DOCKETED	
Docket Number:	79-AFC-02C
Project Title:	NCPA/Shell Geothermal Project #2 (78-NOI-5) - Compliance
TN #:	236734
Document Title:	Northern California Power Agency's Geothermal Project No. 1, Docket No
Description:	NCPA Plant 1 ACR Docket #79-AFC-2
Filer:	Anthony Edward Allegra
Organization:	Northern California Power Agency - Geothermal Project
Submitter Role:	Public Agency
Submission Date:	2/11/2021 11:01:08 AM
Docketed Date:	2/11/2021

January 27, 2021

ANWAR ALI, Ph.D.
COMPLIANCE PROJECT MANAGER
CALIFORNIA ENERGY COMMISSION
Siting, Transmission, & Environmental Protection Division
1516 Ninth Street, Sacramento, CA 95814
Direct: (916) 654-5020 | **Fax: (916) 651-8868**

Subject: Northern California Power Agency's Geothermal Project No. 1, Docket No. 79-AFC-2

Dear Anwar Ali

Enclosed is the Annual Compliance Report prepared for the Northern California Power Agency's Geothermal Project No. 1. This report is being submitted in accordance with the Energy Commission COM-7 reporting requirements and summarizes the primary compliance activities during the year 2020.

Sincerely,

Anthony Allegra
Compliance Manager
Northern California Power Agency

Northern California Power Agency's Geothermal Project No. 1

Annual Compliance Report January 1-December 31, 2018

Compliance Plan

Condition	Verification	Status	Notes
Air Quality			
No specific requirements were included in the compliance and monitoring program.			
Public Health			
No specific requirements were included in the compliance and monitoring program.			
Socioeconomics			
No specific requirements were included in the compliance and monitoring program.			
Cultural Resources			
No specific requirements were included in the compliance and monitoring program.			
Biological Resources			
2.(b)	The USGS shall require NCPA to submit Annual Reports of Compliance under 30 CFR 270.76.	On-going	This report satisfies this requirement for year 2020
Water Resources, Water Quality			
No specific requirements were included in the compliance and monitoring program.			
Soils			
No specific requirements were included in the compliance and monitoring program.			
Solid Waste Management			
No specific requirements were included in the compliance and monitoring program.			
Safety			
12-2	CAL/DOSH shall notify the USGS in writing each time a violation occurs.	On-going	No violations occurred during the reporting period
Transmission Line Safety and Nuisance			
13-4	NCPA shall maintain a record of complaints regarding induced currents. These records shall be made available to authorized USGS staff upon request.	On-going	No complaints received during the reporting period

13-6	NCPA shall keep records of CAL/DOHS inspections and shall make them available to authorized USGS staff upon request.	On-going	No inspections occurred during the reporting period
13-7	NCPA shall maintain records of complaints and corrective action of radio and television interference attributed to the transmission line facilities, and shall make these records available to authorized USGS staff upon request.	On-going	No complaints received during the reporting period
Transmission Line Biological Resources			
No specific requirements were included in the compliance and monitoring program			
Noise			
No specific requirements were included in the compliance and monitoring program			

Attachment 1

2020 Title V Reports

January 27, 2021

ANWAR ALI, Ph.D.
COMPLIANCE PROJECT MANAGER
CALIFORNIA ENERGY COMMISSION
Siting, Transmission, & Environmental Protection Division
1516 Ninth Street, Sacramento, CA 95814
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Anthony Allegra
Compliance Manager
Northern California Power Agency

Northern California Power Agency's Geothermal Project No. 1

Annual Compliance Report January 1-December 31, 2018

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Public Health			
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Transmission Line Safety and Nuisance			
13-4	NCPA shall maintain a record of complaints regarding induced currents. These records shall be made available to authorized USGS staff upon request.	On-going	No complaints received during the reporting period

13-6	NCPA shall keep records of CAL/DOHS inspections and shall make them available to authorized USGS staff upon request.	On-going	No inspections occurred during the reporting period
13-7	NCPA shall maintain records of complaints and corrective action of radio and television interference attributed to the transmission line facilities, and shall make these records available to authorized USGS staff upon request.	On-going	No complaints received during the reporting period
Transmission Line Biological Resources			
No specific requirements were included in the compliance and monitoring program			
Noise			
No specific requirements were included in the compliance and monitoring program			

Attachment 1

2019 Title V Reports

GRANT OF EASEMENT
AND
JOINT ROAD AGREEMENT

THIS AGREEMENT, entered into as of the 1st day of September, 1974, by and between FRANCES W. VOUGHT, an individual, and HELEN DILLINGHAM, an individual acting by and through R. R. Vought, her attorney-in-fact, (hereinafter collectively called "Owners"); BURMAH OIL AND GAS COMPANY, a corporation ("Burmah" herein), and SHELL OIL COMPANY, a corporation ("Shell" herein),

W I T N E S S E T H:

WHEREAS, Owners own in fee that certain property situated in Lake and Sonoma Counties, California, described as follows:

> The SW 1/4 of the SE 1/4 of Section 27 and the NW 1/4 of the NE 1/4 and the SW 1/4 of the NE 1/4 of Section 34, T. 11 N., R 8 W, M.D.M.,

(hereinafter called "Said Lands"); and

WHEREAS, Burmah holds the Lessee's interest in a geothermal resources lease from Owners covering Said Lands, and both Shell and Burmah have or may acquire further geothermal leases, or interests therein, in a larger area in the vicinity of Said Lands, such larger area delineated and outlined in red on attached Exhibit B and referred to herein as "Said Area of Interest"; and

WHEREAS, it is the mutual desire and intent of the parties hereto to provide hereby for the construction and maintenance of an initial road ("Initial Road" herein)

upon and across Said Lands and to set forth guidelines for the construction and maintenance of further roads within Said Area of Interest;

NOW, THEREFORE, in consideration of the premises and other good and valuable consideration, receipt whereof is hereby acknowledged respectively by each party hereto, it is mutually agreed as follows:

I. Initial Road

A. Construction

1. Shell has immediate need, and Shell and Burmah have potential future need, for a road from the Socrates Mine Road across Said Lands along the existing fire trail running generally along the Lake-Sonoma County line to the public domain lands south of Said Lands along the route shown in green ("Said Route" herein) on attached Exhibit A. Accordingly, during the term hereof, Owners grant to Burmah and Shell, and Owners and Burmah grant to Shell an Easement and Right-of-Way, twenty (20) feet in width, lying ten (10) feet on each side of Said Route outlined in green on attached Exhibit A.

