (pounds/hour)	1.113	0.537	0.028	0.002	0.050	239
Potential 24-hour [b] (pounds/hour)	27.4	12.9	0.7	0.1	1.2	5,744
Estimated Annual [c] (pounds/year)	56	27	1.4	0.12	2.5	11,967
Estimated Annual [c] (tons/year)	0.0278	0.0134	0.0007	0.0001	0.0012	6

Source: NSCAPCD 2017a, staff analysis

Notes: [a.] Based on CO_2e emissions rates from the U.S. EPA emission factors for greenhouse gas inventories and global warming potentials from Table A-1 of 40 CFR Part 98, Subpart A: CO_2 = 73.96 kilograms per million British thermal units (kg/MmmBtu) and 1, CH_4 = 3.0 grams per million British thermal units (g/mmBtu) and 25, N_2O = 0.60 g/mmBtu and 298.

[b.] Potential maximum hour operation.

[c.] Based on 50 hours per year operation limitation for testing and maintenance.

Significant emissions of hydrogen sulfide associated with the proposed emission units are not expected. Essentially all sulfur in the fuel is oxidized to SO_2.

The ATC issued by the NSCAPCD includes eleven conditions specific to the proposed emergency diesel engine and five general administrative conditions. The conditions are standard conditions for emergency engines and limit operations to maintenance, testing and emergency use. These conditions ensure the emissions from the emergency engine would not cause a significant increase in criteria pollutants.

Multiple administrative conditions included in the emergency diesel engine ATC are general conditions already included in the current operating permits for the facility. Some of the administrative conditions are specific to the Authority to Construct/Temporary Permit to operate and would not be included in the final operating permits issued by the NSCAPCD. Considering the permit conditions are standard conditions for emergency diesel engines, staff does not expect any changes to these conditions in the final Permit to Operate issued by the NSCAPCD. The NSCAPCD indicated they would issue the final Permit to Operate for the emergency diesel engine after the engine is installed and operation of the equipment is verified.

The U.S. EPA had authority over the PSD program when Grant was licensed. The U.S. EPA originally imposed requirements under the PSD program. The NSCAPCD currently has delegated authority over the PSD requirements for Grant. Therefore, any facility modification triggering a PSD review would be processed by the NSCAPCD. The addition of the emergency wet-down engine does not trigger a PSD review. Requirements from the initial U.S. EPA PSD review remain on the Title V operating permit.

Staff is proposing to update the conditions of certification for consistency with changes incorporated into the NSCAPCD permits since Grant was originally licensed. The changes clarify operational and reporting requirements. Grant operates under a federal Title V

operating permit and separate NSCAPCD operating permits, PTO #82-45A and PTO #82-45B. The NSCAPCD-issued permits require detailed reporting requirements including the submittal of quarterly and annual reports. Staff reviewed the updated NSCAPCD permit operating limits and reporting requirements. Staff is proposing to streamline the Energy Commission requirements where possible.

Staff is proposing to incorporate the quarterly and annual reporting requirements from the NSCAPCD permits. Minor differences in the Energy Commission reporting requirements and NSCAPCD requirements would remain. For example, staff is proposing the project owner submit the proposed engine operating hour logs to the Energy Commission's compliance project manager (CPM) on a quarterly basis (logging the engine operating hours is already a NSCAPCD permit requirement). Staff is proposing language specifying the reports and notices required for submittal to the CPM. Staff is also requesting the inclusion of a statement of compliance pertaining to the conditions of certification, including staff conditions, in the annual periodic report to ensure Grant continues to operate in compliance with Energy Commission requirements.

Staff-proposed changes would clarify the vague existing requirement for the project owner to submit all reports to the CPM relating to Grant submitted to the NSCAPCD and copies of all notices relating to Unit 20 received from the NSCAPCD. The Additional Proposed Condition section includes additional detail on the proposed reporting requirements.

Staff incorporated into the proposed conditions of certification the provisions of the NSCAPCD ATC from the Grant cooling tower reconstruction. On December 22, 2015, GPC formerly requested Energy Commission authorization to reconstruct the cooling tower (GPC 2015). GPC 2015 included a request for the addition of an air quality condition of certification limiting emissions from the cooling tower. On January 5, 2016, the Energy Commission approved the requested reconstruction to remediate the wildfire damage and restore power plant operations. The approval noted action on the proposed condition of certification would occur upon completion of the ATC by the NSCAPCD. On January 29, 2016, the NSCAPCD issued a revised final ATC for the in-kind replacement of the cooling tower. The Energy Commission issued final approval on February 5, 2016 and included direction for staff to incorporate the ATC into the Energy Commission's Unit 20 Final Decision.

The NSCAPCD made administrative changes to the cooling tower replacement conditions when the ATC was converted to a PTO. The changes are outlined in the Proposed and Amended Conditions of Certification section.

California Environmental Quality Act (CEQA) Mitigation

As documented in **Air Quality Table 3**, the NSCAPCD is in attainment or unclassified with the state and federal AAQS. Staff evaluated the proposed changes taking into consideration the attainment status and potential populations surrounding the facility. The proposed mitigation measures would minimize emissions associated with the proposed equipment.

The staff-proposed CEQA mitigation measures noted as conditions of certification would ensure potential direct and cumulative air quality impacts from the proposed facility modifications would be less than significant, including impacts to the environmental justice

population. There are no air quality environmental justice issues related to the proposed facility modifications and no minority population would be significantly or adversely impacted.

Additional Conditions of Certification for the Engine

Staff is proposing the addition of several conditions of certification pertaining to the emergency standby wet-down pump diesel engine. These are standard conditions from the NSCAPCD-issued ATC for emergency diesel engines. The conditions limit the operation of the emergency engine to be consistent with restrictions imposed by the ATCM for stationary diesel engines.

Staff is proposing to denote these conditions of certification with an "E" following the section subset letter. The proposed emergency engine conditions of certification with emission limitations are **AQ-AE1** through **AQ-AE4**. The proposed emergency engine conditions of certification with operational limits and requirements are **AQ-BE1** through **AQ-BE5**. The proposed emergency engine condition of certification with monitoring, testing and analysis requirements is **AQ-CE1**. The proposed emergency engine condition of certification with recordkeeping provisions is **AQ-DE1**.

Staff is proposing to include an additional reporting provision for the proposed emergency engine in Condition of Certification **AQ-E1**. The NSCAPCD does not require the submittal of the records required in Condition of Certification **AQ-DE1** for the proposed diesel-fueled emergency engine. The NSCAPCD performs periodic inspections of the facility and can inspect the records at those times. The proposed engine records are not as easily accessed by Energy Commission staff. Staff is requesting the project owner report the hours the engine operates and purpose of operation as part of the quarterly reports. This would allow staff to verify the engines operate for emergency purposes as requested, and not for other functions.

The proposed emergency engine would be subject to the general requirements for the facility. The NSCAPCD has not yet incorporated the emergency engine's requirements into the Title V operating permit. Staff is proposing to incorporate administrative and plant-wide requirements from the NSCAPCD Title V operating permit into the conditions of certification.

Additional Proposed Condition Changes

Staff is proposing additional changes to update the air quality conditions of certification with current requirements to ensure the facility operates in compliance with all LORS. These changes include incorporating the provisions of the NSCAPCD ATC for the Grant cooling tower reconstruction and additional changes made to the NSCAPCD-issued operating permits over the years.

The NSCAPCD numbering for permit conditions does not match the Energy Commission's numbering for the conditions of certification. In addition, the NSCAPCD's operating permits for the power plant, abatement equipment, and the Title V operating permit have different numbering systems. Therefore, requirements that are included in multiple permits can have different numbers assigned. In order to provide clarity and to avoid confusion between the

NSCAPCD numbering and Energy Commission numbering, staff is proposing to re-order the air quality conditions of certification.

Staff is proposing to include the following condition subcategories: (A) Emission Limits, (B) Operational Limits and Requirements, (C) Monitoring, Testing, and Analysis, (D) Recordkeeping, (E) Reporting, (F) Administrative Requirements and (G) Plant-Wide Conditions, to organize the requirements for clarity and consistency with NSCAPCD permits. Staff is proposing to include the conditions of certification specific to the emergency engine in a subsection of each category. This way, changes to the number of conditions specific to the power plant would not result in numbering changes for the conditions specific to the engine. Additionally, this approach provides clarity in determining the requirements for the separate equipment units.

Staff is proposing to add the glossary included in the Title V operating permit to the beginning of the conditions of certification. The glossary clarifies the terms used in the conditions and are considered part of the requirements.

Staff is proposing to include the equipment list at the beginning of the condition section. Including the list at the beginning of the permit clarifies the equipment subject to air quality requirements. Staff is proposing corrections to the equipment list. The NSCAPCD operating permit for the turbine and the facility Title V operating permit include different turbine ratings. The NSCAPCD confirmed the rating listed on the Title V operating permit is the updated rating. Staff is also proposing the addition of the abatement equipment to the list. The Grant abatement equipment is already included in the NSCAPCD permits. NSCAPCD PTO #82-45b and the Title V operating permit include details on the required systems. The abatement system details were not fully known at the time of the original Energy Commission Decision. Updating the list clarifies the equipment used to achieve compliance with LORS.

Staff is proposing to change the Applicable Laws, Ordinances, Standards and Practices section to Plant-Wide Conditions. Staff is proposing to update the language to match the language in the NSCAPCD Title V operating permit. The language in this section is general language for operations at the facility. Staff is also proposing to move this section to the end of the air quality conditions of certification for consistency with the NSCAPCD permits.

Staff is proposing to rename the Requirements section to Staff Conditions. Staff is proposing to delete Condition of Certification **1-1**. Condition of Certification **1-1** is a general condition clarifying that the NSCAPCD would continue to perform all duties they usually perform for facilities holding permits outside of Energy Commission jurisdiction. The verification includes language regarding ongoing reporting requirements. The existing language in the verification is vague and does not adequately define project owner responsibilities especially considering subsequent amendments made to the reporting requirements in the NSCAPCD-issued operating permits. In addition, the Condition of Certification **1-2** verification requires the submittal of all reports relating to Unit 20 and copies of all notices. Staff is proposing the addition of Conditions of Certification **AQ-SC1**, **AQ-SC2,** and **AQ-SC3,** and the addition of a reporting requirement section to clarify ongoing reporting and submittal requirements.

Proposed Condition of Certification **AQ-SC1** includes language requiring the project owner to provide the Energy Commission with copies of all project permits issued and proposals for new project permits or existing project permit amendments. Condition of Certification **AQ-SC2** includes clarifications on submittals required to demonstrate compliance with the conditions of certification. Condition of Certification **AQ-SC2** would specify the project owner is required to submit specified reports to the CPM within the timeframes outlined in the conditions of certification.

Proposed Condition of Certification **AQ-SC3** clarifies the project owner is required to submit annual compliance reports as stated in the general provisions for the facilities compliance plan. The annual compliance report required in this section is separate from the annual compliance reports required by the NSCAPCD operating permits. The project owner would need to demonstrate compliance with all air quality conditions of certification, including staff conditions, to satisfy the requirements of the Energy Commission annual compliance report. The submittals required by the NSCAPCD include comprehensive reporting requirements to demonstrate compliance with the majority of the requirements. The proposed conditions outlines additional information needed to demonstrate compliance.

Staff is proposing to delete Condition of Certification **1-2** subpart **1**. Condition of Certification **1-2** subpart **1** includes temporary requirements for construction and beginning operations. These requirements are obsolete. Proposed Condition of Certification **AQ-F2** would address ongoing facility site right of entry.

Staff is proposing to update Condition of Certification **1-2** subpart **2** and condition 1 from the cooling tower reconstruction ATC. The emission rates included in these conditions are included in two separate conditions in the Title V operating permit. Staff is also proposing to divide the requirements into two separate conditions, Conditions of Certification: **AQ-A1** and **AQ-A2**, for consistency with the Title V operating permit requirements. The requirements are separate because the NSCAPCD and U.S. EPA-issued requirements are slightly different. The H_2S emission rate limitation is the same, just in different units of measure. However, the required monitoring frequency is different. The U.S. EPA requires only annual testing to verify compliance whereas the NSCAPCD requires more frequent testing. No changes to the emission rate limits are proposed.

Staff is proposing to update Condition of Certification **1-2** subpart **3.** Condition of Certification **1-2** subpart **3** includes equipment requirements, emission limitations, operational requirements, and allows for the use of alternative equipment to meet emission requirements. Staff is proposing to update the language and move the separate requirements into the appropriate sections of the proposed condition format.

Condition of Certification **1-2** subpart **3a** requirements would be included in the equipment description. In addition, proposed Condition of Certification **AQ-B10** specifically requires the non-condensable gas exiting the surface condenser to be ducted to the Stretford process unit.

Staff is proposing to place Condition of Certification **1-2** subpart **3b** emission limitations in new Condition of Certification **AQ-A4**.

Staff is proposing to update Condition of Certification **1-2** subpart **3c** and include the requirement in Conditions of Certification **AQ-B2** and **AQ-B10.** Condition of Certification **AQ-B2** includes secondary abatement requirements. Condition of Certification **AQ-B10** would not specifically require the use of hydrogen peroxide, but would require secondary abatement to reduce levels of hydrogen sulfide. The secondary abatement system is required to be approved by the NSCAPCD. Staff finds this abatement flexibility appropriate for the facility.

Condition of Certification **1-2** subpart **3d** allows use of an alternative to the specified secondary condensate treatment system. Staff is proposing to replace these requirements with Condition of Certification **AQ-B10.** Condition of Certification **AQ-B10** allows an alternate compliance plan to maintain the facility emission limits.

Staff is proposing the addition of Conditions of Certification **AQ-A3** and **AQ-A6**. These conditions set a H_2S emission concentration limit. The compliance verification for Condition of Certification **AQ-A3** requires continuous monitoring established in Condition of Certification **AQ-C10.** Condition of Certification **AQ-A6** does not outline specific monitoring**.** The **AQ-A6** emission concentration limit is very high. H_2S limitations are included in other, more restrictive conditions with specific monitoring procedures.

Staff is proposing the addition of Condition of Certification **AQ-A7**. Condition of Certification **AQ-A7** establishes a particulate emission concentration for non-combustion sources. Grant is not expected to have particulate emissions with concentrations close to this limit. The minimal particulate emissions from the cooling tower are limited on a mass basis in Condition of Certification **AQ-A8.** Compliance with the particulate emission limit is established with the monitoring, testing, and analysis requirements outlined in Condition of Certification **AQ-C5.** If compliance with the limit in Condition of Certification **AQ-A7** is of concern, the verification permits the NSCAPCD or CPM to request a source test to verify compliance.

Staff is proposing to update the language in Condition A2 from the cooling tower reconstruction ATC (Condition of Certification **AQ-A8**). No changes to the emission limits are being proposed.

Staff is proposing the addition of Condition of Certification **AQ-B3**. Condition of Certification **AQ-B3** includes additional operational requirements for the abatement solution to ensure Grant achieves the emission limits in Conditions of Certification **AQ-A1**.

Staff is proposing to include Condition of Certification **1-2** subpart **3** additional requirement **a**, as one of the operational limits and requirements included in Condition of Certification **AQ-B4.** Condition of Certification **AQ-B4** would also detail additional requirements to ensure compliance with all emission limits. Staff proposes to include Condition of Certification **AQ-B4** in the Operational Limits and Requirements section.

Staff is proposing to delete Condition of Certification **1-2** subpart **3** additional requirement **b**. Updated abatement requirements are proposed to replace the outdated requirement.

Staff is proposing to replace Condition of Certification **1-2** subpart **4** with Condition of Certification **AQ-B11**. Condition of Certification **1-2** subpart **4** limits unscheduled outages for Unit 20 to no more than 12 in a 12-month period. The condition also specifies criteria for

outages that would not count towards this limit. An additional criterion was added in the NSCAPCD permits. After reviewing the addition, staff is proposing to include it in Condition of Certification **AQ-B11**. Staff is also proposing to delete outdated language in the condition and replace it with the updated requirements for outage recordkeeping.

Staff is proposing to update and replace the cooling tower drift requirement in Condition of Certification **1-2** subpart **5** with Condition of Certification **AQ-B10c**.

Staff is proposing to update and move the operational requirement in Condition of Certification **1-2** subpart **6** to Condition of Certification **AQ-B1**.

Staff is proposing to update and replace the breakdown requirements in Condition of Certification **1-2** subpart **7** with Condition of Certification **AQ-F8**.

Staff is proposing to update and replace the fugitive dust requirement in Condition of Certification **1-2** subpart **8** with Condition of Certification **AQ-B5**.

Staff is proposing the addition of Condition of Certification **AQ-B6**. Condition of Certification **AQ-B6** establishes procedures to minimize emissions from fugitive leaks. These procedures are already required in NSCAPCD permits.

Staff is proposing to delete Condition of Certification **1-2** subparts **9** and **10.** These requirements are no longer needed. The proposed updated conditions of certification have current abatement requirements for the operation of Grant.

Staff is proposing to replace the testing requirements in Condition of Certification **1-2** subpart **11** with updated requirements in the proposed Monitoring, Testing, and Analysis section. The proposed testing procedures are adequate to ensure compliance with the air quality emission limitations. In addition, the updated testing requirements will have provisions for NESHAP and metal testing to ensure that public health is protected.

Staff is proposing to replace the monitoring requirements in Condition of Certification **1-2** subpart **12** with updated requirements in the proposed Monitoring, Testing, and Analysis, Recordkeeping and Reporting Sections. The proposed monitoring requirements are adequate to ensure compliance with the air quality emission limitations and operating requirements.

Staff is proposing to replace the ambient air monitoring requirements in Condition of Certification **1-2** subpart **13** and Condition of Certification **1-5** with updated requirements in Condition of Certification **AQ-C11**. Conditions of Certification **1-2** subpart **13** and **1-5** include ambient air monitoring provisions. The conditions allow the participation in GAMP to satisfy ambient air monitoring requirements. The provisions require the project owner to maintain and operate monitoring stations if the project owner chooses not to participate in GAMP. Staff is proposing to update the language in these requirements and move them into one condition.

Staff is proposing to delete Condition of Certification **1-2** subparts **14.** The project owner already obtained a PTO. As discussed, staff is proposing the addition of Condition of

Certification **AQ-SC1** requiring the project owner to provide the Energy Commission with copies of all project permits issued and proposals for new project permits or existing project permit amendments.

Staff is proposing to update and move the operational requirement in Condition of Certification **1-2** subpart **15** to Condition of Certification **AQ-B8.** Conditions of Certification **1-2** subpart **15** and **AQ-B8** require the equipment to be maintained and operated in good working order.

Staff is proposing the addition of Condition of Certification **AQ-B9.** Condition of Certification and **AQ-B9** requires the cooling tower to be maintained in good working order. In addition, Condition of Certification **AQ-B9** requires integrity inspections during plant overhauls.

Staff is proposing to replace the operational requirements in Condition of Certification **1-3** to Condition of Certification **AQ-B7.** Condition of Certification **1-3** allowed the use of alternative abatement systems with NSCAPCD approval. Condition of Certification **AQ-B7** allows the project owner to propose an Alternative Compliance Plan to meet the emission requirements. These updates will still allow the project owner flexibility in operation to meet the emission requirements.

Staff is proposing to replace the testing and reporting requirements in Condition of Certification **1-4** with updated monitoring, testing and recordkeeping requirements in the proposed Monitoring, Testing, and Analysis and Reporting sections. Conditions of Certification **AQ-C1** through **AQ-C9** establish the performance testing requirements. Condition of Certification **AQ-C10** establishes the continuous monitoring requirements. The recordkeeping provisions would be included as Conditions of Certification **AQ-D1** through **AQ-D7** and the reporting requirements would be included as Conditions of Certification **AQ-E1** through **AQ-E3.** As discussed above, staff is proposing an additional reporting requirement to be included in Condition of Certification **AQ-E1**. Staff is proposing to require the project owner to submit the engine operating hours, including the reason for use. The project owner is already required to maintain these records on site. Staff is proposing to consolidate administrative requirements into Conditions of Certification **AQ-F1** through **AQ-F12.**

CONCLUSIONS AND RECOMMENDATIONS

Energy Commission staff recommends approving the addition of the proposed emergency diesel-fueled engine. Staff recommends the addition of eleven conditions specific to the engine and five general administrative conditions:

1. Four conditions establishing emission limits, Conditions of Certification **AQ-AE1**, **AQ-AE2**, **AQ-AE3**, and **AQ-AE4;**

2. Five conditions establishing operational limits and requirements, Conditions of Certification **AQ-BE1**, **AQ-BE2**, **AQ-BE3**, **AQ-BE4**, and **AQ-BE5;**

3. One condition with monitoring, testing and analysis requirements, Condition of Certification **AQ-CE1**; and

4. One condition with recordkeeping provisions, Condition of Certification **AQ-DE1**.

Energy Commission staff recommends incorporating the five general administrative conditions in the Administrative Requirement section. These conditions overlap with the requirements in the ATC and PTO issued by the NSCAPCD for the cooling tower reconstruction.

Staff recommends restructuring and updating the existing air quality conditions of certification. Staff proposes to group the conditions of certification into sections organized by type and equipment. Staff proposes to update the conditions and requirements to meet current LORS. These updates include incorporating the current requirements in the NSCAPCD operating permits.

Staff recommends replacing vague existing reporting language with more specific updated requirements. Staff is proposing to streamline periodic reporting requirements already required by the NSCAPCD with a few additional requirements. Staff is also proposing to clarify the existing language requiring the project owner to submit to the CPM all reports relating to Grant submitted to the NSCAPCD or received from the NSCAPCD. The proposed requirements include:

1. Submitting the required quarterly and annual reports;

2. Submitting the proposed emergency diesel fired engine operating hours noting the reason for operation in the quarterly reports

3. Submitting summaries of any notices of violation and associated report(s), and notice of complaints;

4. A demonstration of compliance with the conditions of certification in the annual compliance report; and

5. Submitting proposals for project modifications and permits issued.

With the additional conditions requested by staff, the proposed changes will conform with the applicable LORS related to air quality and will not result in significant air quality impacts.

PROPOSED AND AMENDED CONDITIONS OF CERTIFICATION

The proposed conditions of certification include staff-recommended conditions of certification and the applicable NSCAPCD operating permit conditions. Staff conditions are additional conditions of certification recommended to provide CEQA mitigation for the project. Staff recommended conditions of certification make up the '**AQ-SCx**' series of conditions. Staff recommends identifying conditions of certification pertaining to the emergency diesel fired engine as the '**AQ-E**' series.

Bold underline is used to indicate new language. ~~Strikethrough~~ is used to indicate deleted language. The conditions of certification from the ATC issued by the NSCAPCD for the cooling tower reconstruction are regular text as they appeared in the Energy Commission approval for the cooling tower repair. The Energy Commission order approved these conditions into the license. Updates to the conditions contained in the cooling tower replacement ATC are indicated using **bold underline** and ~~strikethrough~~.

For convenience, a clean version of the conditions of certification reflecting the proposed changes that would become applicable to Grant is included in Appendix A.

CONDITIONS OF CERTIFICATION

~~Section 1: Air Quality~~

GLOSSARY

Abatement Solution: Iron chelate or any other District approved compound used to chemically treat hydrogen sulfide in the steam condensate

ACP: Alternative Compliance Plan. A list of all parametric monitoring data to be collected and recorded as a means of determining compliance with the H_2S emission limits.

APCO: Air Pollution Control Officer

BACT: Best Available Control Technology

CAA: The federal Clean Air Act

CCM: Continuous Compliance Monitor

CCM Availability: Hours CCM is in operation divided by the hours the primary abatement system is in service.

CEQA: California Environmental Quality Act

CFR: The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

Cold Startup: Starting the power plant from inactive status

NSCAPCD or District: The Northern Sonoma County Air Pollution Control District

U.S. EPA: The United States Environmental Protection Agency

Federally Enforceable, FE: All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR

Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain).

GPH: Gallons per hour

HAP: Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

Irregularity: Period of time a CCM monitor reading is not consistent with other verifiable data or information.

Low Flow: The flowrate below 10% of the required flowrate of the back-up caustic scrubber pumps.

Major Facility: A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity as determined by the EPA administrator.

MW: Megawatts

N/A: Not Applicable

NESHAPs: National Emission Standards for Hazardous Air Pollutants contained in 40 CFR Part 61

NSCAPCD: Northern Sonoma County Air Pollution Control District

NMHC: Non-methane Hydrocarbons

NSR: New Source Review. A federal program for preconstruction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 1, Rule 220.

PM: Total Particulate Matter

PM10: Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns.

PM2.5: Particulate matter with aerodynamic equivalent diameter of less than or equal to 2.5 microns.

Primary Pressure Gauges and Flowmeters: All pressure gauges and flow meters used for parametric compliance verification.

Prolonged Outage: The scheduled shutdown of a unit lasting longer than 1 week.

PSD: Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 1, Rule 220.

SIP: State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Ambient Air Quality Standards. Mandated by Title I of the Act.

Standby Spare: A back-up piece of equipment available for use in the event the primary piece of equipment fails.

Sulfur Compounds: Any inorganic compound containing sulfur

Sulfur Oxides calculated as Sulfur Dioxide: Oxides of sulfur normalized to the molecular weight of sulfur dioxide.

Title V: Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOG: Total Organic Gasses

TDS Total Dissolved Solids

TRS: Total Reduced Sulfur

TSS: Total Suspended Solids

Unit of measure:	**ft3 = cubic feet**	**g = grams**	**gal = gallon**	**hr = hour**
	lb = pound	**in = inches**	**yr = year**	
	ppmv = parts per million volume		**scfm = standard cubic feet per minute**	
	ppmw = parts per million weight		**psia = pounds per square inch absolute**	

VEE: Visible Emissions Evaluation

EQUIPMENT DESCRIPTION

Geothermal Power Plant, Unit 20 Consisting of:

Power Plant		
S-#	Description	Nominal Capacity
1	Steam Turbine	1,968,900 lb steam/hr maximum plant gross steam flow
2	Generator	119 Megawatt gross nameplate capacity
3	Surface Condenser with Steam Operated Two and Three Stage Gas Ejector System	1,750,000,000 BTU/Hr Design Heat Load
4	Cooling Tower, Cross-Flow, Mechanical Draft Type with 0.001% rated drift eliminators with eleven fans	168,000 GPM, Fans 200 hp each
	Two 100% Condensate Pumps	200 HP and 4,700 gpm each
	Three Auxiliary Condensate Pumps	15 HP each
	Four 25% Circulating Water Pumps	1,250 hp and 42,000 gpm each
5	Gland Seal Leak Off System	
Hydrogen Sulfide Control System		
A-#	Description	Nominal Capacity
1	Stretford Air Pollution Control System consisting of:	598 lb/hr H_2S
A	Two Venturi Scrubbers	1,120 gallons per minute (gpm) each
B	H_2S Absorber, 5' 6" diameter (D) x 38' height (H)	560 gpm
C	Two Oxidizer Tanks, 19” D x 20' H, with four Oxidizer Air Blowers each 100 HP	790 SCFM air per Blower
D	Reaction Tank, 19” D x 20' H	42,000 gallon
E	Balance Tank, 24' D x 18' H	60,000 gallon
F	Froth Tank, 12' D x 12' H	15,000 gallon
G	Caustic Tank, 12' D x 12' H	9,300 gallon
H	Condensate Tank, 4' D x 5' H	450 gallon
I	Heat Exchangers consisting of:	
a	Stretford Heater	3.0 million British thermal units per hour (mmBtu/hr)
b	Stretford Cooling Tower, 0.002% drift	5.3 mmBtu/hr
c	Auxiliary Stretford Solution Heater	1.75 mmBtu/hr
J	Main Pumps consisting of:	
a	Three Stretford Circulating Pumps	1,560 gpm each
b	Two Stretford Cooler Circulating Pumps	1,100 gpm each
c	Caustic Additive Pump	15-100 gpm

K	**Stretford Treated Gas Analyzer and Alarm System**	
L	**One Sulfur Vacuum Filter Belt**	
2	**Circulating Water H_2S Abatement System consisting of:**	
A	**Abatement Solution Storage Tank**	**5,400 gallon**
B	**One Abatement Solution Feed Pump and one Spare Pump**	**0-100 gph range**
C	**Mass Flow Meter and Flow Alarm**	
3	**Mercury Removal System consisting of**	
A	**Vapor Liquid Separator Assembly**	
B	**Mercury Adsorption Vessel**	
Emergency Engine		
S-#	**Description**	**Nominal Capacity**
S-1	**Emergency Standby Wet-Down Pump Diesel Drive Engine, Cummins Model CFP7E-F40, (Tier 3, Manufactured 2017)**	**204 HP**

- ~~TURBINE, 1,905,550 LB STEAM/HR MAXIMUM FOUR FLOW (DOUBLE-ROTOR) OR TWO FLOW (SINGLE ROTOR + "JACKSHIFT")~~
- ~~GENERATOR, 119 MEGAWATT~~
- ~~CONDENSER WITH STEAM OPERATED TWO AND THREE STAGE GAS EJECTOR SYSTEM~~
- ~~COOLING TOWER, CROSS-FLOW, MECHANICAL DRAFT TYPE WITH 0.001% RATED MIST ELIMINATROS AND WITH 11 200 HP FANS~~
- ~~TWO 100% CONDENSATE PUMPS, EACH 200 HP AND EACH 4700 GPM~~
- ~~FOUR 25% CIRCULATING WATER PUMPS, EACH 1250 HP AND EACH 42,000 GPM~~
- ~~THREE AUXILIARY CONDENSATE PUMPS, EACH 15 HP~~
- ~~CIRCULATING WATER H_2S ABATEMENT SYSTEM CONSISTING OF:~~

  ~~D. ABATEMENT SOLUTION STORAGE TABK, 5400 GALLON~~

  ~~E. ONE 100% PUMP AND ONE 100% SPARE~~

  ~~F. MASS FLOW METER AND FLOW ALARM~~
- ~~GLAND STEAM LEAK OFF SYSTEM CONSISTING OF:~~

  ~~A. GLAND STEAM SEAL LEAK OFF CONDENSER~~

  ~~B. GLAND SEAL LEAK OFF BLOWER~~

  ~~C. GLAND STEAM SEAL LEAK OFF SEPARATOR~~

~~**C. APPLICABLE LAWS, ORDINANCES, STANDARDS, AND PRACTICES**~~

- ~~Northern Sonoma County Air Pollution Control District (NSCAPCD) Rules and Regulations, including but not limited to 220, 230, 260(b), 400(a), 410(a), 420(d), 430 and 455 (a and b).~~
- ~~Clean Air Act and implementing federal regulations.~~
- ~~California Health and Safety Code, and implementing regulations.~~

G. PLANT-WIDE CONDITIONS

AQ-G1 The project owner shall comply with the following district regulations:

a. **Regulation 1 Rule 400-General Limitations**
b. **Regulation 1 Rule 410-Visible Emissions**
c. **Regulation 1 Rule 430-Fugitive Dust Emissions**
d. **Regulation 1 Rule 492 (40 CFR part 6 Subpart M)-Asbestos**
e. **Regulation 1 Rule 540-Equipment Breakdown**
f. **Regulation 2- Open Burning**
g. **40 CFR Part 82- Chlorinated Fluorocarbons**

If in the event this stationary source as defined in 40 CFR Part 68.3, becomes subject to Part 68, this stationary source shall submit a risk management plan (RMP) by the date specified in Part 68.10. As specified in Parts 68, 70, and 71, this stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification required by 40 CFR Part 70 or 71.

If in the event this stationary source as defined in 40 CFR Part 63, becomes subject to Part 63, this stationary source shall notify the NSCAPCD and CPM within 90 days of becoming subject to the regulation. The stationary source shall identify all applicable requirements of Part 63 and submit a plan for complying with all applicable requirements.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA and Energy Commission upon request. The project owner shall submit required reports to the CPM (see AQ-SC2).

~~**B. REQUIREMENTS**~~ **STAFF CONDITIONS**

~~**1-1** The NSCAPCD shall perform all duties and functions normally conducted by the APCD and shall have authority to issue a Permit to Operate, collect the permit fees, levy fines, order correction of operational or mechanical procedures or functions, and perform compliance tests. The established NSCAPCD appeal procedures shall apply for all contested NSCAPCD actions.~~

~~**Verification:** PGandE shall summarize in an annual compliance report to the CEC any significant interactions related to Geysers 20 with the NSCAPCD. PGandE shall immediately inform the CEC and ARB in writing of any formal appeals filed with the NSCAPCD.~~

AQ-SC1 **The project owner shall provide the compliance project manager (CPM) copies of any Northern Sonoma County Air Pollution Control District (NSCAPCD or District) issued project air permit for the facility. The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM.**

Verification: The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.

AQ-SC2 **The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District, U.S. EPA, or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project.**

Verification: The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.

AQ-SC3 **The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.**

Verification: The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.

PERMIT CONDITIONS:

~~**1-2** P GandE shall comply with the requirements specified in the NSCAPCD document entitled "Determination of Compliance," dated September 16, 1982.~~

~~NSCAPCD DOC Conditions:~~

~~1. This shall be your DOC for construction and temporary Permit to Operate once construction is complete. The District must be notified approximately 30 days prior to commencing construction and operating the geothermal power plant and control system. The Applicant shall allow representatives of the District to enter the premises in order to observe construction testing as is necessary to determine compliance with the rules and regulations of the District and the terms and conditions of this DOC for construction and temporary Permit to Operate. The Applicant shall notify the District when construction is completed.~~

2. In the operation of PGandE Unit 20 geothermal power plant the Applicant shall control H2S emissions to 5 lbs H_2S per million pounds of steam or 10.4 lbs H_2S/hr as well as comply with all applicable federal, state, and local laws, standards, and ordinances and the terms and condition set forth herein.