2. Subject to the obtaining of all necessary governmental and other permits, Burmah shall, at the sole risk and expense of Shell, as hereinafter set forth, commence not later than October 1, 1974, and thereafter diligently pursue, operations to grade, construct, and establish an improved road along Said Route.

Within forty-five (45) days after completion of said road and subject to the availability of a survey crew, Burmah, at Shell's expense, shall furnish to Owners and to Shell a survey of the centerline description of said Initial Road. Within thirty (30) days thereafter, Burmah shall file for record in the offices of the County Recorders of Lake County and Sonoma County an instrument setting forth said centerline description.

3. Any and all operations connected with the construction, improvement, and surveying of said Initial Road shall be at Shell's expense, and Shell agrees to reimburse or pay Burmah for all items of such expense within thirty (30) days after receiving invoice therefor; provided, however, that the road is estimated to cost in the neighborhood of $25,000.00, and Shell shall not be obligated to pay any such construction expense totalling in excess of $40,000.00.

4. Notwithstanding the foregoing limitation, all risk of construction, improvement, and surveying of said Initial Road, including without limitation all loss or damage arising out of death, personal injury or property damage and suffered by any persons whatsoever, whether or not a party to this agreement, shall be borne exclusively by Shell, and Shell hereby indemnifies and holds harmless Owners and Burmah therefrom, except as to any such loss or damage occasioned solely by the gross negligence or willful misconduct of

Burmah, its employees, agents, or contractors.

5. During the construction of said Initial Road, all cuts and fills or other excavations made in the soil are to be backfilled or replaced, reseeded with native pasture grasses, trees and other vegetation, and fertilized, upon completion of this work, at the appropriate season of the year. All rocks and earth materials removed in the construction of said road are to be replaced upon termination of this work and said lands left in a neat and orderly condition. If it becomes necessary to remove any commercially valuable trees during the construction of said Initial Road Burmah shall pay to Owner the reasonable value thereof at the location where cut, and Shell shall promptly reimburse Burmah therefor.

B. Use and Maintenance

During the term hereof each of the parties hereto shall have the right at its own risk to use said Initial Road. Any party using the said road shall take necessary steps to maintain or restore said road to the condition thereof at the time said party commenced use of said road. Other than the foregoing, no party is obligated to maintain said Initial Road, but any party may volunteer and shall have the right to further improve or maintain the road at its own risk and expense.

II. Additional Roads in Said Area of Interest

A. Construction

During the term hereof, the parties will cooperate with one another in granting or acquiring easements, rights-of-way, or other necessary permission to allow any party hereto to construct at its sole risk and expense, additional roads in said Area of Interest, in furtherance of said party's geothermal operations therein or in the vicinity thereof.

B. Use and Maintenance

Any such additional road constructed by a party hereto in said Area of Interest may be used by any party hereto at its sole risk and expense, in connection with its geothermal operations in the Area of Interest or in the vicinity thereof, provided necessary permission for such use can be obtained from third parties where required. Any party hereto may, but no party is hereby required to, further improve or maintain any such additional road, but any party hereto entitled to use said additional road may improve or maintain same at its sole risk and expense.

III. Miscellaneous

A. Term

The term of this agreement shall extend for as long as either Burmah or Shell has any interest in any geothermal lease in Said Area of Interest.

B. Successors in Interest

This agreement shall bind and inure to the benefit of the respective heirs, administrators, executors, successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first hereinabove written.

Owners:

Frances W. Vought

Helen Dillingham, by R. R. Vought, her attorney-in-fact

Burmah: BURMAH OIL AND GAS COMPANY

By Wm J. Talley
Contract Agent

Shell: SHELL OIL COMPANY

By R. F. Karshner
Its Attorney-in-Fact

EXE

STATE OF CALIFORNIA)
Santa Barbara } ss.
COUNTY OF ~~LOS ANGELES~~)

On Feb. 17, 1975, before me, the undersigned, a Notary Public in and for said County and State, personally appeared FRANCES W. VOUGHT, known to me to be the person whose name is subscribed to the within instrument and acknowledged that she executed the same.

WITNESS my hand and official seal.

OFFICIAL SEAL
O. R. WILSON
NOTARY PUBLIC-CALIFORNIA
SANTA BARBARA COUNTY
My Commission Expires Mar. 3, 1978
1482 East Valley Rd., Santa Barbara, CA. 93108

O R Wilson
Notary Public in and for said County and State

STATE OF CALIFORNIA)
Santa Barbara } ss.
COUNTY OF ~~LOS ANGELES~~)

On Feb. 17, 1975, before me, the undersigned, a Notary Public in and for said County and State, personally appeared R. R. VOUGHT, known to me to be the person whose name is subscribed to the within instrument, as the Attorney-in-Fact of HELEN DILLINGHAM, and acknowledged to me that he subscribed the name of HELEN DILLINGHAM thereto as principal and his own name as Attorney-in-Fact.

WITNESS my hand and official seal.

OFFICIAL SEAL
O. R. WILSON
NOTARY PUBLIC-CALIFORNIA
SANTA BARBARA COUNTY
My Commission Expires Mar. 3, 1978
1482 East Valley Rd., Santa Barbara, CA. 93108

O R Wilson
Notary Public in and for said County and State

STATE OF CALIFORNIA)
~~X~~ VENTURA } ss.
COUNTY OF ~~LOS ANGELES~~)

On 10-1-74, before me, the undersigned, a Notary Public in and for said County and State, personally appeared R. E. KARSHNER, known to me to be the person whose name is subscribed to the within instrument, as Attorney-in-Fact of SHELL OIL COMPANY, and acknowledged to me that he subscribed the name of SHELL OIL COMPANY thereto as principal and his own name as Attorney-in-Fact.

WITNESS my hand and official seal.

OFFICIAL SEAL
NINA E. SEIBEL
NOTARY PUBLIC - CALIFORNIA
PRINCIPAL OFFICE IN
VENTURA COUNTY
My Commission Expires January 27, 1978
196 South Fir St., Ventura Calif. 93001

Nina E. Seibel
Notary Public in and for said County and State
Nina E. Seibel

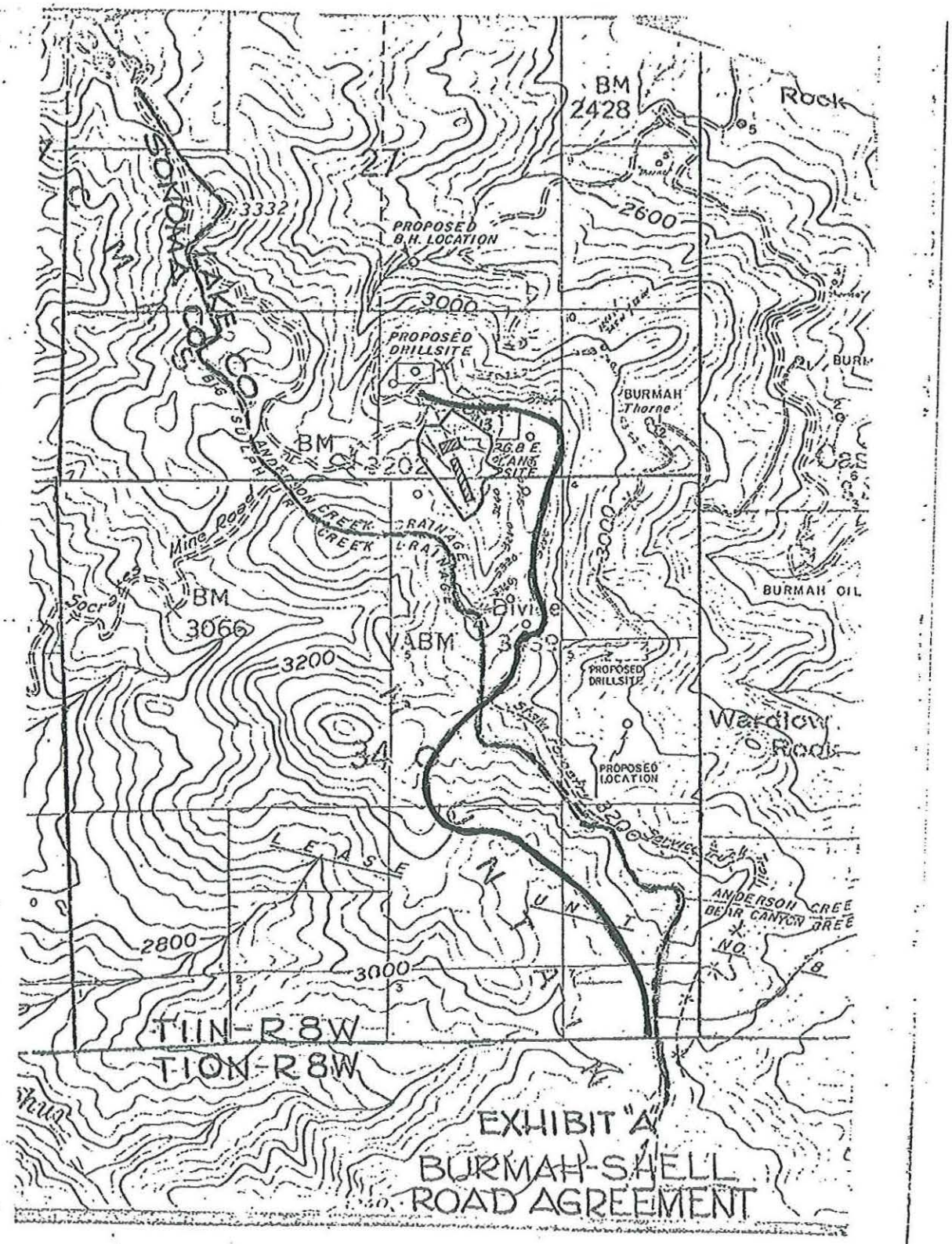
STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

On October 14, 1974, before me, the undersigned, a Notary Public in and for said County and State, personally appeared Wm. J. Talley, known to me to be the Contract Agent of BURMAH OIL AND GAS COMPANY that executed the within Instrument, known to be to be the person who executed the within Instrument on behalf of the corporation herein named, and acknowledged to me that such corporation executed the within instrument pursuant to its by-laws or a resolution of its board of directors.

WITNESS my hand and official seal.

OFFICIAL SEAL
SHIRLEY F. ZAZA
NOTARY PUBLIC-CALIFORNIA
PRINCIPAL OFFICE IN
LOS ANGELES COUNTY
My Commission Expires Jan. 31, 1977