A. EMISSION LIMITS

Power Plant and Abatement Systems

AQ-A1 The maximum cumulative **The project and associated abatement systems shall comply with Regulation 1 Rule 455(b) –Geothermal Emission Standards. Total emissions of** hydrogen sulfide (H_2S) emissions from the plant shall not exceed **4.7 kilograms averaged over any one hour period** 10.4 pounds per hour (4.7 kg/hr). **Total H_2S emissions shall be the cumulative emissions to the atmosphere from the power plant and associated abatement equipment. [ref. Rule 455(b), PTO 82-45B Cond. 16.A]**

Verification: The project owner shall verify compliance by conducting a monthly source test on the cooling tower as indicated in AQ-C1, weekly determinations of the H_2S content in the main steam supply as required in AQ-C6, or as required in an approved Alternative Compliance Plan.

AQ-A2 The project owner shall not discharge or cause the discharge into the atmosphere of more than a total of 10.4 pounds per hour of H_2S from the project. [ref. PSD SFB 81-03 Cond. IX.D.]

Verification: The project owner shall verify compliance by conducting an annual performance test on the turbine exhaust system to determine the H_2S emission rate as required in AQ-C2.

3. The atmospheric emission control system described in the 82-AFC-1 shall be utilized. The system as described shall consist of the following concurrently operating major components:

   a. A surface condenser to facilitate the partitioning of H_2S into the noncondensible gas phase,

   b. A Stretford unit as specified in the AFC to reduce the H_2S concentration in the treated noncondensible gases to 125 ppm by volume or less, but in no event greater than 0.5 lb/hr.

   c. Secondary condensate treatment which includes sufficient hydrogen peroxide (H2O2) and catalyst injection and reaction time to ensure the power plant will comply with the emission limitation specified in Condition 2, and

~~d. An equally effective alternative to (c) provided the District gives prior approval.~~

AQ-A3 **The exit concentration in the process piping leading from the Stretford system shall not exceed 10 ppmv H_2S averaged over any consecutive 60-minute period unless operating under a District-approved Alternative Compliance Plan (ACP). [ref. PTO 82-45B Cond. 16.B.]**

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in AQ-C10.

AQ-A4 **The exit concentration of H_2S from the Stretford unit shall not exceed 125 ppmv or 0.5 lb/hr [ref. PSD 81-03, 82-AFC-1 Cond. 3.b]**

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in AQ-C10.

AQ-A5~~2~~ Annual emissions from the cooling tower shall not exceed, on a calendar year basis, 20.6 tons per year of hydrogen sulfide (H_2S)~~, 17.0 tons per year particulate matter less than 10 microns in diameter (PM-10) and 12.0 tons per year particulate matter less than 2.5 microns in diameter (PM-2.5).~~

Verification: The project owner shall maintain records of total H_2S as indicated in AQ-D7 and submit reports as indicated in AQ-E2. Records shall be based on required source testing in Condition AQ-C1, and an annual summation from January to December.

AQ-A6 **The project owner shall comply with Regulation 1 Rule 455 (a)-Geothermal Emission Standards; no person shall discharge into the atmosphere from any geothermal operation sulfur compounds, calculated as sulfur dioxide, in excess of 1,000 ppmv. [ref. Rule 455(a)]**

Verification: The project owner shall verify compliance by adhering to all monitoring and testing requirements.

AQ-A7 **The project owner shall operate the power plant and associated abatement systems in compliance with Regulation 1 Rule 420 (d) Non-Combustion Sources- Particulate Matter; no person shall discharge particulate matter into the atmosphere from a non-combustion source in excess of 0.2 grains per cubic foot of exhaust gas or in total quantities in excess of the amount shown in Table I. (40 lb/hr) whichever is the more restrictive condition. [ref. Rule 420(d)]**

Verification: The project owner shall perform a source test to determine compliance as requested by the NSCAPCD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-A8~~2~~ **Annual emissions from the cooling tower shall not exceed, on a calendar year basis,** 17.0 tons per year particulate matter less than 10 microns in diameter (PM-10) and 12.0 tons per year particulate matter less than 2.5 microns in diameter (PM-2.5).

Verification: The project owner shall verify compliance through monitoring as indicated in AQ-C5. The project owner shall maintain records according to AQ-D6 and AQ-D7 and submit reports as indicated in AQ-E2. Records shall be based on required sampling and an annual summation from January through the end of December.

~~In addition,~~

~~a. The emission control system specified above shall be properly winterized, and~~

AQ-B4 **All the abatement systems shall be properly winterized and maintained to ensure proper and reliable functioning. All primary pressure gauges and flow meters associated with abatement equipment shall be readily identified, maintained in good operating condition and calibrated on a quarterly basis. Alarm systems associated with abatement equipment shall be tested on a quarterly basis. Calibration and maintenance shall be performed according to manufacturer's recommendations or per the project owner's maintenance schedule as needed to maintain the equipment in good working order. [ref. PTO 82-45B Cond. 14]**

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~b. If a solids removal system is necessary as a result of solids formation in condensate, such facility shall be incorporated into the system.~~

~~4. The Applicant shall, in any consecutive 12-month period limit unscheduled outages to no more than a total of 12. The following shall not be used in computing the total outages:~~

~~a. Scheduled outages (defined as outages with 24 hours' advance notice* between steam supplier and Applicant),~~

~~b. Steam supplier induced outages (such as pressure surge, strainer plugging, etc.), and~~

~~c. Outage of less than 2.0 hours.~~

~~The Applicant shall not start-up Unit 20 until a control system, approved by the District, for stacking emissions is installed and operational by Union Oil Company of California. The outage "count" shall start seven months after initial~~

~~start-up (defined as once steam passes through the turbine) of Unit 20 in order to allow steam supplier and Applicant to gain experience with Unit 20. A violation of the above performance standard is considered a violation of this condition.~~

~~The Applicant shall, on a monthly basis, provide the District with the number of outages, cause of each outage, and the balance or outages for the past 12 months. The Control Officer may change the frequency of reporting at the request of the Applicant. The Applicant shall inform the District and CEC when the total number of outages reaches 12 or greater, within 5 working days. The Applicant shall allow the District and CEC to inspect all operating logs to verify the total number of outages. These requirements are in addition to the applicable requirements of Rule 540.~~

~~The Applicant shall submit by January 15, 1983, to the District and CEC a preliminary "plan" on how the Applicant plans to achieve the outage standard set forth above. This good faith effort shall consider those measures outlined in the next paragraph and shall contain an explanation as to why a newer approach will fleet the outage standard when compared to the current operations. Other than the submittal date this preliminary "plan" shall be nonbinding.~~

~~In the event the Applicant is not able to meet the standards specified above, the following shall be required. Applicant shall prepare and submit a revised "plan" to the Control Officer, within 30 days of the end of the month in which the outage limit is exceeded to achieve the outage standards set forth above. At a minimum, the measures to be considered in the "plan" shall include: operational protocol, improved coordination of the power plant and steam field operations, improved alarming and control systems, increased duration of manned operation of the power plant, improved preventative maintenance, and design modifications as may be indicated by the operating histories of Unit 20 and other similarly designed PGandE units.~~

~~Within 30 days of receipt of the "plan" the Control Officer shall determine whether the "plan" is satisfactory and, if so, shall approve the "plan." Upon approval of such "plan" it shall supercede and become a part of the terms and conditions of the DOC and shall be incorporated in any certification and any Permit to Operate issued for Geysers Unit 20 at this site.~~

~~(The intent of this Condition 4 is for the Applicant to reduce by some 45 percent over the life of the proposed unit, the total steam stacking resulting from unscheduled power plant outages when compared to the current practices and history of similar Units 19 and 14 from 1979 through 1981. Although one method to achieve such a reduction would be the use of a turbine bypass, the Applicant is confident that alternate measures as mentioned for inclusion in the "plan" will be equally effective. In any event the net effect will be reduced steam stacking to the atmosphere.)~~

AQ-B11 **The project owner shall, in any 12 month period, limit unscheduled outages for the project to no more than a total of 12. The following shall not be used in computing the total outages.**

a. **Scheduled outages (defined as outages with 24 hour advance notice between the steam supplier and project owner, except in the case of project outages resulting from an abundance of hydropower in which case a scheduled outage shall be defined as one hour notice).**
b. **Steam supplier induced outages (such as pressure surge, strainer plugging, etc.).**
c. **Outages of less than 2 hours in duration.**
d. **Outages which do not cause steam stacking.**

A violation of the above performance standards is considered a violation of this condition.

The project owner shall have on file with the District an approved operating protocol describing the methods that will be used to meet the 12 outages in 12 consecutive months performance standard. The protocol must include a description of the operational procedures between the steam supplier and project owner, project owner's operational procedures, and equipment to meet the above standard. The terms and requirements of the protocol may be modified by the Air Pollution Control Officer and CPM for good cause upon written request from the project owner.

The project owner shall allow the District and CPM to inspect all operating logs to verify the total outage hours. These requirements are in addition to the applicable requirements of rule 540.

In the event the project owner is not able to meet the standards specified above, the following shall be required:

The project owner shall prepare and submit a revised "plan" to the Air pollution Control Officer and CPM, within 30 days of the end of the month in which the outage limit was exceeded, to achieve the outage standards set forth in this permit condition. At a minimum, the measures to be considered in the "plan" shall include: improved coordination of the power plant and steam field operations, improved alarming and control systems, increased duration of manned operation of the power plant, improved preventative maintenance and design modifications, retrofit of a 100% of steam flow turbine bypass, and retrofit of a 50% of steam flow turbine bypass. In evaluating measures to be taken to prevent future exceedances of the outage standard, outages of less than 2 hours shall be counted. This "plan" shall also be submitted to EPA for approval if the outage standard is exceeded.

Within 30 days of receipt of the "plan" the Air Pollution Control Officer shall determine whether the "plan" is satisfactory and, if so, shall approve the "plan". Upon approval, the revised "plan" shall supersede the old plan and become a part of the terms and conditions of this permit.

[ref. PSD SFB 81-03 Cond. IX.C., PT0-82-45A Cond.18]

Verification: The project owner shall submit revised plans to the CPM for approval. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~5. The Applicant shall design and install cooling towers to have a drift rate of no more than .002 percent of the circulation water flow as described in the AFC.~~

~~6. The off-gas vent to the atmosphere with untreated vent gas shall be used only during upset/breakdown situations. During periods of cold start-ups, the H_2S vent gas treatment system shall be operated to preclude the release of untreated vent gases to the atmosphere unless it is required for human or equipment safety.~~

Emergency Engine

AQ-AE1 Visible particulate emissions shall not exceed an opacity as to obscure an observer's view to a degree equal to or greater than Ringelmann 2.0 or 40 percent opacity for a period or periods exceeding 3 minutes in any one hour [ref. PTO 17-10 Cond. B1]

Verification: The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the NSCAPCD or CPM, The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE2 Particulate emissions shall not exceed an emission rate of 0.15 g/bhp-hr. [ref. PTO 17-10 Cond. B2]

Verification: The project owner shall verify compliance according to Condition AQ-CE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE3 Combined non-methane hydrocarbons and nitrogen oxide emissions shall not exceed an emission rate of 3.0 g/bhp-hr. [ref. PTO 17-10 Cond. B3]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE4 Carbon monoxide emissions shall not exceed an emission rate of 2.6 g/bhp-hr. [ref. PTO 17-10 Cond. B4]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

B. OPERATIONAL LIMITS AND REQUIREMENTS

~~**1** The permit holder shall install drift eliminators rated at 0.001 % or less at the cooling tower.~~

Power Plant and Abatement Systems

AQ-B1 The project owner shall not operate the plant unless untreated vent gasses are vented to the Stretford Air Pollution Control System. The condensate H2S abatement chemical feed system and the Stretford abatement system shall be kept in good working order and operated as necessary in order to limit H_2S and particulate emissions on a continuous basis from the power plant as specified in conditions AQ-A1, AQ-A2, AQ-A3, AQ-A4, and AQ-A6. [ref. Rule 240.d, PTO 82-45A Cond. 18, PSD SFB 81-03, 82-AFC-1 Cond. 15]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B2 The secondary abatement solution storage tank shall hold a minimum of 1,000 gallons of abatement solution at all times when the plant is in operation. All continuously operated abatement solution feed pumps shall have a standby spare available, a readily accessible flowmeter readable in appropriate units and equipped with alarms signaling no or low flow. Flowmeter accuracy shall be plus or minus 10% of flow. [ref. PTO 82-45A Cond. 18]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B3 Except for justifiable reasons during performance testing or under operation of an ACP, for which the project owner has received prior District written approval, the circulating water shall be kept to the following specification: Circulating water iron chelate (abatement solution) concentration shall be maintained at or above the ppmw concentration recommended in the power plant operating guidelines as necessary to abate H_2S emissions from the power plant to the emission limit specified in Condition AQ-A1. [ref. PTO 82-45A Cond. 19]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~7. The Applicant shall comply with all appropriate sections of Rule 540. All breakdown information and responses shall be public record when not in conflict with Public Records Rule 150.~~

AQ-B5 ~~**8.**~~ All ~~construction~~ areas in the immediate vicinity and under the ~~Applicant's~~ **project owner's** responsibility ~~for the power plant during the construction phase~~ shall be properly treated to **control fugitive dust.** ~~meet the requirements of Fugitive Dust Rule 430~~ .**[ref. PTO 82-45B Cond. 17]**

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B6 Fugitive Leaks

C. Non-condensable gas leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained, and repaired to prevent the emission of non-condensable gases to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices, for the purpose of stopping or reducing leakage to the atmosphere.

Non-condensable gas leaks shall not: (i) exceed (as measured within 1 cm of such leak) 1,000 ppmv H_2S nor 10,000 ppmv methane nor (ii) exceed emission limits of Rule 455. Such leaks shall be repaired within 24 hours, unless the leak is from essential equipment. If the leak is from essential equipment, the leak must be minimized within 24 hours using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices.

D. Steam and Condensate leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of steam and condensate to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere. Valves, flanges, drip legs,

threaded fittings, and seals on pipelines shall be maintained to prevent or reduce the emission of steam and condensate to the atmosphere as noted below:

Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minutes. Liquid leak rates in excess of 20 ml in 3 minutes shall be repaired within 15 calendar days, excepting those leaks from essential equipment. If the leak is from essential equipment, the leak must be minimized within 15 days using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices

The project owner shall check the power plant for fugitive leaks at least once per quarter. [ref. PTO 82-45B Cond. 17]

Verification: The project owner shall keep records according to Condition AQ-D5. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~9. The Applicant will be licensed on the basis of a hydrogen peroxide/catalyst and Stretford/surface condenser system. However, the Applicant may propose to use other means to comply with the hydrogen sulfide emissions limitation of Condition 2. The Applicant shall submit, no later than two years* prior to the scheduled commercial operation, the conceptual design of the finally selected abatement system if different than proposed in the AFC along with supporting documents, including data demonstrating compliance with the emissions limitation of Condition 2. Such data shall be submitted to the CEC, the ARB, and the District within 60 days prior to the date intended for commencement of the final design of the proposed system. Final design shall not proceed until the District determines that the material submitted is adequate to demonstrate compliance with the H_2S emissions limitation. The District shall render a determination within 30 days following the receipt of the material from the Applicant.~~

~~10. At least 60 days prior to scheduled commercial operation, the Applicant shall submit to the District, for approval, a detailed plan for testing the performance of the PGandE Unit 20 power plant H_2S abatement system at normal full load~~

operation. A copy of the plan shall also be sent to the ARB for comment. Normal full load for this purpose is defined as operating at a minimum of 90 percent of the 2,000,000 lbs/hr steam flow capacity. The District shall approve, disapprove, or modify the plan within 30 days of receipt from the Applicant. Within sixty (60) days after achieving the highest practical production rate of the geothermal generating unit but no later than 180 days after initial start-up of the plant, the Applicant shall conduct performance tests on the power plant.

11. The Applicant shall conduct performance tests as delineated in CEC Public Health Compliance Plan Condition 5 (dealing with well test steam constituent analysis). Test results shall be furnished to the district.

12. (Intent - The District fully believes H_2S emissions from power plants should be continuously monitored for compliance purposes because of the changing H_2S content of geothermal steam due to its nonhomogeneity or due to steam supplier switching steam supplies. However, specific equipment has not been yet adapted to geothermal environment to a fully satisfactory extent. Therefore, the Applicant shall pursue a program to develop suitable monitoring, but in the meanwhile they shall be required to implement provisions of Part A of this condition below.)

A. Until such time as a continuous emission compliance monitor is installed, the Applicant shall be held responsible for the following commitments relative to a computer based alarm system (CBAS):

1. Applicant shall install and have operational commencing as of unit start-up a computer based system which monitors the following critical equipment on or about the Stretford facility and the secondary abatement:

a. Position of the Stretford bypass valve,

b. Circulation of the Stretford chemicals,

c. Operation of oxidizer blowers, and

d. Chemical feed pumps of secondary system.

2. During operations this system shall detect, alarm, and log the failures or operation of the above equipment or systems which could lead to a significant loss of abatement. This CBAS system shall be used to initiate an investigation by plant operators, manual H_2S concentration tests of the Stretford exhaust, and/or corrective actions as necessary. Such investigation, testing, or corrective action shall be logged by the plant

operator. The computer system shall be maintained, and any failures or alarms shall be logged, along with the actions taken. The Control Officer will determine the applicability of this system as a monitoring system relative to the reporting requirements of District Rule 540.

3. Plant personnel will also normally inspect the operating Stretford and secondary abatement facilities once per shift, checking for proper operation. Stretford solution chemistry and off-gas H_2S concentration will be checked weekly when the system is in operation.

4. Computer system alarm logs and operator logs showing normal checks and abnormal or alarm conditions, responses, and corrective actions shall be available for inspection on site upon request.

5. Quarterly reports on the performance of the CBAS shall be submitted to the APCD.

B. Until such time that a continuous emission monitoring system is installed or in the event that the Control Officer determines that monitors meeting the specifications below are not commercially available within 1 year after initial start-up, the Applicant shall conduct source testing no less than once every 30 operating days to ensure compliance with (DOC) conditions. Part A of this condition is to be in effect commencing upon start-up. The testing procedures to determine compliance with DOC conditions shall be submitted 90 days prior to start-up for District approval. A log of such testing shall be maintained and made available to the District upon request.

C. A summary of monitoring data or source test data is to be forwarded to the District every 30 days. This summary is subject to the requirements of Rule 455(c).

D. The Applicant shall submit within a reasonable period of time (target date approximately January 14, 1983) to the district for approval, a proposal which outlines an "in house" development program for continuous compliance H_2S monitoring devices to meet the following requirements:

1. H_2S emissions shall be monitored by measuring the following parameters: (a) total process mass or volume flow rates and (b) H_2S concentrations within those process streams.

2. The following process streams are to be sampled: (a) the treated gas outlet of the Stretford unit, (b) the main Condenser condensate prior to any secondary abatement chemical injection or the condensate

upstream or the cooling tower after chemical injection, and (c) the cooling tower. It is allowed that items (c) can serve in lieu of (a) and (b), therefore, the Applicant can pursue item (c) first. However, if (c) proves infeasible, than items 2(a) and (b) would have to be pursued as a means of overall unit compliance monitoring.

3. As a development goal the H_2S monitoring devices should strive for a relative accuracy or +/-10 percent of full scale (as compared to a standard reference method or reference analysis acceptable to the District), an average weekly calibration drift of +/-10 percent (assumes weekly calibrations averaged over a 30 day period), and provide over a 30 day period), and provide measurements at least every 15 minutes. Monthly data capture should be 80 percent or better or the operational hours, and the monitor should not require more than 16 hours of maintenance per month. The Control Officer may for good cause change the specifications above.

4. Flow rate measuring devices must have accuracies of +/-5 percent at 40 percent to 120 percent of total flow rate and calibrations must be performed as necessary and at least quarterly. The Control Officer may for good cause change the specifications above.

5. All monitoring records and calibration information must be made readily accessible to District staff upon request.

Once an "in-house" program has met District approval it shall be implemented.

E. Participation by the Applicant in a cooperative continous emission monitor development program will be deemed acceptable in place of Part 12.D above provides the goals and requirements set forth are the same as those identified in 12.D.1 through 12.D.4 and it is submitted within a reasonable period of time (target date approximately January 14, 1983). Such a cooperative program must first meet NSCAPCD approval prior to it being implemented. Since such a venture willing to offer its assistance in obtaining relief from any applicable time restrictions provided the Applicant and cooperative partners demonstrate adequate commitment to such a program.

F. Within 60 days after completion of the program described in 12.D or 12.E, Applicant shall submit a final report to the District on the availability of acceptable continuous monitors which satisfy criteria 12.D.1 through 12.D.4. Within 30 days of receipt of the report, the Control Officer shall determine

~~whether or not such monitors are available and should be installed at Unit 20.~~

~~G. Any dispute relative to this Condition 12 may be heard before the Hearing Board of the NSCAPCD and such resulting decision shall be honored.~~

~~13. Participation by the Applicant in the Geysers Air Quality Monitoring Program (GAMP) shall be deemed to satisfy all the ambient air quality monitoring requirements of the DOC. However, (1) if the Applicant does not participate in such program or (2) if the Applicant does participate and GAMP is completed prior to completion of the equivalent of one full year of ambient monitoring after Unit 20 begins initial startup, then the Applicant can be required by the Control Officer to install and operate one H_2S/meteorological monitoring station/TSP High Volume station at a location approved in advance by the Control Officer for a period not to exceed two consecutive years beginning one year prior to the power plant's initial start-up (July 1985 unless the Applicant has bonafide reasons based upon construction delays). Credit for participation in GAMP shall be given toward the two years requirement for any time overlaps relative to the initial start-up time.~~

~~14. Within 90 days after the scheduled commencement or commercial operation the Applicant shall file with the District an application for a Permit to Operate together with all appropriate information.~~

~~15. Once construction has been completed and operation has commenced all equipment must be properly maintained and operated and kept in good working condition at all times.~~

~~**Verification:** PGandE shall provide the CEC with copies of all reports relating to Unit 20 submitted to the NSCAPCD and copies of all notices relating to Unit 20 received from NSCAPCD.~~

~~**1-3** PGandE shall obtain written approval from both NSCAPCD and CEC before using any abatement systems other than the hydrogen peroxide/catalyst and Stretford/surface condenser, as approved in the CEC certification, to control H_2S emissions.~~

~~**Verification:** PGandE petition the CEC for an amendment to the CEC certification. CEC in consultation with the NSCAPCD shall issue a written approval for any changes granted prior to beginning construction of any alternative H2S emissions abatement system..~~

AQ-B7 Alternative Compliance Plan

A. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining

compliance with all applicable emission limits of Conditions AQ-A2, AQ-A4, AQ-A6, and AQ-A7. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO and CPM for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions AQ-A2, AQ-A4, AQ-A6, and AQ-A7. The ACP shall list the specific operating conditions the ACP will supersede.

B. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions AQ-A1 and AQ-A3. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO and CPM for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO-approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions AQ-A1 and AQ-A3. The ACP shall list the specific operating conditions the ACP will supersede.

Verification: The project owner shall submit any ACP to the CPM for review and approval. The project owner shall submit the District's approval, disapproval, or plan modification to the CPM.

AQ-B8 All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this license shall at all times be maintained in good working order. The equipment shall be operated in a manner necessary to meet all emission limits of the permit. [Ref. Rule 240(d), PSD SFB 81-03 Cond. III]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B9 The cooling tower shall be maintained in good operating condition. The project owner shall conduct an integrity inspection of the cooling tower during each scheduled plant overhaul and carry out any repairs necessary to correct all deficiencies encountered. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B10 The project owner shall operate and maintain the following air pollution control equipment::

a. The non-condensable gas stream exiting from the surface condenser shall be ducted to an operating Stretford process unit.

b. Condensate exiting from the surface condenser shall be treated as necessary to reduce the levels of dissolved hydrogen sulfide. The project owner shall use a secondary abatement system authorized by the NSCAPCD to accomplish this reduction.

c. The project owner shall have installed drift controls on the power plant cooling tower to limit drift losses to 0.002 percent or better of the circulating water mass, thus minimizing emissions of particulate matter.

[ref. PSD SFB 81-03 Cond. IX.B.]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-BE1 S-1, emergency standby wet-down pump diesel drive engine, shall only be used because of a failure or loss of all or part of normal electrical power service, except for testing and maintenance as defined in CA HSC 93115.4 (30). [ref. PTO 17-10 Cond. B2]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE2 S-1, emergency standby wet-down pump diesel drive engine, shall be equipped with a non-resettable hour counting meter to indicate the number of hours the engine is operated. [ref. PTO 17-10 Cond. C2]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE3 S-1, emergency standby wet-down pump diesel drive engine, shall be operated exclusively on California Air Resources Board (CARB) Diesel Fuel. [ref. PTO 17-10 Cond. C3]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE4 S-1, emergency standby wet-down pump diesel drive engine, shall be operated according to manufacturer specifications [ref. PTO 17-10 Cond. C4]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE5 Total operating hours used for testing and maintenance of S-1, emergency standby wet-down pump diesel drive engine, shall not exceed 50 hours in any consecutive 12-month period. The total hours of operation do not include use during emergencies. [ref. PTO 17-10 Cond. A1]

Verification: The project owner shall maintain records according to Condition AQ-DE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

C. MONITORING, ~~AND~~ TESTING, AND ANALYSIS

Power Plant and Abatement Systems

~~**1-4** DOC Condition 10 requires submittal of a detailed plan for testing the performance of the Unit 20 H2S emissions abatement systems at normal full load operation. If continuous H_2S monitors are available as described in DOC Condition 19, PGandE shall ensure that the detailed plan includes the following test parameters: (1) the test data shall reflect a minimum of 80 percent of the gross electricity-generating capacity, and (2) in the event that at least 30 days of qualifying data could not be obtained during the 90-day test period specified in the Determination of Compliance, PGandE shall continue to collect test data until the required information has been obtained. The application for a Permit to Operate shall be filed as specified in DOC Condition 14.~~

~~**Verification:** PGandE shall provide the CEC with a copy of the detailed plan submitted to the NSCAPCD for review and approval and a copy of the plan as approved. In addition, if the test period extends beyond the initial 90 days after commercial operation, PGandE shall file a supplementary report with the CEC and the NSCAPCD which reflects all the results of the performance test.~~

~~**1** Within 30 days of start-up the permit holder shall conduct a performance evaluation of the new cooling tower, including particulate matter and H_2S emission rates.~~

AQ-C1 The project owner shall, on a monthly basis, conduct a source test of the cooling tower to determine the H_2S emission rate to verify compliance with condition AQ-A1. A mass balance determination of total H_2S to the cooling tower based on measured operating conditions may be used to document that the worst case possible H_2S emissions are less than the emission limit of the plant or District Method 102 shall be utilized to determine the H_2S emission rate. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including periods when accessing the cooling tower is not possible, while maintaining compliance with all applicable emission limits of Condition AQ-A1. The ACP

shall list operating parameters such as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO and CPM for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO-approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Condition AQ-A1. The ACP shall list the specific operating conditions the ACP will supersede. [ref. PTO 82-45A Cond. 22]

Verification: The project owner shall submit source test results according to Condition AQ-E1. The project owner shall submit any ACP to the CPM for review and approval. The project owner shall submit the District's approval, disapproval or plan modification to the CPM within 5 days of receipt.

AQ-C2 The project owner shall conduct or cause to be conducted performance tests on the turbine exhaust system to determine the H_2S emission rate to verify compliance with Condition AQ-A2. Performance tests shall be conducted in accordance with Northern Sonoma County APCD Method 102, unless otherwise specified by the U.S. EPA. The project owner shall furnish the Northern Sonoma County APCD, the ARB, and the U.S EPA, a written report of such tests. All performance tests shall be conducted at the maximum operating capacity of the plant. Performance tests shall be conducted at least on a yearly basis and at such times as shall be specified by the U.S. EPA. [ref. PSD SFB 81-03 Cond. 1X.E]

Verification: The project owner shall submit source test results according to Condition AQ-E1.

AQ-C3 The project owner shall provide platforms, electrical power, and safe access to sampling ports to enable representatives of the District, ARB, and EPA to collect samples from the main steam supply, treated and untreated condensate, circulating water upstream of the cooling tower, cooling tower stacks, untreated and treated non-condensable gas stream to and from the Stretford abatement facility, any off gas bypass vents to the atmosphere and any Stretford tanks or evaporative coolers. [ref. PTO 82-45B Cond.11, PSD SFB-81-03 Cond. 1X E.3]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

~~**2** The operator shall submit to the District, for prior approval, a performance evaluation test plan at least 15 days prior to conducting the tests.~~

AQ-C4 The project owner, as requested by the Air Pollution Control Officer or CPM, shall conduct a requestor-approved performance test for particulate matter (PM), H_2S, other species (i.e. benzene, mercury, arsenic, TRS, mercaptans,

radon, other nitrogen compounds (amines) and compounds listed under NESHAPS and/or AB2588 from the power plant evaporative cooling tower and/or the Stretford evaporative cooling tower. Upon written request, the project owner shall submit to the requestor at least 45 days prior to testing a detailed performance test plan. The requestor shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The project owner shall incorporate the requestor's comments or modifications to the plan which are required to assure compliance with the requestor's regulations. The Air Pollution Control Officer shall be notified 15 days prior to the test date in order to arrange for an observer to be present for the test. The test results shall be provided to the District and CPM within 45 days of the test date unless a different submittal schedule is approved in advance. [ref. PTO 82-45a Cond. 9 and 10]

Verification: The project owner shall conduct performance tests as requested by the Air Pollution Control Officer or CPM. The project owner shall submit results to the CPM within 45 days if the test was requested by the CPM or in the quarterly reports according to Condition AQ-E1.

AQ-C5~~3~~ Compliance with the particulate mass emission limitation **shall be estimated using calculations** ~~from the cooling tower shall be~~ based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.001 percent **for the main cooling tower and 0.005% for the Stretford cooling tower,** multiplied by the circulating water rate **or Stretford solution circulating rate,** and total dissolved solids (TDS) and total suspended solids (TSS). A circulating water sample shall be collected and analyzed for TDS and TSS on a monthly basis. **[ref. PTO 82-45A Cond. 21]**

Verification: The project owner shall maintain records according to Conditions AQ-D6 and AQ-D7 and submit reports as indicated in Condition AQ-E2.

AQ-C6 Main steam supply H_2S concentrations shall be determined minimally on a weekly basis and any additional times as required by the operating protocol or ACP. [ref. PTO 82-45A Cond. 19]

Verification: The project owner shall maintain records according to Conditions AQ-D6 and AQ-D7 and submit reports as indicated in Condition AQ-E1 and AQ-E2.

AQ-C7 The project owner shall perform an abatement solution concentration test of the cooling tower circulating water once per operating shift when abatement solution is necessary in order to achieve compliance with Condition AQ-A1. The testing equipment shall be kept calibrated per the manufacturer's specifications. [ref. PTO 82-45A Cond. 19]

Verification: The project owner shall maintain records according to Conditions AQ-D6 and AQ-D7 and submit reports as indicated in Conditions AQ-E1 and AQ-E2. The

project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C8 Instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations shall receive District approval prior to use. Test plans shall be submitted for District approval of instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations. [ref. Rule 240(d)]

Verification: The project owner shall submit any District approvals to the CPM in the quarterly reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C9 All sampling protocols, chemical feed charts, targets and operational guidelines for using said charts and targets, necessary to abate H_2S emissions from the power plant to the emission limits specified in Conditions AQ-A1 and AQ-A2 must be developed using good engineering judgment and supporting data. The APCO or CPM may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO or CPM determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions AQ-A1 and AQ-A2, the APCO or CPM shall require the project owner to develop revised protocols, feed charts, targets and guidelines. [ref. Rule 240(d)]

Verification: The project owner shall submit any revised protocol, feed charts, targets and guidelines to the CPM in the annual reports required by Condition AQ-E2. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C10 Continuous Compliance Monitoring (CCM)

The project owner shall operate a continuous compliance monitor capable of measuring the concentrations of H_2S in the exhaust stream from the Stretford absorber in order to verify compliance with Conditions AQ-A1 and AQ-A3. The monitoring system must alarm the operator when H_2S in the treated gas is in excess of 10 ppmv. The project owner shall respond to the alarm with appropriate mitigation measures. Mitigation measures taken shall be logged in the power plant abatement log book. In the event H_2S concentrations are in excess of 10 ppmv and the range of the CCM is exceeded, the project owner shall test for H_2S using an approved alternative method (ex Draeger tester, wet chemical tests) once every hour during the excess. The monitor shall have a full range of at least 50 ppmv. The monitor shall meet the following operational specifications: an accuracy of plus or minus 10% of full scale, provide measurements at least every 3 minutes, provide a continuous strip chart record or a District-approved alternative, and provide monthly data capture of at least 90%. The District must be notified when the concentration of H_2S exceeds the hourly average limit of 10

ppmv.

A one-point calibration shall be performed at least once per week. A three-point calibration shall be performed at least once per quarter.

The Air Pollution Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the project owner as long as emissions from the power plant do not exceed the "total" H2S emission limitations of Condition AQ-A1. Written notification from the Air Pollution Control Officer must be received by the project owner prior to any change in monitoring specifications.

[ref. PTO 82-45B Cond. 19]

Verification: The project owner shall provide the District and CPM with a summary of the monitor's availability and any irregularities that occurred with the continuous monitor. The summary shall be provided to the CPM in the quarterly reports required by Condition AQ-E1.