Shirley F. Zaza
Notary Public in and for said County and State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SONOMA LAKE CO
3332
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PROPOSED DRILLSITE
BURMAH Thorne
BURMAH OIL
BM 3202
ANDERSON CREEK
DRAINAGE
Mine Road
BM 3066
3200
PROPOSED DRILLSITE
Wardlow Road
PROPOSED LOCATION
LEASE
UNIT
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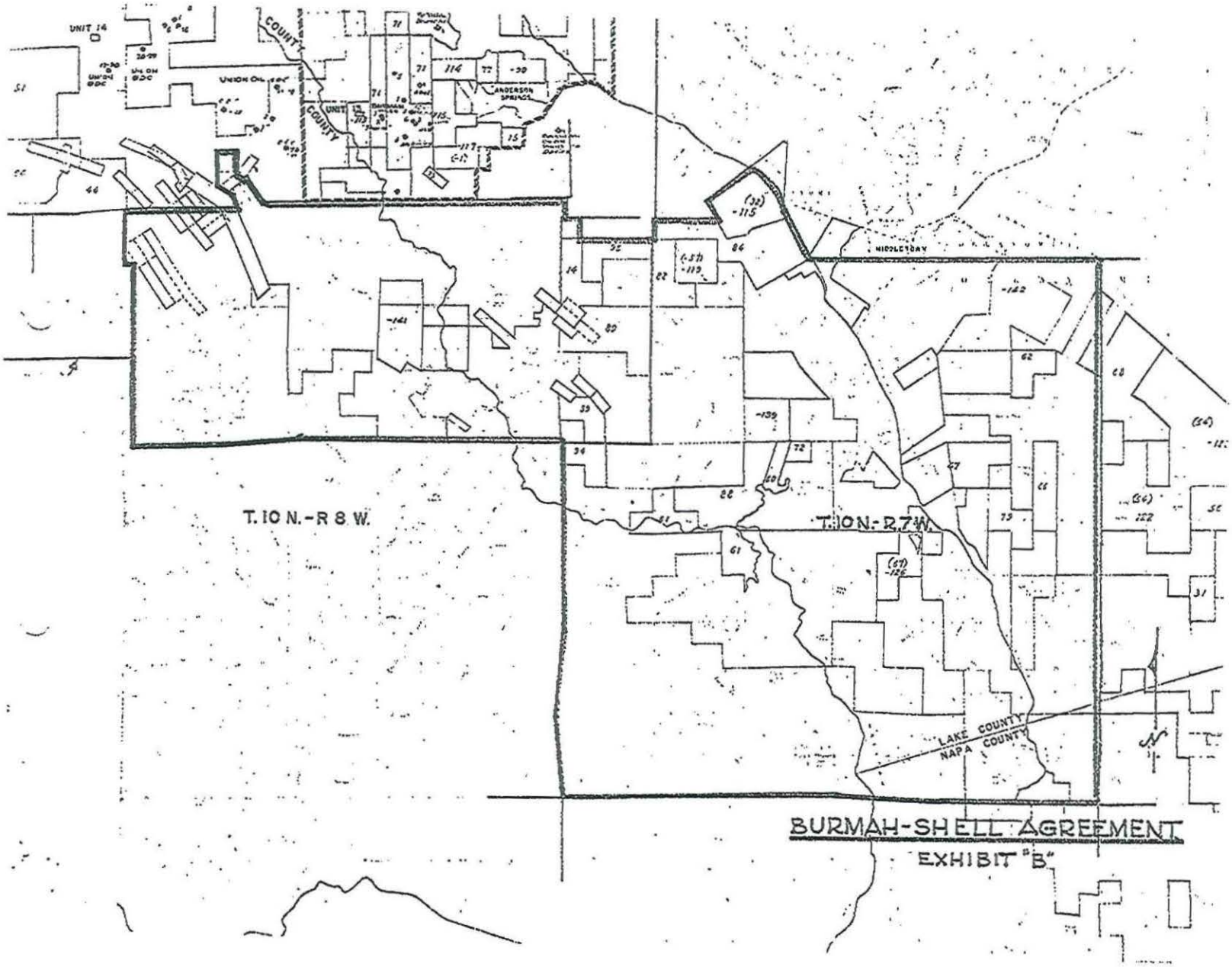
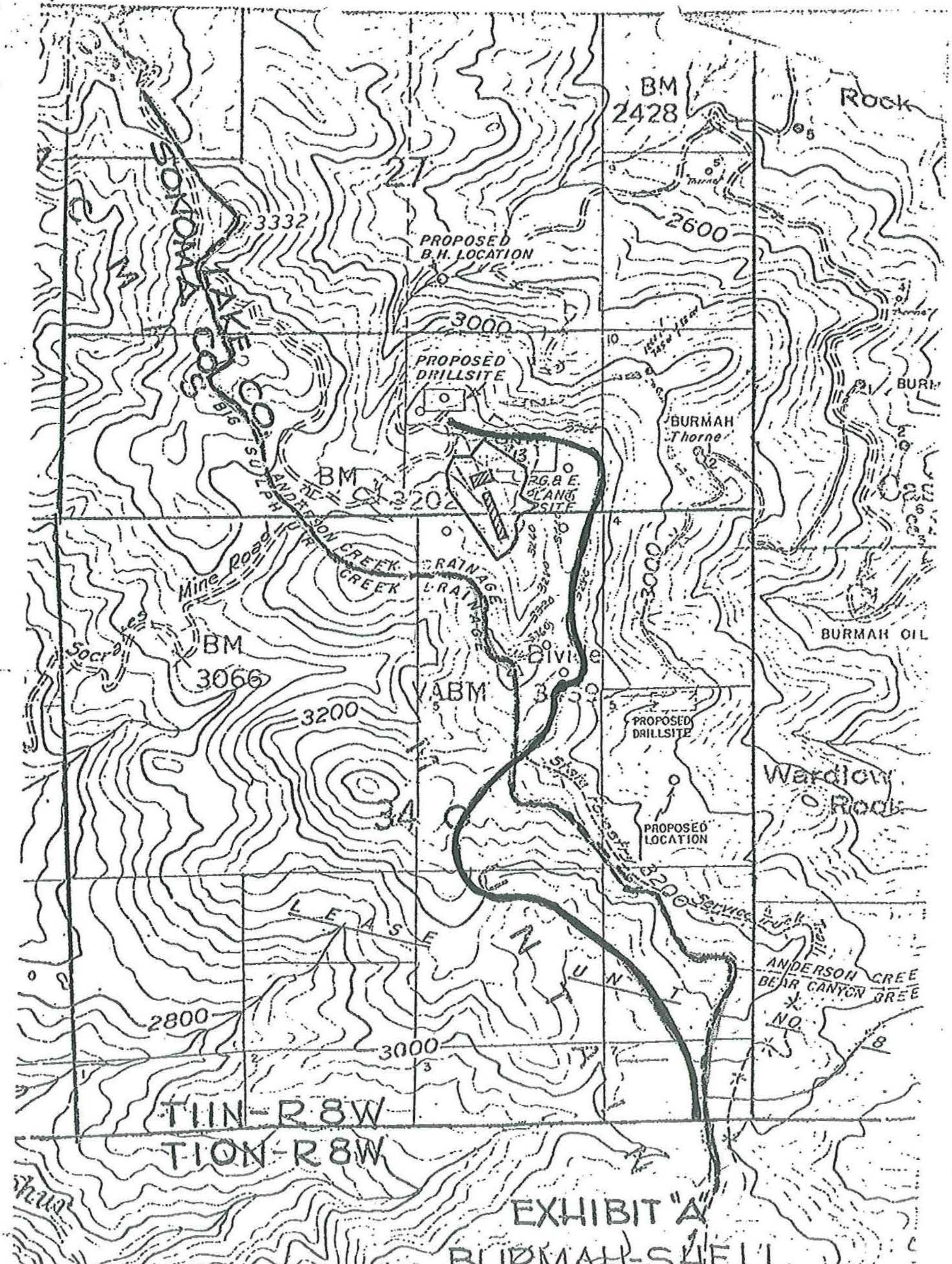
3000
T11N-R8W
T10N-R8W
EXHIBIT "A"
BURMAH-SHELL
ROAD AGREEMENT



BURMAH-SHELL AGREEMENT

EXHIBIT "B"


BM
2428
Rock
27
3332
2600
PROPOSED
B.H. LOCATION
3000
PROPOSED
DRILLSITE
BURMAH
Thorne
BM
3202
P.G.&E.
PLANT
SITE
SONOMA CO.
LAKE CO.
BIG SULPHUR CREEK
ANDERSON CREEK
DRAINAGE
Mine Road
BM
3066
BURMAH OIL
VABM
Divide
3200
PROPOSED
DRILLSITE
Wardlow
Rock
34
PROPOSED
LOCATION
Service Trail
LEASE
UNIT
ANDERSON CREEK
BEAR CANYON CREEK
NO.
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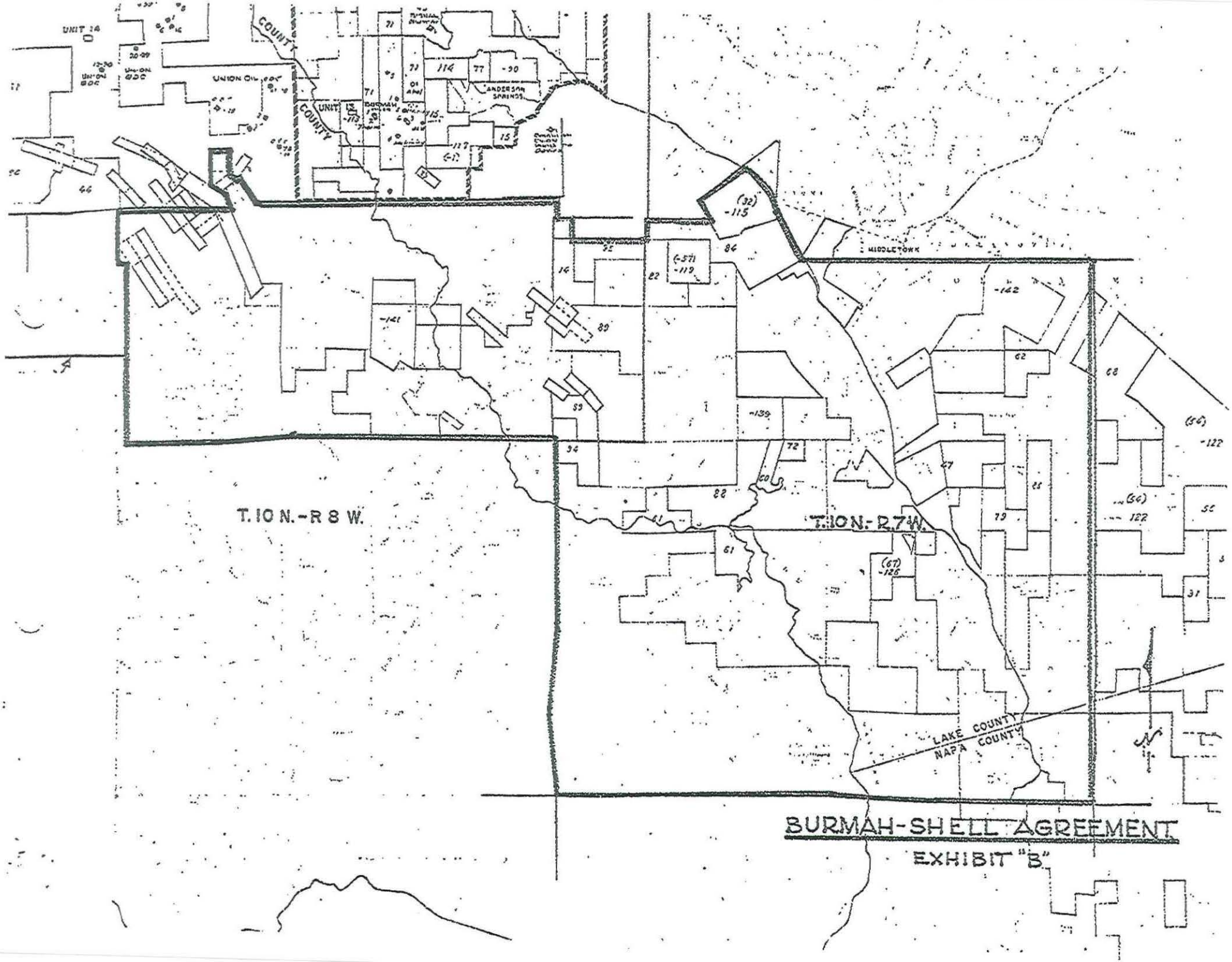
2800
3000
T11N-R8W
T10N-R8W
EXHIBIT "A"
BURMAH-SHELL
ROAD AGREEMENT


T. 10 N. - R 8 W.
T. 10 N. - R 7 W.
LAKE COUNTY
NAPA COUNTY
MIDDLETOWN
ANDERSON SPRINGS
UNION OIL
UNIT 1A
COUNTY
BURMAH-SHELL AGREEMENT
EXHIBIT "B"

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: January
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	01/29/2020	4.98 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.7 ppm Fe in Circ. Wtr.: 0.89 ppm
2	5.0 lbs/hr	01/29/2020	2.96 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.7 ppm Fe in Circ. Wtr.: 1.45 ppm
4	5.5 lbs/hr	01/10/2020	1.9 lbs/hr	Fe Feedrate: 10.0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0 ppm Fe in Circ. Wtr.: 1.22 ppm

Notes/Comments: Plant 1 out-of-service 01/01/2020 - 01/23/2020 due to PG&E outage (543.25 hours off-line).

Plant 2 out-of-service 01/21/2020 - 01/22/2020 for scheduled outage (43 hours off-line).

		Plant 1	Plant 2
Hours in Month: 744	***Hours Houston Atlas On-Line:**	200.75	701

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: February
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	02/06/2020	0.19 lbs/hr	Fe Feedrate: 15 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.8 ppm Fe in Circ. Wtr.: 2.8 ppm
2	5.0 lbs/hr	02/06/2020	0.62 lbs/hr	Fe Feedrate: 15 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.8 ppm Fe in Circ. Wtr.: 2.4 ppm
4	5.5 lbs/hr	02/04/2020	2.48 lbs/hr	Fe Feedrate: 16 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.3 ppm Fe in Circ. Wtr.: 1.58 ppm

Notes/Comments: Plant 1 out-of-service 02/17/2020 - 02/21/2020 due to forced outage (105 hours off-line).