~~**1-5** NS CAPCD can require PGandE to install and operate one ambient monitoring station (with TSP) for H_2S for a one-year period before initial operation and one year after initial operation in a manner to be specified by the NSCAPCD in consultation with LCAPCD, ARB, and CEC. To meet this requirement, PGandE can participate in the Geysers Air Monitoring Program (GAMP) if it is implemented. If the GAMP ends before completing the equivalent of the above, the NSCAPCD can require PGandE to continue monitoring to meet the requirement.~~

AQ-C11 Ambient Air Monitoring

The project owner shall maintain and operate one H_2S/meteorological monitoring station, PM10 high-volume station at a location approved in advance by the Air Pollution Control Officer for the life of the facility. The project owner shall install and operate additional monitoring stations, such as a PM2.5 monitoring station, if required by the Air Pollution Control Officer, Energy Commission, California Air Resources Board or U.S. EPA. Participation by the project owner in a joint air monitoring program, such as the Geysers Air Quality Monitoring Program (GAMP), shall be deemed to satisfy all ambient air quality monitoring requirements of this license provided the term of monitoring is equivalent. The Air Pollution Control Officer can alter, suspend, or cancel this requirement provided no ambient air quality standard applicable to this facility is threatened or that sufficient other monitoring is available by the District, Lake County AQMD or other third party. [ref. PTO 82-45A Cond. 22, PSD SFB 81-03, 82-AFC-1 Cond. 13.]

Verification: ~~If PGandE participates in GAMP, PGandE shall notify the CEC.~~ If **the project owner** ~~PGandE~~ does not participate in GAMP, **the project owner** ~~PGandE~~ shall submit to the NSCAPCD, ARB, and ~~CEC~~ **CPM**, for their review **and approval**, a detailed ~~H_2S~~ ambient monitoring plan ~~at least 60 days before the monitoring begins~~.

Emergency Engine

AQ-CE1 At any time as specified by the Air Pollution Control Officer or CPM, the operator of this source shall conduct a requestor-approved source test to determine NOx and particulate emissions from the diesel powered generator. The test results shall be provided to the District and CPM within 30 days of the test [ref. PTO 17-10 Cond. D1]

Verification: The project owner shall perform an approved source test upon request of the District or CPM. Test results shall be submitted to the District and CPM.

D. RECORDKEEPING

Power Plant and Abatement Systems

AQ-D1 All records and logs shall be retained for a period of at least 5 years from the date the record or log was made and shall be submitted to the NSCAPCD or CPM upon request.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D2 The project owner shall maintain a weekly abatement solution inventory log available for on-site inspection. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D3 The project owner shall maintain a strip chart or other District-approved data recording device of H_2S readings measured by the CCM. All measurements, records, and data shall be maintained by the project owner for at least five (5) years. The project owner shall report all exceedances of Condition AQ-A3 in the quarterly report as required in AQ-E1. The report shall include a description of all measures taken to bring the Stretford system back into compliance with Condition AQ-A3. The project owner shall include in the report a copy of the output from the H_2S CCM or alternative District-approved data during the upset condition. [ref. Rule 240(d)]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D4 The project owner shall maintain copies of the source test results as required in Condition AQ-C1 for a minimum of 5 years. [ref. PTO 82-45A Cond. 22]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D5 Fugitive Leak Records

A. Any non-condensable gas leak in excess of the limitations of Condition AQ-B6 which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition AQ-B6 and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

B. Any valve, flange, drip leg threaded fitting or seal on a pipeline or condensate collection system with a leak in excess of the limitations of Condition AQ-B6 which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition AQ-B6 and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

[ref. PTO 82-45A Cond. 20]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall report all deviations to the CPM as required in Condition AQ-F4. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D6 The project owner shall maintain records detailing:

a. Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action.

b. The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions AQ-A3, and AQ-A4.

c. Fugitive steam and non-condensable gas emission source inspections, leak rates, repairs, and maintenance.

d. Total dissolved solids and total suspended solids in the circulating water.

[ref. Rule 240 (d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D7~~1~~ ~~In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following information summarized on a monthly basis~~ **The project owner shall maintain records detailing:**

a. **Hours of operation**

b. **Types, concentrations, and amounts of chemicals used for Stretford absorbing solution and used for condensate treatment, including target levels for abatement solution concentration in the circulating water.**

c. **A summary of any irregularities that occurred with a continuous compliance monitor.**

d. **The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions AQ-A1, and AQ-A2.**

e. **Periods of scheduled and unscheduled outages and the cause of the outages.**

f. **Time and date of all pump and flowmeter calibrations required by this permit.**

g. **Time and date of all alarm system tests**

h. **Leaking equipment awaiting repair; time and date of detection and final repair.**

i. ~~a.~~ Total H2S, PM-10 and PM 2.5 annual emissions to date**.**

[ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-DE1 In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District-approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following

information summarized on a monthly basis:

a. Total engine operating hours

b. Emergency use hours of operation

c. Maintenance and testing hours of operation.

d. Type and amount of fuel purchased.

[ref. PTO 17-10 Cond. E1]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request. The project owner shall report hours of operation, identifying the reason for operation, to the CPM in the quarterly reports required by Condition AQ-E1.

E. REPORTING

~~**2** Within 30 days of conducting the performance tests pursuant to Condition A. I. The permit holder shall submit to the District the test results from the performance tests as outlined in the performance evaluation plan.~~

AQ-E1 A quarterly report shall be submitted to the District which contains the following information:

a. CCM availability for the given quarter.

b. Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action taken.

c. Time and date of any monitor indicating an hourly average exceedance of 10 ppmv of H_2S.

d. Source test results.

e. Steam stacking events.

Additional requirement for reports submitted to the Energy Commission:

f. Hours of operation for the emergency engine. The hours of operation shall be reported according to total use, emergency use, and maintenance and testing.

The quarterly report shall be submitted to the District and CPM within 30 days of the end of each quarter. The reports are due by May 1, August 1, November 1 and February 1 for each corresponding quarter.

[ref. Rule 240(d)]

Verification: The project owner shall submit the quarterly reports to the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E2 An annual report shall be submitted to the District and CPM which contains the following information:

a. **Average mainsteam H_2S and ammonia concentrations.**
b. **Average total dissolved and suspended solids and average flowrate of the cooling tower water.**
c. **Annual ammonia emissions.**
d. **Gross megawatt hours generated.**
e. **Steaming rate, gross average (gross steam flow; lb/ gross MW).**
f. **Update to any changes in operating protocols used to determine plant chemical feed charts and targets; calibration and maintenance programs.**
g. **Total organic gasses emitted as methane.**
h. **Hours of plant operation.**
i. **Annual carbon dioxide equivalent (CO_2e) emissions**
j. **Annual H_2S, PM10 and PM2.5 emissions.**

The annual report shall be submitted to the District within 45 days of the end of each calendar year.

[ref. Rule 240(d)]

Verification: The project owner shall submit the annual reports to the CPM within 45 days of the end of each calendar year or another timeframe approved by the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E3 The project owner shall submit reports to the California Air Resources Board in accordance with the provisions of CCR Title 17, Division 3, Chapter 1, Subchapter 10, Article 2, Regulation for Mandatory Reporting of Greenhouse Gas Emissions.

Steam Stacking

The project owner shall, on a quarterly basis, provide a written report to the District and CPM with the outage events, cause of each outage, and the balance of events for the year. The Air Pollution Control Officer may change the frequency of reporting. The project owner shall inform the District and CPM when total outages have reached 12 in any consecutive 12 month period. The District and CPM shall be notified within 5 days of the 12th outage.

Verification: The project owner shall provide a statement of compliance in the annual report regarding the submittal of greenhouse gas emissions reporting to the ARB. The greenhouse gas emissions report is not required to be submitted to the CPM in the periodic compliance reports. The project owner shall make the reports available to the CPM upon request. If steam stacking occurs, the project owner shall provide the CPM with the required report and notifications.

F. ADMINISTRATIVE REQUIREMENTS

AQ-F12 ~~Permit Expiration~~**Payment of Fees**

~~This Authority to Construct~~ **The operating permits shall remain valid as long as** ~~is valid for one year and may be extended by an additional year with the payment of~~ the annual renewal fee**s are paid in accordance with the District Rules and Regulations and permit conditions are met.** ~~After construction of the listed equipment, the permit to operate shall remain valid provided the annual renewal fees are paid in accordance with District Rule 300 and all Permit conditions are met. [NSCAPCD Rule 300.5.1]~~

Verification: No verification needed.

AQ-F25 Right to Entry **and Inspection**

The **Air Pollution** Control Officer, ~~T~~**t**he Chairman of the California Air Resources Board, ~~T~~**t**he Regional Administrator of U**.**S**.** EPA, **the CPM,** and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

a. To enter ~~upon~~ the premises where the source is located or in which any records are required to be kept under the terms and conditions of ~~this PERMIT~~ **the operating permits**; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of ~~this PERMIT~~ **the operating permits**; and

c. To inspect any equipment, operation, or method required in ~~this PERMIT~~ **the operating permits**; and

d. To sample emissions from the source.

[NSCAPCD Rule 240.e **and Reg. 5.610(e)**]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F3 Compliance with Permit Conditions

The project owner shall submit a complete application for renewal of the Title V operating permit in accordance with the District deadlines. [ref. Reg 5.660]

The project owner shall comply with all conditions of the Title V operating permit. Any non-compliance with the terms and conditions of the Title V operating permit will constitute a violation of the law and may be grounds for enforcement action, including monetary civil penalties, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [ref. Reg 5.610(f)(3)]

In the event any enforcement action is brought as a result of a violation of any term or condition of the Title V operating permit, the fact that it would have been necessary for the project owner to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. [ref. Reg 5. 610(f)(4)]

The filing of a request by the facility for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. [ref. Reg 5. 610(f)(5)]

The Title V operating permit does not convey any property rights of any sort, nor any exclusive privilege. [ref. Reg 5. 610(f)(2)]

The project owner shall supply in writing within 30 days any information that the District requests to determine whether cause exists, per Regulation 5.570, for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. [ref. Reg 5. 610(f)(4)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F4 Reporting

All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District and CPM at least once every six months. For emissions of a hazardous air pollutant (HAP) or a toxic air pollutant (as identified in an applicable regulation) that continue for more than an hour in excess of the permit requirements, the report must be made within 24 hours of the occurrence. For emissions of any regulated air pollutant, excluding those HAP emission requirements listed above, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours. All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventative or corrective action taken. A progress report shall be made on a compliance schedule at least semi-annually and shall include the date when compliance will be achieved, an explanation of why compliance was not, or will not be, achieved by the scheduled date, and a log of any preventative or corrective action taken. The reports shall be certified by the responsible official as true, accurate and complete. [ref. Reg 5.625]

Verification: The project owner shall submit deviation reports to the CPM according to the outlined timeframes. The project owner make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F5~~3~~ Severability

~~This p~~**P**rovisions of ~~this PERMIT~~ **the operating permits** are severable, and, if any provision of ~~this PERMIT~~ **the operating permits** is held invalid, the remainder of ~~this PERMIT~~ **the operating permits** shall not be affected. **[ref. Reg 5.610]**

Verification: No verification needed.

AQ-F6~~4~~ Transfer of Ownership

~~c. Transfer of Ownership -~~ In the event of any changes in control or ownership of facilities to be ~~constructed or~~ modified **and/or operated**, ~~this PERMIT~~ **the operating permits are transferable and** ~~together with its terms and conditions~~ shall be binding on all subsequent owners and operators. The ~~Applicant~~ **project owner** shall notify the succeeding owner and operator of the existence of ~~this PERMIT~~ **the operating permits** and ~~it's~~ **the** conditions by letter, a copy of which shall be forwarded to the **Air Pollution** Control Officer. [NSCAPCD Rule 240~~.j.~~]

Verification: The project owner shall provide a copy of the letter of notification to the CPM in the following quarterly report.

AQ-F7 Records

Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of entry and shall include: date, place, and time of sampling, operating conditions at the time of sampling, date, place, and method of analysis and the results of the analysis. [ref. Reg 5.615]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F8~~4~~ ~~Notification Requirements~~ **Emergency Provisions**

~~b. Applicant shall notify the District at least 3 days prior to the start-up of this source~~

~~b. Upsets and Breakdowns - In the event of any failure of process or abatement equipment to operate in a normal manner which results in an increase in emissions above any allowable emissions limit stated in District Rules or in conditions to this PERMIT the Operator shall notify the District as provided by Rule 540 regarding upset breakdown conditions to petition for shelter from enforcement actions. In order to qualify for such shelter an initial notification of the equipment failure must be reported to the District Office no later than one (I)~~

~~hour after its detection during normal office hours (8:00 am to 4:30 pm) or one (1) hour after the start of the next regular business day, whichever is sooner. [NSCAPCD Rule 540]:~~

The project owner may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, by following the procedures contained in Regulation 1, rule 540 (b). the District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1, Rule 540 (b)(3).

The project owner may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond the project owner's reasonable control by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. Any variance granted by the Hearing Board from any term or condition of this permit which lasts longer than 90 days will be subject to EPA approval. [ref. Reg 1 Rule 600]

Notwithstanding the foregoing, the granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement unless the Title V Operating Permit has been modified pursuant to Regulation 5 or other EPA-approved process. [ref. Reg 1 Rule 600]

Verification: The project owner shall notify the CPM of any breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations within the timeframes outlined in Regulation 1 Rule 540 of the District's Rules and Regulations. The project owner shall submit the required breakdown reports and report any variance to the CPM in the next quarterly report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F9 Malfunction

The Regional Administrator shall be notified by telephone within 48 hours following any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner which results in an increase in emissions above allowable emissions limit stated in Condition AQ-A2. In addition, the Regional Administrator shall be notified in writing within fifteen (15) days of any such failure. This notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial failure, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed under Condition AQ-A2, and the methods utilized to restore normal operations. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this

permit or of any law or regulations which such malfunction may cause. [ref. PSD SFB 81-03 Cond. IV.]

Verification: The project owner shall submit malfunction reports to the CPM in the quarterly reports. The project owner make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F10~~1~~ ~~Facilities Operation~~ **Permit Posting**

~~a.~~ Operation**s** under ~~this~~ **the operating** permit**s** must be conducted in compliance with all data and specifications included in the application which attest to the operator's ability to comply with District Rules and Regulations. Th**e**~~is~~ permit**s** must be posted in ~~a conspicuous place nearby or, as per rule 240.~~ **such a manner as to be clearly visible and accessible at a location near the source. In the event that the permits cannot be so placed, the permits shall be maintained readily available at all times on the operating premises. [ref. Rule 240]**

~~b. All equipment of this PERMIT shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions. [NSCAPCD Rule 420]~~

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F11 Compliance Certification

Compliance reports and certifications shall be submitted annually by the project owner of the facility to the Northern Sonoma County Air Pollution Control District and CPM. Each compliance certification shall be accompanied by a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report. [ref. Regulation 5 Rule 650]

Permits shall not authorize the emissions of air contaminants in excess of those allowed by the Health and Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. Permits shall not be considered as permissions to violate existing laws, ordinances, regulations or statutes of other governmental agencies. [Rule 240(d)]

Verification: The project owner shall submit the annual compliance reports and certification to the CPM.

AQ-F12 Permit Modification

The project owner shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. [ref. Regulation 1 Rule 200]

Verification: No verification needed.

APPENDIX A

CONDITIONS OF CERTIFICATION

CLEAN COPY

(Assumes Energy Commission adopts all conditions as recommended by staff)

CONDITIONS OF CERTIFICATION

GLOSSARY

Abatement Solution: Iron chelate or any other District approved compound used to chemically treat hydrogen sulfide in the steam condensate

ACP: Alternative Compliance Plan. A list of all parametric monitoring data to be collected and recorded as a means of determining compliance with the H_2S emission limits.

APCO: Air Pollution Control Officer

BACT: Best Available Control Technology

CAA: The federal Clean Air Act

CCM: Continuous Compliance Monitor

CCM Availability: Hours CCM is in operation divided by the hours the primary abatement system is in service.

CEQA: California Environmental Quality Act

CFR: The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

Cold Startup: Starting the power plant from inactive status

NSCAPCD or District: The Northern Sonoma County Air Pollution Control District

U.S. EPA: The United States Environmental Protection Agency

Federally Enforceable, FE: All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain).

GPH: Gallons per hour

HAP: Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

Irregularity: Period of time a CCM monitor reading is not consistent with other verifiable data or information.

Low Flow: The flowrate below 10% of the required flowrate of the back-up caustic scrubber pumps.

Major Facility: A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity as determined by the EPA administrator.

MW: Megawatts

N/A: Not Applicable

NESHAPs: National Emission Standards for Hazardous Air Pollutants contained in 40 CFR Part 61

NSCAPCD: Northern Sonoma County Air Pollution Control District

NMHC: Non-methane Hydrocarbons

SR: New Source Review. A federal program for preconstruction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 1, Rule 220.

PM: Total Particulate Matter

PM10: Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns.

PM2.5: Particulate matter with aerodynamic equivalent diameter of less than or equal to 2.5 microns.