Plant 1 Houston Atlas out-of-service 02/23/2020, 02/24/2020, and 02/27/2020 (28 hours off-line).

Plant 2 out-of-service 02/17/2020 - 02/29/2020 due to scheduled PG&E line outage (306 hours off-line).

		Plant 1	Plant 2
Hours in Month: 696	***Hours Houston Atlas On-Line:**	563	390

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: March
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	03/03/2020	0.68 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 1.11 ppm
2	5.0 lbs/hr	03/03/2020	0.22 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 1.47 ppm
4	5.5 lbs/hr	03/04/2020	0.84 lbs/hr	Fe Feedrate: 10.7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0 ppm Fe in Circ. Wtr.: 2.52 ppm

Notes/Comments: Plant 1 Houston Atlas out-of-service 03/19/2020 - 03/20/2020 (12.5 hours off-line).

Plant 2 out-of-service 03/01/2020 - 03/02/2020 due to scheduled PG&E line outage (32.5 hours off-line).

Plant 2 out-of-service 03/24/2020 - 03/31/2020 due to forced outage (179.5 hours off-line).

		Plant 1	Plant 2
Hours in Month: 744	***Hours Houston Atlas On-Line:**	731.5	532

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: April
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	04/02/2020	0.46 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 2.8 ppm Fe in Circ. Wtr.: 1.55 ppm
2	5.0 lbs/hr	04/02/2020	0.62 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 2.8 ppm Fe in Circ. Wtr.: 2.50 ppm
4	5.5 lbs/hr		lbs/hr	Fe Feedrate: lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: ppm Fe in Circ. Wtr.: ppm

Notes/Comments: Plant 2 out-of-service 04/01/2020 - 04/30/2020.

		Plant 1	Plant 2
Hours in Month: 720	***Hours Houston Atlas On-Line:**	720	0

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: May
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	05/28/2020	0.15 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.7 ppm Fe in Circ. Wtr.: 1.68 ppm
2	5.0 lbs/hr	05/28/2020	0.31 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.7 ppm Fe in Circ. Wtr.: 2.42 ppm
4	5.5 lbs/hr	05/27/2020	4.17 lbs/hr	Fe Feedrate: 10.0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.2 ppm Fe in Circ. Wtr.: 1.69 ppm

Notes/Comments: Plant 2 out-of-service 05/01/2020 - 05/14/2020

		Plant 1	Plant 2
Hours in Month: 744	***Hours Houston Atlas On-Line:**	744	418.25

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: June
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	06/09/2020	0.18 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 2.47 ppm
2	5.0 lbs/hr	06/09/2020	0.04 lbs/hr	Fe Feedrate: 3 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 1.33 ppm
4	5.5 lbs/hr	06/11/2020	0.37 lbs/hr	Fe Feedrate: 10.3 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.1 ppm Fe in Circ. Wtr.: 1.84 ppm

Notes/Comments: Plant 1 H2S analyzer out-of-service 06/14/2020 - 06/15/2020 due to equipment failure.

Plant 1 out-of-service 06/23/2020 due to scheduled PG&E line outage.

Plant 2 out-of-service 06/26/2020 due to scheduled PG&E line outage.

		Plant 1	Plant 2
Hours in Month: 720	***Hours Houston Atlas On-Line:**	683.25	701.67

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: July
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	07/13/2020	0.2 lbs/hr	Fe Feedrate: 10 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 2.28 ppm
2	5.0 lbs/hr	07/13/2020	0.14 lbs/hr	Fe Feedrate: 3.5 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 1.38 ppm
4	5.5 lbs/hr	07/21/2020	0.51 lbs/hr	Fe Feedrate: 11.3 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0 ppm Fe in Circ. Wtr.: 2.74 ppm

Notes/Comments:

		Plant 1	**Plant 2**
Hours in Month: 744	***Hours Houston Atlas On-Line:**	744	744

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: August
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	08/03/2020	0.09 lbs/hr	Fe Feedrate: 11 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.4 ppm Fe in Circ. Wtr.: 2.68 ppm
2	5.0 lbs/hr	08/03/2020	0.27 lbs/hr	Fe Feedrate: 4 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.4 ppm Fe in Circ. Wtr.: 1.64 ppm
4	5.5 lbs/hr	08/04/2020	0.66 lbs/hr	Fe Feedrate: 9.6 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.1 ppm Fe in Circ. Wtr.: 1.23 ppm

Notes/Comments: Plant 1 H2S analyzer out-of-service 08/17/20 - 08/18/20.

Plant 2 out-of-service 08/16/20 due to line trip caused by electrical storm.

		Plant 1	**Plant 2**
Hours in Month: 744	***Hours Houston Atlas On-Line:**	720	735.25

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: September
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	09/17/2020	0.23 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.8 ppm Fe in Circ. Wtr.: 0.27 ppm
2	5.0 lbs/hr	09/17/2020	0.3 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.8 ppm Fe in Circ. Wtr.: 0.38 ppm
4	5.5 lbs/hr	09/15/2020	1 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.2 ppm Fe in Circ. Wtr.:0.31 ppm

Notes/Comments: Plant1 H2S analyzer out-of-service 9/17/20 - 9/18/20.

Plant 1 out-of-service 9/24/20 - 9/30/20 due to PG&E line outage.

		Plant 1	**Plant 2**
Hours in Month: 720	***Hours Houston Atlas On-Line:**	546.33	720

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: October
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	10/15/2020	0.08 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 2.43 ppm
2	5.0 lbs/hr	10/15/2020	0.04 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.3 ppm Fe in Circ. Wtr.: 0.28 ppm
4	5.5 lbs/hr	10/13/2020	1.39 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.4 ppm Fe in Circ. Wtr.:0.18 ppm

Notes/Comments: Plant 1 off-line 10/1/2020 - 10/6/2020 due to PG&E outage. Plant 2 offline 10/21/2020 due to forced outage. Plant 1 and Plant 2 off-line 10/25/2020 - 10/28/2020 due to PG&E line outage (PSPS event).

		Plant 1	**Plant 2**
Hours in Month: 744	***Hours Houston Atlas On-Line:**	563.34	688

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: November
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	11/05/2020	0.85 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.1 ppm Fe in Circ. Wtr.: 0.43 ppm
2	5.0 lbs/hr	11/05/2020	0.17 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.1 ppm Fe in Circ. Wtr.: 0.18 ppm
4	5.5 lbs/hr	11/04/2020	0.25 lbs/hr	Fe Feedrate: 7 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.6 ppm Fe in Circ. Wtr.:0.64 ppm

Notes/Comments: Plant 2 off-line 11/6/2020 - 11/8/2020 due to scheduled outage.

		Plant 1	Plant 2
Hours in Month: 720	***Hours Houston Atlas On-Line:**	720	653

***Note: Calibration hours are considered on-line hours.**

NORTHERN CALIFORNIA POWER AGENCY

SUMMARY OF H2S EMISSIONS

Month: December
Year: 2020

UNIT NUMBER	EMISSION LIMIT	DATE	SOURCE TEST RESULTS	REMARKS
1	5.0 lbs/hr	12/03/2020	1.09 lbs/hr	Fe Feedrate: 5.5 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.4 ppm Fe in Circ. Wtr.: 1.25 ppm
2	5.0 lbs/hr	12/03/2020	0.91 lbs/hr	Fe Feedrate: 0 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 1.4 ppm Fe in Circ. Wtr.: 0.50 ppm
4	5.5 lbs/hr	12/02/2020	0.95 lbs/hr	Fe Feedrate: 14 lbs/hr H2O2 Feedrate: 0 lbs/hr Sweet Gas H2S: 0.1 ppm Fe in Circ. Wtr.:2.04 ppm

Notes/Comments: Plant 1 Houston Atlas H2S analyzer out-of-service 12/3/2020 - 12/4/2020 and 12/11/2020 due to breakdown.

		Plant 1	Plant 2
Hours in Month: 744	***Hours Houston Atlas On-Line:**	721.75	744

***Note: Calibration hours are considered on-line hours.**

NCPA PLANT 1 TITLE V OPERATING PERMIT

ANNUAL COMPLIANCE CERTIFICATION REPORT

For the reporting period of July 18, 2019 thru July 17, 2020

TABLE OF CONTENTS

I. EQUIPMENT LIST

A. **PERMITTED SOURCE LIST EACH** of the following sources has been issued a Permit to Operate pursuant to the requirements of NSCAPCD Regulation 1, Chapter II Permits.
The equipment and capacities listed in Tables I.A and I.B are based on information provided by the permit holder. Routine maintenance, repair, or replacement with identical or equivalent equipment that does not result in an increase, or potential increase, in emissions of any air pollutant subject to District control does not require a permit modification. Replacement equipment that is within 5% of the listed capacity shall be considered equivalent for the purposes of this permit.

Pumps listed with a capacity range may be replaced with pumps within the listed range without notification to the District. Any replacement of pumps outside the listed range shall receive District approval prior to replacement;

Power Plant			
PLANT 1			
		UNIT 1	
S-#	**Description**	**Capacity**	**Notes**
1	Steam Turbine	986,267 lb Steam/hr	**No Changes**
2	Generator	55 MW gross nameplate capacity	**No Changes**
3	Surface Condenser with Steam Operated 3 Stage Hybrid Gas Ejector/Vacuum Pump System	1,170,000,000 BTU/Hr	**No Changes**
4	Cooling Tower, Cross Flow Mechanical Draft Type with 0.002% rated drift eliminators and with 6x150 hp fans	63,000 gpm maximum	**No Changes**

Power Plant

PLANT 1

		UNIT 2	
S-#	**Description**	**Capacity**	
1	Steam Turbine	985,000 lb Steam/hr	**No Changes**
2	Generator	55 MW gross nameplate capacity	**No Changes**
3	Surface Condenser with Steam/Vacuum Pump Operated 3 Stage Hybrid Gas Ejector System	1,170,000,000 BTU/Hr	**No Changes**
4	Cooling Tower, Cross Flow Mechanical Draft Type with 0.002% rated drift eliminators and with 6x150 hp fans	63,000 gpm maximum	**No Changes**

Geothermal Steam Transmission Lines

POWER PLANT 1 STEAM TRANSMISSION LINE

S-#	**Description**	**Make**	**Capacity**	**Notes**
T-1	Transmission Line connected to 40 or more wells with individual rock catchers/separators, shut-in valves, root valves, and throttling valves	Custom	2.10 million lb steam/hr	**No Changes**
T-2	Transmission Line Drain Valves, Various Diameters at Various Pipeline Low Spots	Custom		**No Changes**
T-3	Main Separators, Particulate and Condensate	Custom		**No Changes**
T-4	Stacking Mufflers, Rock	Custom		**No Changes**
T-5	Waste Water Sump/Pond/ Injection Wells	Custom		**No Changes**
T-6	Central Computer Control with Power Back-Up	Custom		**Software and security updates on regular basis.**
T-7	Condensate Collection System and Storage Tanks	Custom		**No Changes**
T-8	Pipeline Rupture Discs	Custom		**No Changes**
T-9	Intertie to Power Plant 2 Steam Transmission Line	Custom		**No Changes**