Primary Pressure Gauges and Flowmeters: All pressure gauges and flow meters used for parametric compliance verification.

Prolonged Outage: The scheduled shutdown of a unit lasting longer than 1 week.

PSD: Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 1, Rule 220.

SIP: State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Ambient Air Quality Standards. Mandated by Title I of the Act.

Standby Spare: A back-up piece of equipment available for use in the event the primary piece of equipment fails.

Sulfur Compounds: Any inorganic compound containing sulfur

Sulfur Oxides calculated as Sulfur Dioxide: Oxides of sulfur normalized to the molecular weight of sulfur dioxide.

Title V: Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOG: Total Organic Gasses

TDS: Total Dissolved Solids

TRS: Total Reduced Sulfur

TSS: Total Suspended Solids

Unit of measure:	ft3 = cubic feet	g = grams	gal = gallon	hr = hour
	lb = pound	in = inches	yr = year	
	ppmv = parts per million volume		scfm = standard cubic feet per minute	
	ppmw = parts per million weight		psia = pounds per square inch absolute	

VEE: Visible Emissions Evaluation

EQUIPMENT DESCRIPTION

Geothermal Power Plant, Unit 20 Consisting of:

Power Plant	
Description	**Nominal Capacity**
Steam Turbine	1,968,900 lb steam/hr maximum plant gross steam flow
Generator	119 Megawatt gross nameplate capacity
Surface Condenser with Steam Operated Two and Three Stage Gas Ejector System	1,750,000,000 BTU/Hr Design Heat Load
Cooling Tower, Cross-Flow, Mechanical Draft Type with 0.001% rated drift eliminators with eleven fans	168,000 GPM, Fans 200 hp each
Two 100% Condensate Pumps	200 HP and 4,700 gpm each
Three Auxiliary Condensate Pumps	15 HP each
Four 25% Circulating Water Pumps	1,250 hp and 42,000 gpm each
Gland Seal Leak Off System	
Hydrogen Sulfide Control System	

Description	Nominal Capacity
Stretford Air Pollution Control System consisting of:	598 lb/hr H_2S
Two Venturi Scrubbers	1,120 gallons per minute (gpm) each
H_2S Absorber, 5' 6" diameter (D) x 38' height (H)	560 gpm
Two Oxidizer Tanks, 19” D x 20' H, with four Oxidizer Air Blowers each 100 HP	790 SCFM air per Blower
Reaction Tank, 19” D x 20' H	42,000 gallon
Balance Tank, 24' D x 18' H	60,000 gallon
Froth Tank, 12' D x 12' H	15,000 gallon
Caustic Tank, 12' D x 12' H	9,300 gallon
Condensate Tank, 4' D x 5' H	450 gallon
Heat Exchangers consisting of:	
Stretford Heater	3.0 million British thermal units per hour (mmBtu/hr)
Stretford Cooling Tower, 0.002% drift	5.3 mmBtu/hr
Auxiliary Stretford Solution Heater	1.75 mmBtu/hr
Main Pumps consisting of:	
Three Stretford Circulating Pumps	1,560 gpm each
Two Stretford Cooler Circulating Pumps	1,100 gpm each
Caustic Additive Pump	15-100 gpm
Stretford Treated Gas Analyzer and Alarm System	
One Sulfur Vacuum Filter Belt	
Circulating Water H_2S Abatement System consisting of:	
Abatement Solution Storage Tank	5,400 gallon
One Abatement Solution Feed Pump and one Spare Pump	0-100 gph range
Mass Flow Meter and Flow Alarm	
Mercury Removal System consisting of	
Vapor Liquid Separator Assembly	
Mercury Adsorption Vessel	
Emergency Engine	
Description	**Nominal Capacity**
Emergency Standby Wet-Down Pump Diesel Drive Engine, Cummins Model CFP7E-F40, (Tier 3, Manufactured 2017)	204 HP

STAFF CONDITIONS

AQ-SC1 The project owner shall provide the compliance project manager (CPM) copies of any Northern Sonoma County Air Pollution Control District (NSCAPCD or District) issued project air permit for the facility. The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM.

Verification: The project owner shall submit any request or application for a new project air permit or project air permit modification to the CPM at the time of its submittal to the permitting agency. The project owner shall provide the CPM a copy of all issued air permits, including all modified air permits, to the CPM within 30 days of finalization.

AQ-SC2 The project owner shall provide the CPM with copies or summaries of the quarterly and annual reports submitted to the District, U.S. EPA, or ARB. The project owner shall submit to the CPM in the required quarterly reports a summary of any notices of violation and reports, and complaints relating to the project**.**

Verification: The project owner shall provide the reports to the CPM within the timeframes required in the conditions of certification.

AQ-SC3 The project owner shall provide the CPM with an Annual Compliance Report demonstrating compliance with all the conditions of certification as required in the General Provisions of the Compliance Plan for the facility.

Verification: The project owner shall provide the Annual Compliance Report to the CPM within 45 calendar days after the end of the reporting period or a later date as approved by the CPM.

PERMIT CONDITIONS:

A. EMISSION LIMITS

Power Plant and Abatement Systems

AQ-A1 The project and associated abatement systems shall comply with Regulation 1 Rule 455(b) –Geothermal Emission Standards. Total emissions of hydrogen sulfide (H_2S) shall not exceed 4.7 kilograms averaged over any one-hour period. Total H_2S emissions shall be the cumulative emissions to the atmosphere from the power plant and associated abatement equipment. [Ref. Rule 455(b), PTO 82-45B Cond. 16.A]

Verification: The project owner shall verify compliance by conducting a monthly source test on the cooling tower as indicated in **AQ-C1**, weekly determinations of the H_2S content in the main steam supply as required in **AQ-C6**, or as required in an approved Alternative Compliance Plan.

AQ-A2 The project owner shall not discharge or cause the discharge into the atmosphere of more than a total of 10.4 pounds per hour of H_2S from the project. [ref. PSD SFB 81-03 Cond. IX.D.]

Verification: The project owner shall verify compliance by conducting an annual performance test on the turbine exhaust system to determine the H_2S emission rate as required in **AQ-C2**.

AQ-A3 The exit concentration in the process piping leading from the Stretford system shall not exceed 10 ppmv H_2S averaged over any consecutive 60-minute period unless operating under a District-approved Alternative Compliance Plan (ACP). [ref. PTO 82-45B Cond. 16.B.]

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in **AQ-C10**.

AQ-A4 The exit concentration of H_2S from the Stretford unit shall not exceed 125 ppmv or 0.5 lb/hr [ref. PSD 81-03, 82-AFC-1 Cond. 3.b]

Verification: The project owner shall verify compliance by operating a continuous compliance monitor as required in **AQ-C10**.

AQ-A5 Annual emissions from the cooling tower shall not exceed, on a calendar year basis, 20.6 tons per year of hydrogen sulfide (H_2S)**.**

Verification: The project owner shall maintain records of total H_2S as indicated in **AQ-D7** and submit reports as indicated in **AQ-E2**. Records shall be based on required source testing in Condition **AQ-C1**, and an annual summation from January to December.

AQ-A6 The project owner shall comply with Regulation 1 Rule 455 (a)-Geothermal Emission Standards; no person shall discharge into the atmosphere from any geothermal operation sulfur compounds, calculated as sulfur dioxide, in excess of 1,000 ppmv. [ref. Rule 455(a)]

Verification: The project owner shall verify compliance by adhering to all monitoring and testing requirements.

AQ-A7 The project owner shall operate the power plant and associated abatement systems in compliance with Regulation 1 Rule 420 (d) Non-Combustion Sources-Particulate Matter; no person shall discharge particulate matter into the atmosphere from a non-combustion source in excess of 0.2 grains per cubic foot of exhaust gas or in total quantities in excess of the amount shown in Table I. (40 lb/hr) whichever is the more restrictive condition. [ref. Rule 420(d)]

Verification: The project owner shall perform a source test to determine compliance as requested by the NSCAPCD or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-A8 Annual emissions from the cooling tower shall not exceed, on a calendar year basis, 17.0 tons per year particulate matter less than 10 microns in diameter (PM-10) and 12.0 tons per year particulate matter less than 2.5 microns in diameter (PM-2.5).

Verification: The project owner shall verify compliance through monitoring as indicated in **AQ-C5**. The project owner shall maintain records according to **AQ-D6** and **AQ-D7** and submit reports as indicated in **AQ-E2**. Records shall be based on required sampling and an annual summation from January through the end of December.

Emergency Engine

AQ-AE1 Visible particulate emissions shall not exceed an opacity as to obscure an observer's view to a degree equal to or greater than Ringelmann 2.0 or 40 percent opacity for a period or periods exceeding 3 minutes in any one hour [ref. PTO 17-10 Cond. B1]

Verification: The project owner shall perform a Visible Emissions Evaluation to determine compliance as requested by the NSCAPCD or CPM, The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE2 Particulate emissions shall not exceed an emission rate of 0.15 g/bhp-hr. [ref. PTO 17-10 Cond. B2]

Verification: The project owner shall verify compliance according to Condition AQ-CE1. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE3 Combined non-methane hydrocarbons and nitrogen oxide emissions shall not exceed an emission rate of 3.0 g/bhp-hr. [ref. PTO 17-10 Cond. B3]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-AE4 Carbon monoxide emissions shall not exceed an emission rate of 2.6 g/bhp-hr. [ref. PTO 17-10 Cond. B4]

Verification: The project owner shall perform a source test to verify compliance with the emission rate upon request of the District or CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

B. OPERATIONAL LIMITS AND REQUIREMENTS

Power Plant and Abatement Systems

AQ-B1 The project owner shall not operate the plant unless untreated vent gasses are vented to the Stretford Air Pollution Control System. The condensate H2S abatement chemical feed system and the Stretford abatement system shall be kept in good working order and operated as necessary in order to limit H_2S and particulate emissions on a continuous basis from the power plant as specified in conditions **AQ-A1**, **AQ-A2**, **AQ-A3**, **AQ-A4**, and **AQ-A6**. [ref. Rule 240.d, PTO 82-45A Cond. 18, PSD SFB 81-03, 82-AFC-1 Cond. 15]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B2 The secondary abatement solution storage tank shall hold a minimum of 1,000 gallons of abatement solution at all times when the plant is in operation. All continuously operated abatement solution feed pumps shall have a standby spare available, a readily accessible flowmeter readable in appropriate units and equipped with alarms signaling no or low flow. Flowmeter accuracy shall be plus or minus 10% of flow. [ref. PTO 82-45A Cond. 18]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B3 Except for justifiable reasons during performance testing or under operation of an ACP, for which the project owner has received prior District written approval, the circulating water shall be kept to the following specification: Circulating water iron chelate (abatement solution) concentration shall be maintained at or above the ppmw concentration recommended in the power plant operating guidelines as necessary to abate H_2S emissions from the power plant to the emission limit specified in Condition **AQ-A1**. [ref. PTO 82-45A Cond. 19]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B4 All the abatement systems shall be properly winterized and maintained to ensure proper and reliable functioning. All primary pressure gauges and flow meters associated with abatement equipment shall be readily identified, maintained in good operating condition and calibrated on a quarterly basis. Alarm systems associated with abatement equipment shall be tested on a quarterly basis. Calibration and maintenance shall be performed according to manufacturer's recommendations or per the project owner's maintenance schedule as needed to maintain the equipment in good working order. [ref. PTO 82-45B Cond. 14]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B5 All areas in the immediate vicinity and under the project owner's responsibility shall be properly treated to control fugitive dust. [ref. PTO 82-45B Cond. 17]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B6 Fugitive Leaks

A. Non-condensable gas leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of non-condensable gases to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere.

Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1,000 ppmv H_2S nor 10,000 ppmv methane nor (ii) exceed emission limits of Rule 455. Such leaks shall be repaired within 24 hours, unless the leak is from essential equipment. If the leak is from essential equipment, the leak must be minimized within 24 hours using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices.

B. Steam and Condensate leaks: Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of steam and condensate to the atmosphere. Valves, flanges and seals shall be tightened, adjusted, or have gasket material added using the best modern practices for the purpose of stopping or reducing leakage to the atmosphere. Valves, flanges, drip legs, threaded fittings and seals on pipelines shall be maintained to prevent or reduce the emission of steam and condensate to the atmosphere as noted below:

Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minutes. Liquid leak rates in excess of 20 ml in 3 minutes shall be repaired within 15 calendar days, excepting those leaks from essential equipment. If the leak is from essential equipment, the leak must be minimized within 15 days using best modern practices and eliminated at the next prolonged outage of the process unit unless an extension is approved by the APCO.

Essential Equipment is defined as equipment which cannot be taken out of service without shutting down the process unit which it serves.

Leak Minimization is defined as the tightening, adjusting, or addition of packing material which surrounds the leak, or the replacement of the valve or flange for the purpose of stopping or reducing leakage to the atmosphere, using best modern practices

The project owner shall check the power plant for fugitive leaks at least once per quarter. [ref. PTO 82-45B Cond. 17]

Verification: The project owner shall keep records according to Condition **AQ-D5**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B7 Alternative Compliance Plan

A. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions **AQ-A2**, **AQ-A4**, **AQ-A6**, and **AQ-A7**. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions **AQ-A2**, **AQ-A4**, **AQ-A6**, and **AQ-A7**. The ACP shall list the specific operating conditions the ACP will supersede.

B. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant while maintaining compliance with all applicable emission limits of Conditions **AQ-A1** and **AQ-A3**. The ACP shall list operating parameters such as power output (MW) and abatement solution concentration levels which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO-approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Conditions **AQ-A1** and **AQ-A3**. The ACP shall list the specific operating conditions the ACP will supersede.

Verification: The project owner shall submit any ACP to the CPM for review at the time it is submitted to the District. The project owner shall submit the District's approval, disapproval, or plan modification to the CPM in the quarterly report.

AQ-B8 All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this license shall at all times be maintained in good working order. The equipment shall be operated in a manner necessary to meet all emission limits of the permit. [Ref. Rule 240(d), PSD SFB 81-03 Cond. III]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B9 The cooling tower shall be maintained in good operating condition. The project owner shall conduct an integrity inspection of the cooling tower during each scheduled plant overhaul and carry out any repairs necessary to correct all deficiencies encountered. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B10 The project owner shall operate and maintain the following air pollution control equipment:

a. The non-condensable gas stream exiting from the surface condenser shall be ducted to an operating Stretford process unit.

b. Condensate exiting from the surface condenser shall be treated as necessary to reduce the levels of dissolved hydrogen sulfide. The project owner shall use a secondary abatement system authorized by the NSCAPCD to accomplish this reduction.

c. The project owner shall have installed drift controls on the power plant cooling tower to limit drift losses to 0.002 percent or better of the circulating water mass, thus minimizing emissions of particulate matter.

[ref. PSD SFB 81-03 Cond. IX.B.]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-B11 The project owner shall, in any 12 month period, limit unscheduled outages for the project to no more than a total of 12. The following shall not be used in computing the total outages.

a. Scheduled outages (defined as outages with 24 hour advance notice between the steam supplier and project owner, except in the case of project outages resulting from an abundance of hydropower in which case a scheduled outage shall be defined as one hour notice).

b. Steam supplier induced outages (such as pressure surge, strainer plugging, etc.).

c. Outages of less than 2 hours in duration.

d. Outages which do not cause steam stacking.

A violation of the above performance standards is considered a violation of this condition.

The project owner shall have on file with the District an approved operating protocol describing the methods that will be used to meet the 12 outages in 12 consecutive months performance standard. The protocol must include a description of the operational procedures between the steam supplier and project owner, project owner's operational procedures, and equipment to meet the above standard. The terms and requirements of the protocol may be modified by the Air Pollution Control Officer and CPM for good cause upon written request from the project owner.

The project owner shall allow the District and CPM to inspect all operating logs to verify the total outage hours. These requirements are in addition to the applicable requirements of rule 540.

In the event the project owner is not able to meet the standards specified above, the following shall be required:

The project owner shall prepare and submit a revised “plan” to the Air pollution Control Officer and CPM, within 30 days of the end of the month in which the outage limit was exceeded, to achieve the outage standards set forth in this permit condition. At a minimum, the measures to be considered in the “plan” shall include: improved coordination of the power plant and steam field operations, improved alarming and control systems, increased duration of manned operation of the power plant, improved preventative maintenance and design modifications, retrofit of a 100% of steam flow turbine bypass, and retrofit of a 50% of steam flow turbine bypass. In evaluating measures to be taken to prevent future exceedances of the outage standard, outages of less than 2 hours shall be counted. This “plan” shall also be submitted to EPA for approval if the outage standard is exceeded.

Within 30 days of receipt of the “plan” the Air Pollution Control Officer shall determine whether the “plan” is satisfactory and, if so, shall approve the “plan”. Upon approval, the revised “plan” shall supersede the old plan and become a part of the terms and conditions of this permit.

[ref. PSD SFB 81-03 Cond. IX.C., PT0-82-45A Cond.18]

Verification: The project owner shall submit revised plans to the CPM for approval. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-BE1 S-1, emergency standby wet-down pump diesel drive engine, shall only be used because of a failure or loss of all or part of normal electrical power service, except for testing and maintenance as defined in CA HSC 93115.4 (30). [ref. PTO 17-10 Cond. B2]

Verification: The project owner shall maintain records according to Condition **AQ-DE1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE2 S-1, emergency standby wet-down pump diesel drive engine, shall be equipped with a non-resettable hour counting meter to indicate the number of hours the engine is operated [ref. PTO 17-10 Cond. C2]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE3 S-1, emergency standby wet-down pump diesel drive engine, shall be operated exclusively on California Air Resources Board (CARB) Diesel Fuel. [ref. PTO 17-10 Cond. C3]

Verification: The project owner shall maintain records according to Condition **AQ-DE1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE4 S-1, emergency standby wet-down pump diesel drive engine, shall be operated according to manufacturer specifications [ref. PTO 17-10 Cond. C4]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-BE5 Total operating hours used for testing and maintenance of S-1, emergency standby wet-down pump diesel drive engine, shall not exceed 50 hours in any consecutive 12-month period. The total hours of operation do not include use during emergencies. [ref. PTO 17-10 Cond. A1]

Verification: The project owner shall maintain records according to Condition **AQ-DE1**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

C. MONITORING, TESTING, AND ANALYSIS

Power Plant and Abatement Systems

AQ-C1 The project owner shall, on a monthly basis, conduct a source test of the cooling tower to determine the H_2S emission rate to verify compliance with condition **AQ-A1**. A mass balance determination of total H_2S to the cooling tower based on measured operating conditions may be used to document that the worst case possible H_2S emissions are less than the emission limit of the plant or District Method 102 shall be utilized to determine the H_2S emission rate. The project owner may propose an Alternative Compliance Plan (ACP) which allows for operating flexibility of the power plant, including periods when accessing the cooling tower is not possible, while maintaining compliance with all applicable emission limits of Condition **AQ-A1**. The ACP shall list operating parameters such as power output (MW), target pH, abatement solution concentration levels, and burner/scrubber exit concentrations which shall be met in order to meet all applicable emission limits listed above. The ACP shall be submitted to the APCO and CPM for approval. The APCO shall approve, disapprove or modify the plan within 30 days of receipt of the ACP. An APCO-approved ACP shall consist of all parametric operating guidelines which shall be used to determine compliance with Condition **AQ-A1**. The ACP shall list the specific operating conditions the ACP will supersede. [ref. PTO 82-45A Cond. 22]

Verification: The project owner shall submit source test results according to Condition **AQ-E1**. The project owner shall submit any ACP to the CPM for review. The project owner shall submit the District's approval, disapproval or plan modification to the CPM in the following quarterly report.

AQ-C2 The project owner shall conduct or cause to be conducted performance tests on the turbine exhaust system to determine the H_2S emission rate to verify compliance with Condition **AQ-A2**. Performance tests shall be conducted in accordance with Northern Sonoma County APCD Method 102, unless otherwise specified by the U.S. EPA. The project owner shall furnish the Northern Sonoma County APCD, the ARB, and the U.S EPA, a written report of such tests. All

performance tests shall be conducted at the maximum operating capacity of the plant. Performance tests shall be conducted at least on a yearly basis and at such times as shall be specified by the U.S. EPA. [ref. PSD SFB 81-03 Cond. 1X.E]

Verification: The project owner shall submit source test results according to Condition **AQ-E1**.

AQ-C3 The project owner shall provide platforms, electrical power, and safe access to sampling ports to enable representatives of the District, ARB and EPA to collect samples from the main steam supply, treated and untreated condensate, circulating water upstream of the cooling tower, cooling tower stacks, untreated and treated non-condensable gas stream to and from the Stretford abatement facility, any off gas bypass vents to the atmosphere and any Stretford tanks or evaporative coolers. [ref. PTO 82-45B Cond.11, PSD SFB-81-03 Cond. 1X E.3]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C4 The project owner, as requested by the Air Pollution Control Officer or CPM, shall conduct a requestor-approved performance test for particulate matter (PM), H_2S, other species (i.e. benzene, mercury, arsenic, TRS, mercaptans, radon, other nitrogen compounds (amines) and compounds listed under NESHAPS and/or AB2588 from the power plant evaporative cooling tower and/or the Stretford evaporative cooling tower. Upon written request, the project owner shall submit to the requestor at least 45 days prior to testing a detailed performance test plan. The requestor shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The project owner shall incorporate the requestor's comments or modifications to the plan which are required to assure compliance with the requestor's regulations. The Air Pollution Control Officer shall be notified 15 days prior to the test date in order to arrange for an observer to be present for the test. The test results shall be provided to the District and CPM within 45 days of the test date unless a different submittal schedule is approved in advance. [ref. PTO 82-45a Cond. 9 and 10]

Verification: The project owner shall conduct performance tests as requested by the Air Pollution Control Officer or CPM. The project owner shall submit results to the CPM within 45 days if the test was requested by the CPM or in the quarterly reports according to Condition **AQ-E1**.

AQ-C5 Compliance with the particulate mass emission limitation shall be estimated using calculations based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.001 percent for the main cooling tower and 0.005% for the Stretford cooling tower, multiplied by the circulating water rate or Stretford solution circulating rate, and total dissolved solids (TDS) and total suspended solids (TSS). A circulating water sample shall be collected and analyzed for TDS and TSS on a monthly basis. [ref. PTO 82-45A Cond. 21]

Verification: The project owner shall maintain records according to Conditions **AQ-D6** and **AQ-D7** and submit reports as indicated in Condition **AQ-E2**.

AQ-C6 Main steam supply H_2S concentrations shall be determined minimally on a weekly basis and any additional times as required by the operating protocol or ACP. [ref. PTO 82-45A Cond. 19]

Verification: The project owner shall maintain records according to Conditions **AQ-D6** and **AQ-D7** and submit reports as indicated in Condition **AQ-E1** and **AQ-E2**.

AQ-C7 The project owner shall perform an abatement solution concentration test of the cooling tower circulating water once per operating shift when abatement solution is necessary in order to achieve compliance with Condition **AQ-A1**. The testing equipment shall be kept calibrated per the manufacturer's specifications. [ref. PTO 82-45A Cond. 19**]**

Verification: The project owner shall maintain records according to Conditions **AQ-D6** and **AQ-D7** and submit reports as indicated in Conditions **AQ-E1** and **AQ-E2**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C8 Instruments used for the measurement of H_2S or total organic gases to satisfy District permit conditions or regulations shall receive District approval prior to use. Test plans shall be submitted for District approval of instruments used for the measurement of H_2S or Total Organic Gases to satisfy District permit conditions or regulations. [ref. Rule 240(d)]

Verification: The project owner shall submit any District approvals to the CPM in the quarterly reports. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C9 All sampling protocols, chemical feed charts, targets and operational guidelines for using said charts and targets, necessary to abate H_2S emissions from the power plant to the emission limits specified in Conditions **AQ-A1** and **AQ-A2** must be developed using good engineering judgment and supporting data. The APCO or CPM may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO or CPM determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions **AQ-A1** and **AQ-A2**, the APCO or CPM shall require the project owner to develop revised protocols, feed charts, targets and guidelines. [ref. Rule 240(d)]

Verification: The project owner shall submit any revised protocol, feed charts, targets and guidelines or summary to the CPM in the annual reports required by Condition **AQ-E2**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-C10 Continuous Compliance Monitoring (CCM)

The project owner shall operate a continuous compliance monitor capable of measuring the concentrations of H_2S in the exhaust stream from the Stretford absorber in order to verify compliance with Conditions **AQ-A1** and **AQ-A3**. The monitoring system must alarm the operator when H_2S in the treated gas is in excess of 10 ppmv. The project owner shall respond to the alarm with appropriate mitigation measures. Mitigation measures taken shall be logged in the power plant abatement log book. In the event H_2S concentrations are in excess of 10 ppmv and the range of the CCM is exceeded, the project owner shall test for H_2S using an approved alternative method (ex Draeger tester, wet chemical tests) once every hour during the excess. The monitor shall have a full range of at least 50 ppmv. The monitor shall meet the following operational specifications: an accuracy of plus or minus 10% of full scale, provide measurements at least every 3 minutes, provide a continuous strip chart record or a District approved alternative, and provide monthly data capture of at least 90%. The District must be notified when the concentration of H_2S exceeds the hourly average limit of 10 ppmv.

A one-point calibration shall be performed at least once per week. A three-point calibration shall be performed at least once per quarter.

The Air Pollution Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the project owner as long as emissions from the power plant do not exceed the “total” H2S emission limitations of Condition **AQ-A1**. Written notification from the Air Pollution Control Officer must be received by the project owner prior to any change in monitoring specifications.

[ref. PTO 82-45B Cond. 19]

Verification: The project owner shall provide the District and CPM with a summary of the monitor’s availability and any irregularities that occurred with the continuous monitor. The summary shall be provided to the CPM in the quarterly reports required by Condition **AQ-E1**.

AQ-C11 Ambient Air Monitoring

The project owner shall maintain and operate one H_2S/meteorological monitoring station, PM10 high volume station at a location approved in advance by the Air Pollution Control Officer for the life of the facility. The project owner shall install and operate additional monitoring stations, such as a PM2.5 monitoring station, if required by the Air Pollution Control Officer, Energy Commission, California Air Resources Board or U.S. EPA. Participation by the project owner in a joint air monitoring program, such as the Geysers Air Quality Monitoring Program (GAMP), shall be deemed to satisfy all ambient air quality monitoring requirements of this license provided the term of monitoring is equivalent. The Air Pollution Control Officer can alter, suspend, or cancel this requirement provided no ambient air quality standard applicable to this facility is threatened or that sufficient other monitoring is available by the District, Lake County AQMD or other third party. [ref. PTO 82-45A Cond. 22, PSD SFB 81-03, 82-AFC-1 Cond. 13.]

Verification: If the project owner does not participate in GAMP, the project owner shall submit to the NSCAPCD, ARB, and CPM, for their review and approval, a detailed ambient monitoring plan.

Emergency Engine

AQ-CE1 At any time as specified by the Air Pollution Control Officer or CPM, the operator of this source shall conduct a requestor-approved source test to determine NOx and particulate emissions from the diesel powered generator. The test results shall be provided to the District and CPM within 30 days of the test [ref. PTO 17-10 Cond. D1]

Verification: The project owner shall perform an approved source test upon request of the District or CPM. Test results shall be submitted to the District and CPM.

D. RECORDKEEPING

Power Plant and Abatement Systems

AQ-D1 All records and logs shall be retained for a period of at least 5 years from the date the record or log was made and shall be submitted to the NSCAPCD or CPM upon request.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D2 The project owner shall maintain a weekly abatement solution inventory log available for on-site inspection. [ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D3 The project owner shall maintain a strip chart or other District-approved data recording device of H_2S readings measured by the CCM. All measurements, records, and data shall be maintained by the project owner for at least five (5) years. The project owner shall report all exceedances of Condition **AQ-A3** in the quarterly report as required in **AQ-E1**. The report shall include a description of all measures taken to bring the Stretford system back into compliance with Condition **AQ-A3**. The project owner shall include in the report a copy of the output from the H_2S CCM or alternative District-approved data during the upset condition. [ref. Rule 240(d)]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D4 The project owner shall maintain copies of the source test results as required in Condition **AQ-C1** for a minimum of 5 years. [ref. PTO 82-45A Cond. 22]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D5 Fugitive Leak Records

A. Any non-condensable gas leak in excess of the limitations of Condition **AQ-B6** which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition **AQ-B6** and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

B. Any valve, flange, drip leg threaded fitting or seal on a pipeline or condensate collection system with a leak in excess of the limitations of Condition **AQ-B6** which has been detected by the project owner and is awaiting repair shall be identified in a manner which is readily verifiable by a District or Energy Commission inspector. Any leak in the above listed pieces of equipment exceeding the limitations of Condition **AQ-B6** and not identified by the project owner and which is found by the District shall constitute a violation of this license. The project owner shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District and CPM upon request.

[ref. PTO 82-45A Cond. 20]

Verification: The project owner shall comply with all recordkeeping and reporting provisions. The project owner shall report all deviations to the CPM as required in Condition **AQ-F4**. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D6 The project owner shall maintain records detailing:

a. Any periods of significant abatement equipment malfunction, reasons for malfunctions, and corrective action.
b. The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions **AQ-A3**, and **AQ-A4**.
c. Fugitive steam and non-condensable gas emission source inspections, leak rates, repairs, and maintenance.
d. Total dissolved solids and total suspended solids in the circulating water.

[ref. Rule 240 (d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-D7 The project owner shall maintain records detailing:

a. Hours of operation

b. Types, concentrations, and amounts of chemicals used for Stretford absorbing solution and used for condensate treatment, including target levels for abatement solution concentration in the circulating water.

c. A summary of any irregularities that occurred with a continuous compliance monitor.

d. The dates and hours in which the emission rates were in excess of the emission limitations specified in permit Conditions AQ-A1, and AQ-A2.

e. Periods of scheduled and unscheduled outages and the cause of the outages.

f. Time and date of all pump and flowmeter calibrations required by this permit.

g. Time and date of all alarm system tests

h. Leaking equipment awaiting repair; time and date of detection and final repair.

i. Total H2S, PM-10 and PM 2.5 annual emissions to date.

[ref. Rule 240(d)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

Emergency Engine

AQ-DE1 In order to demonstrate compliance with the above permit conditions, records shall be maintained in a District-approved log, shall be kept on site, and made available for District inspection for a period of 5 years from the date on which a record is made. The records shall include the following information summarized on a monthly basis:

a. Total engine operating hours

b. Emergency use hours of operation

c. Maintenance and testing hours of operation.

d. Type and amount of fuel purchased.

[ref. PTO 17-10 Cond. E1]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request. The project owner shall report hours of operation, identifying the reason for operation, to the CPM in the quarterly reports required by Condition **AQ-E1**.

E. REPORTING

AQ-E1 A quarterly report shall be submitted to the District which contains the following information:

a. CCM availability for the given quarter.

b. Any periods of significant abatement equipment malfunction, reasons for

malfunctions, and corrective action taken.

c. Time and date of any monitor indicating an hourly average exceedance of 10 ppmv of H_2S.

d. Source test results.

e. Steam stacking events.

Additional requirement for reports submitted to the Energy Commission:

f. Hours of operation for the emergency engine. The hours of operation shall be reported according to total use, emergency use, and maintenance and testing.

The quarterly report shall be submitted to the District and CPM within 30 days of the end of each quarter. The reports are due by May 1, August 1, November 1 and February 1 for each corresponding quarter.

[ref. Rule 240(d)]

Verification: The project owner shall submit the quarterly reports to the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E2 An annual report shall be submitted to the District and CPM which contains the following information:

a. Average mainsteam H_2S and ammonia concentrations.

b. Average total dissolved and suspended solids and average flowrate of the cooling tower water.

c. Annual ammonia emissions.

d. Gross megawatt hours generated.

e. Steaming rate, gross average (gross steam flow; lb/ gross MW).

f. Update to any changes in operating protocols used to determine plant chemical feed charts and targets; calibration and maintenance programs.

g. Total organic gasses emitted as methane.

h. Hours of plant operation.

i. Annual carbon dioxide equivalent (CO_2e) emissions

j. Annual H_2S, PM10 and PM2.5 emissions.

The annual report shall be submitted to the District within 45 days of the end of each calendar year.

[ref. Rule 240(d)]

Verification: The project owner shall submit the annual reports to the CPM within 45 days of the end of each calendar year or another timeframe approved by the CPM. The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA, and Energy Commission upon request.

AQ-E3 The project owner shall submit reports to the California Air Resources Board in accordance with the provisions of CCR Title 17, Division 3, Chapter 1, Subchapter 10, Article 2, Regulation for Mandatory Reporting of Greenhouse Gas Emissions.

Steam Stacking

The project owner shall, on a quarterly basis, provide a written report to the District and CPM with the outage events, cause of each outage and the balance of events for the year. The Air Pollution Control Officer may change the frequency of reporting. The project owner shall inform the District and CPM when total outages have reached 12 in any consecutive 12-month period. The District and CPM shall be notified within 5 days of the 12th outage.

Verification: The project owner shall provide a statement of compliance in the annual report regarding the submittal of greenhouse gas emissions reporting to the ARB. The greenhouse gas emissions report is not required to be submitted to the CPM in the periodic compliance reports. The project owner shall make the reports available to the CPM upon request. If steam stacking occurs, the project owner shall provide the CPM with the required report and notifications.

F. ADMINISTRATIVE REQUIREMENTS

AQ-F1 Payment of Fees

The operating permits shall remain valid as long as the annual renewal fees are paid in accordance with the District Rules and Regulations and permit conditions are met.

Verification: No verification needed.

AQ-F2 Right to Entry and Inspection

The Air Pollution Control Officer, the Chairman of the California Air Resources Board, the Regional Administrator of U.S. EPA, the CPM, and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

a. To enter the premises where the source is located or in which any records are required to be kept under the terms and conditions of the operating permits; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of the operating permits; and

c. To inspect any equipment, operation, or method required in the operating permits; and

d. To sample emissions from the source.

[NSCAPCD Rule 240.e and Reg. 5.610(e)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F3 Compliance with Permit Conditions

The project owner shall submit a complete application for renewal of the Title V operating permit in accordance with the District deadlines. [ref. Reg 5.660]

The project owner shall comply with all conditions of the Title V operating permit. Any non-compliance with the terms and conditions of the Title V operating permit will constitute a violation of the law and may be grounds for enforcement action, including monetary civil penalties, permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. [ref. Reg 5.610(f)(3)]

In the event any enforcement action is brought as a result of a violation of any term or condition of the Title V operating permit, the fact that it would have been necessary for the project owner to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. [ref. Reg 5. 610(f)(4)]

The filing of a request by the facility for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. [ref. Reg 5. 610(f)(5)]

The Title V operating permit does not convey any property rights of any sort, nor any exclusive privilege. [ref. Reg 5. 610(f)(2)]

The project owner shall supply in writing within 30 days any information that the District requests to determine whether cause exists, per Regulation 5.570, for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. [ref. Reg 5. 610(f)(4)]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F4 Reporting

All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District and CPM at least once every six months. For emissions of a hazardous air pollutant (HAP) or a toxic air pollutant (as identified in an applicable regulation) that continue for more

than an hour in excess of the permit requirements, the report must be made within 24 hours of the occurrence. For emissions of any regulated air pollutant, excluding those HAP emission requirements listed above, that continue for more than two hours in excess of permit requirements, the report must be made within 48 hours. All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventative or corrective action taken. A progress report shall be made on a compliance schedule at least semi-annually and shall include the date when compliance will be achieved, an explanation of why compliance was not, or will not be, achieved by the scheduled date, and a log of any preventative or corrective action taken. The reports shall be certified by the responsible official as true, accurate and complete. [ref. Reg 5.625]

Verification: The project owner shall submit deviation reports to the CPM according to the outlined timeframes. The project owner makes the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F5 Severability

Provisions of the operating permits are severable, and, if any provision of the operating permits is held invalid, the remainder of the operating permits shall not be affected. [ref. Reg 5.610]

Verification: No verification needed.

AQ-F6 Transfer of Ownership

In the event of any changes in control or ownership of facilities to be modified and/or operated, the operating permits are transferable and shall be binding on all subsequent owners and operators. The project owner shall notify the succeeding owner and operator of the existence of the operating permits and the conditions by letter, a copy of which shall be forwarded to the Air Pollution Control Officer. [NSCAPCD Rule 240]

Verification: The project owner shall provide a copy of the letter of notification to the CPM in the following quarterly report.

AQ-F7 Records

Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of entry and shall include: date place and time of sampling, operating conditions at the time of sampling, date, place, and method of analysis and the results of the analysis. [ref. Reg 5.615]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F8 Emergency Provisions

The project owner may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations, by following the procedures contained in Regulation 1, rule 540 (b). the District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1, Rule 540 (b)(3).

The project owner may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond the project owner's reasonable control by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. Any variance granted by the Hearing Board from any term or condition of this permit which lasts longer than 90 days will be subject to EPA approval. [ref. Reg 1 Rule 600]

Notwithstanding the foregoing, the granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement unless the Title V Operating Permit has been modified pursuant to Regulation 5 or other EPA-approved process. [ref. Reg 1 Rule 600]

Verification: The project owner shall notify the CPM of any breakdown, as defined by Regulation 1 Rule 540 of the District's Rules and Regulations within the timeframes outlined in Regulation 1 Rule 540 of the District's Rules and Regulations. The project owner shall submit the required breakdown reports and report any variance to the CPM in the next quarterly report. The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F9 Malfunction

The Regional Administrator shall be notified by telephone within 48 hours following any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner which results in an increase in emissions above allowable emissions limit stated in Condition AQ-A2. In addition, the Regional Administrator shall be notified in writing within fifteen (15) days of any such failure. This notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial failure, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed under Condition AQ-A2, and the methods utilized to restore normal operations. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or of any law or regulations which such malfunction may cause. [ref. PSD SFB 81-03 Cond. IV.]

Verification: The project owner shall submit malfunction reports to the CPM in the quarterly reports. The project owner makes the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F10 Permit Posting

Operations under the operating permits must be conducted in compliance with all data and specifications included in the application which attest to the operator's ability to comply with District Rules and Regulations. The permits must be posted in such a manner as to be clearly visible and accessible at a location near the source. In the event that the permits cannot be so placed, the permits shall be maintained readily available at all times on the operating premises. [ref. Rule 240]

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, and Energy Commission upon request.

AQ-F11 Compliance Certification

Compliance reports and certifications shall be submitted annually by the project owner of the facility to the Northern Sonoma County Air Pollution Control District and CPM. Each compliance certification shall be accompanied by a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report. [ref. Regulation 5 Rule 650]

Permits shall not authorize the emissions of air contaminants in excess of those allowed by the Health and Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. Permits shall not be considered as permissions to violate existing laws, ordinances, regulations or statutes of other governmental agencies. [Rule 240(d)]

Verification: The project owner shall submit the annual compliance reports and certification to the CPM.

AQ-F12 Permit Modification

The project owner shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. [ref. Regulation 1 Rule 200]

Verification: No verification needed.

G. PLANT-WIDE CONDITIONS

AQ-G1 The project owner shall comply with the following district regulations:

a. Regulation 1 Rule 400-General Limitations
b. Regulation 1 Rule 410-Visible Emissions
c. Regulation 1 Rule 430-Fugitive Dust Emissions
d. Regulation 1 Rule 492 (40 CFR part 6 Subpart M)-Asbestos
e. Regulation 1 Rule 540-Equipment Breakdown
f. Regulation 2- Open Burning

g. 40 CFR Part 82- Chlorinated Fluorocarbons

If in the event this stationary source as defined in 40 CFR Part 68.3, becomes subject to Part 68, this stationary source shall submit a risk management plan (RMP) by the date specified in Part 68.10. As specified in Parts 68, 70, and 71, this stationary source shall certify compliance with the requirements of Part 68 as part of the annual compliance certification required by 40 CFR Part 70 or 71.

If in the event this stationary source as defined in 40 CFR Part 63, becomes subject to Part 63, this stationary source shall notify the NSCAPCD and CPM within 90 days of becoming subject to the regulation. The stationary source shall identify all applicable requirements of Part 63 and submit a plan for complying with all applicable requirements.

Verification: The project owner shall make the site and records available for inspection by representatives of the District, ARB, U.S. EPA and Energy Commission upon request. The project owner shall submit required reports to the CPM (see **AQ-SC2**).

REFERENCES

ARB 2018a - California Air Resources Board. Air Designation Maps available on ARB website. http://www.arb.ca.gov/desig/adm/adm.htm Accessed May 2018.

ARB 2018b - California Air Resources Board. California Ambient Air Quality Data Standards available on ARB website. http://www.arb.ca.gov/research/aaqs/aaqs.htm Accessed May 2018

GPC 2015 – Geyser Power Company – Grant (Unit 20) Cooling Tower Replacement Project Description and Request for Expedited Processing (TN 207102) December 22, 2015

GPC 2017 – Geyser Power Company – PTA Geysers-16, Quicksilver, Diesel Generator for Cooling Tower Wetting System (TN 222035) December 21, 2017

GPC 2018a – Geyser Power Company – Consolidated Petition for Geysers Unit 16, Unit 18 and Unit 20 (TN 222335) January 23, 2018

GPC 2018b – Geyser Power Company – Air Quality and Emissions Impact Analysis (TN 222539) February 13, 2018

CEC 1983a – California Energy Commission – Grant (Unit 20) 1983 Final Decision (TN 207102) November 24, 2015

CEC 1983b – California Energy Commission – Grant Compliance Plan (TN 206758) November 24, 2015

CEC 2016a – California Energy Commission –Expedited Processing Pursuant to Order B-36-15 (TN 207192) January 5, 2016

CEC 2016b – California Energy Commission – Final Permission for Exec. Order B-36-15 Expedited Processing & N. Sonoma Air Pollution Control District Authority to Construct (ATC) (TN 210233) February 8, 2016

NSCAPCD 2010 – Northern Sonoma County Air Pollution Control District – Title V Operating Permit issued December 1, 2010

NSCAPCD 2016 – Northern Sonoma County Air Pollution Control District – Title V Operating Permit issued August 8, 2016

NSCAPCD 2017a – Northern Sonoma County Air Pollution Control District – Evaluation Report Geysers Power Company Emergency Standby Diesel Generator issued December 6, 2017

NSCAPCD 2017b – Northern Sonoma County Air Pollution Control District – Authority to Construct and Temporary Permit to Operate #14-20 issued December 6, 2017

NSCAPCD 2018 – Northern Sonoma County Air Pollution Control District – Permit to Operate #82-45A current 2018

NSCAPCD 2018 – Northern Sonoma County Air Pollution Control District – Permit to Operate #82-45B current 2018

U.S. EPA 2018a – United States Environmental Protection Agency. The Green Book Nonattainment Areas for Criteria Pollutants website. https://www.epa.gov/green-book Accessed May 2018.

U.S. EPA 2018b - United States Environmental Protection Agency. National Ambient Air Quality Data Standards available on U.S. EPA website. https://www.epa.gov/criteria-air-pollutants/naaqs-table Accessed May 2018.

Quicksilver Geothermal (PG&E Geysers 16) (79-AFC-05C)
Socrates Geothermal (PG&E Geysers 18) (79-AFC-03C)
Grant Geothermal (PG&E Geysers 20) (82-AFC-01C)

Petition to Amend Worker Safety and Fire Protection Analysis Permanent diesel pump for cooling Tower Wet-down System.

Brett Fooks

INTRODUCTION AND SUMMARY

Geysers Power Company, LLC filed a Petition to Amend (PTA) on December 21, 2017 requesting approval to install a permanent stationary diesel engine and pump for the cooling tower wet-down systems at Quicksilver, Socrates and Grant. (GPC 2017).

SCOPE OF ANALYSIS

The scope of this analysis is to determine whether construction and operation of the permanent stationary diesel engine and pump for the cooling tower wet-down system would:

- Comply with worker safety and fire protection laws, ordinances, regulations, and standards (LORS);
- Protect against fire; or,
- Require changes, deletions, or the addition of any new condition(s) of certification in order to ensure compliance with LORS.

BACKGROUND

The PTA consists of installing a permanent diesel engine and pump to supply water to the cooling tower wet-down system at each of the power plants. The primary purpose of the pump is to operate the cooling tower wet-down system during a plant personnel evacuation caused by an approaching wildland fire and grid-provided electrical power is unavailable. The diesel pump would be able to provide up to 24 hours of continuous unattended operation for the cooling tower wet-down system.

ANALYSIS

Staff reviewed the provided schematic design of the fire protection system. The schematic shows that the wet-down system diesel pump would use the cooling tower basin for its water supply (GPC 2017, Figure 1). The schematic also shows that the existing fire protection system would be connected so that it can also supply water to the cooling tower wet-down system through a check valve from the main fire protection loop that runs throughout the plant. Staff asked for clarification on the schematic drawing as to why the plant's fire protection loop would be connected to the cooling tower wet-down system. According to the project owner, the plant's electric fire pumps currently provide the primary supply of water for

the cooling tower wet-down system during outages. The wet-down diesel pump would only be activated in the event that the power plant loses grid power during an approaching wildland fire event.

Section 913.1 of the current 2016 California Fire Code (CFC) states that where provided, fire pumps shall be installed in accordance with this section and National Fire Protection Association (NFPA) 20, Standard for the Installation of Stationary Pumps for Fire Protection. Per CFC Chapter 80, the 2016 NFPA 20 is the incorporated-by-reference applicable standard for fire pumps. Section 4.7.1 of the 2016 NFPA 20 states that fire pumps shall be dedicated to and listed for fire protection service. Furthermore, the NFPA definition of fire pump is a pump that is a provider of liquid flow and pressure dedicated to fire protection. The project owner's current use of the existing electric fire pumps to provide water to the cooling tower wet-down system during production outages would not be code compliant because the wet-down system has not been designed or built to comply with the California Fire Code (CFC) or National Fire Protection Association (NFPA) standards, and is not approved as a fire protection system. Therefore, the cooling tower wet-down system is not a code-approved fire protection system and the plant's dedicated electric fire pumps cannot, per code, be used to supply water to the cooling tower wet-down system.

Staff has further concerns about the use of the plant's existing electric fire pumps to provide water to the cooling tower wet-down system during production outages. Providing water through the plant's fire protection system to the cooling tower wet-down system impairs the existing fire protection system. The proposed amendment would use the existing electric fire pumps to supply the wet-down system during routine scheduled plant maintenance shutdowns to keep the fiberglass cooling tower wet when the condenser pumps are not operational. Routine use of the fire pumps for non-fire related functions, effectively disables the alarm function of the "fire pump running" alarm used to notify the facility control room of an emergency situation. Such non-fire-related use should be provided by independent process pumps, whether diesel or electric, and not by the dedicated emergency fire pumps.

The plant's original hydraulic calculations for the design of the fire protection system did not anticipate nor allow for the increased water flow demand from the current cooling tower wet-down system, which replaced the original wet-down system, and for which no fire-code compliant design data, hydraulic calculations, or flow tests have been submitted. Section 903.3.8.5 of the 2016 CFC requires that hydraulic calculations in accordance with NFPA 13 be provided to demonstrate that the available water flow and pressure are adequate to supply all sprinklers installed in any single fire area with discharge densities corresponding to the hazard classification. These hydraulic calculations are to be used to determine the amount of water that is needed for each zone within the fire protection system, based on the hazard. The original calculations for the plant's fire protection system would not have provided for a simultaneous and ongoing process usage of the cooling tower wet-down system in addition to a potential fire emergency call for water at the lube oil systems, as an example. The fire protection system design assumes that only one fire would occur at any one time. Therefore, anytime the wet-down system would be operating off the existing electric fire pumps, the fire protection system would be considered to be impaired with respect to its designed fire response capability.

To prevent the routine impairment of the fire protection system through its use for maintenance processes, staff proposes as mitigation Condition of Certification **WORKER SAFETY-1** which would require the project owner to remove the physical connection between the cooling tower wet-down system and the plant's existing fire protection system. By removing the physical connection, the project could no longer use the existing electric fire pumps to run the cooling tower wet-down system. This would bring the plant back into compliance. The fire protection system would no longer be impaired by having its electric fire pumps used to provide water for the routine supply of water to the wet-down system during routine maintenance processes.

Included in the PTA is a cut-sheet of the diesel pump that would be used to power the cooling tower wet-down system. Staff reviewed the document and learned that the diesel pump that the project owner selected is a fire service-listed fire pump which has been painted red to match the standard color for fire life safety systems. However, according to section 901.4.5 of the current 2016 CFC, any device that has the physical appearance of life safety to fire protection equipment but that does not perform that life safety or fire protection function shall be prohibited. Since the diesel pump would be installed only to run the cooling tower wet-down system, the pump would not be used for the plant's fire life safety needs. To ensure that the diesel pump is not misconstrued for a fire life safety system, staff proposes condition of certification **WORKER SAFETY-2** which would require the project owner to put up signage stating that the diesel pump is not part of the plant's fire life safety system. By having appropriate signage, first responders would know that the diesel wet-down pump would not be a part of the plant's fire protection system.

CONCLUSIONS

Staff has reviewed the proposed PTA and found that with implementation of proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2,** the proposed changes to the plant, as described in the PTA, would comply with applicable LORS.

PROPOSED CONDITIONS OF CERTIFICATION

WORKER SAFETY-1 The project owner shall physically disconnect the piping connection between the cooling tower wet-down system and the plant's fire protection system.

VERIFICATION: The project owner shall complete the physical disconnection of the cooling tower wet-down system from the plant's fire protection system no later than January 1, 2019 or a later date if agreed upon by the CPM. The CPM shall be notified at least 30 days prior to the current disconnection date, if the project owner wishes to seek an extension to the current disconnection date. The project owner shall submit a letter stating that the physical disconnection has occurred and provide the final DCBO approved design drawings along with photographs showing the implementation no later than 30 days after the disconnection.

WORKER SAFETY-2 The project owner shall physically label the diesel engine and wet-down pump and the pump house with clear signage so that it would not be mistakenly identified as an emergency fire pump by plant personnel or first responders during an emergency.

VERIFICATION: At least 30 days prior to the start of construction of the diesel engine and wet-down pump and the pump house, the project owner shall submit a plan and photographs showing the language and location of the signage to the CPM for review and approval.

REFERENCES

GPC 2017. Petition to amend – Permanent Installation of Diesel Engine and Pump for Cooling Tower Wet-Down System Permanent Diesel Engine and Pump. 21 December 2017, Docket No. 79-AFC-05C, (TN#222035-7).