Plant 1 - Individual Steam Wells				
S-#	**Well**	**Make**	**Capacity 8/27/2020**	**Notes**
W-1	A-1	Custom		Injection
W-2	A-3	Custom	15,500 lb/hr @ 36 psig	Production
W-3	A-4	Custom	35,400 lb/hr @ 37 psig	Production
W-4	A-5	Custom	37,500 lb/hr @ 39 psig	Production
W-5	A-6	Custom	46,400 lb/hr @ 38 psig	Production
W-6	C-1	Custom	33,700 lb/hr @ 38 psig	Production
W-7	C-2	Custom	32,000 lb/hr @ 38 psig	Production
W-8	C-4	Custom	17,200 lb/hr @ 38 psig	Production
W-9	C-5	Custom	9,500 lb/hr @ 38 psig	Dual Use - Production & Injection
W-10	C-6	Custom	11,900 lb/hr @ 38 psig	Production
W-11	C-7	Custom	25,300 lb/hr @ 38 psig	Production
W-12	C-8	Custom	34,600 lb/hr @ 39 psig	Production
W-13	C-9	Custom		Test
W-14	C-10	Custom	39,500 lb/hr @ 41 psig	Production
W-15	C-11	Custom		Shut – in
W-16	D-1	Custom	40,000 lb/hr @ 34 psig	Production
W-17	D-2	Custom	34,600 lb/hr @ 33 psig	Production
W-18	D-5	Custom		Abandoned - January 25, 2017
W-19	D-6	Custom	20,100 lb/hr @ 32 psig	Production
W-20	D-7	Custom	0	Test
W-21	D-8	Custom	15,200 lb/hr @ 31.5 psig	Production
W-22	F-1	Custom	31,100 lb/hr @ 40 psig	Dual Use - Production & Injection
W-23	F-2	Custom	40,300 lb/hr @ 42 psig	Production
W-24	F-3	Custom	32,200 lb/hr @ 42 psig	Production
W-25	F-4	Custom		Injection
W-26	F-5	Custom	53,000 lb/hr @ 44 psig	Production

Plant 1 - Individual Steam Wells				
S-#	**Well**	**Make**	**Capacity 8/27/2019**	**Notes**
W-27	F-6	Custom	44,600 lb/hr @ 44 psig	Production
W-28	F-7	Custom	17,100 lb/hr @ 42 psig	Production
W-29	H-1	Custom	34,800 lb/hr @ 42 psig	Production
W-30	H-2	Custom	45,600 lb/hr @ 43 psig	Production
W-31	H-3	Custom	44,300 lb/hr @ 44 psig	Production
W-32	H-4	Custom		Injection
W-33	H-5	Custom	65,000 lb/hr @ 47 psig	Production
W-34	N-1	Custom	26,400 lb/hr @ 39 psig	Production
W-35	N-2	Custom	16,100 lb/hr @ 39 psig	Production
W-36	N-3	Custom	45,000 lb/hr @ 40 psig	Production
W-37	N-4	Custom	39,500 lb/hr @ 39 psig	Production
W-38	N-5	Custom	29,300 lb/hr @ 38 psig	Production
W-39	N-6	Custom	31,400 lb/hr @ 38 psig	Production
W-40	N-7, N-8	Custom		Injection

B. ABATEMENT DEVICE LIST

Hydrogen Sulfide Control System consisting of:			
POWER PLANT 1 STRETFORD SYSTEM			
A-#	**Description**	**Capacity**	**Notes**
1	**Stretford Air Pollution Control System consisting of:**		**No Changes**
A	Venturi Scrubber, 12" D	8,410 lb/hr gas 276,000 lb/hr liquid	**No Changes**
B	H_2S Absorber, 10' and 4' D x 59' H.	674,000 lb/hr liquid flow 4,900 gallon capacity 7,600 lb/hr gas flow 318,000 lb/hr liquid spray	**No Changes**
C	Two Oxidizer Tanks 15'D x 19'H, with oxidizer air blowers and spare, 150 HP each	2040 lb/hr air each 25,000 gallon capacity each	**No Changes**
D	Sulfur Slurry Tank 12"D x 14' H	9,900 gallon capacity	**No Changes**
E	Sulfur Filter, Vacuum Rotary Type, 5 ft^2, 1.5 HP	370 lb/hr wet cake ejected	**No Changes**
F	Pump Tank 11' D x 13' H	18,500 gallon capacity	**No Changes**
G	Pump Tank Evaporative Cooler with 3.0/0.75 HP fan and 0.002% Drift Eliminator	156 gpm maximum flow liquid	**No Changes**
H	Make-Up Tank 4' D x 5.5' Deep	450 gallon capacity	**No Changes**
I	Main Pumps consisting of		
a	Scrubbing Solution Circulating Pump and Spare, 100 HP each	1,320 gpm each	**No Changes**
b	Vacuum Pumps and Spare, 10 HP each	130 cfm each	**No Changes**
c	Make-Up Tank Transfer Pump, 5 HP	10 gpm	**No Changes**
d	Sulfur Slurry tank pump and Spare, 1.5 HP each	20 gpm	**No Changes**
2	**Circulating Water H_2S Abatement Solution Injection (For H_2S Control) System Consisting of:**		
A	Iron Chelate Injection/Storage System	7,000 gallon capacity 3 metering pumps, 16.7 gph each	**No Changes**
3	**Mercury Removal System Consisting of:**		

A	Vapor Liquid Separator Assembly	4’ D x 6” Demister	**No Changes**
B	Mercury Adsorption Vessel	Sulfur pastille and/or sulfur impregnated carbon filter media, 6’ minimum media depth	**No Changes**

II. PERMIT CONDITIONS

Permit conditions are designated federally (**F**), state (**S**), and/or locally (**L**) enforceable. Where a condition references a specific District regulation, the text of the referenced regulation can be found in Appendix A.

A.	**POWER PLANTS AND ABATEMENT SYSTEMS**		**Compliance?**	**Notes/Means/Methods**
I.	**Emission Limits**			
	Emission Limits for H_2S			
1.	The power plants and associated abatement systems shall comply with Regulation 1 Rule 455 (b)-Geothermal Emission Standards. In accordance with the Protocol Method specified in Rule 455(b) Note 8, total emissions of H_2S from Unit's 1and 2 shall not exceed 5.5 pounds per hour, respectively, averaged over any one hour period with Unit 3 curtailed or as specified in Appendix A of Units 1, 2, 3, and 4 Protocol Agreement. The maximum cumulative H_2S emissions from Unit's 1, 2, 3, and 4 shall not exceed 21.0 pounds per hour. Total H_2S emissions shall be the cumulative emissions to the atmosphere from the power plants and associated abatement equipment. *ref. Rule 455(b), PTO 79-26 Cond. 20.*	**F S L**	**Yes**	**Means: Quarterly compliance reports, including incident logs show that the Units are in compliance with this condition. Excursions and exceedances are documented in the quarterly compliance reports. Method: NSCAPCD Modified Method 102**
2.	The maximum cumulative H_2S emissions from Units 1, 2, 3 and 4 shall not exceed 21.0 pounds per hour. *ref. PSD SFB 82-05 Cond. IX.C.*	**F S L**	**Yes**	**As above** **Method: NSCAPCD Modified Method 102**
3.	The exit concentration in the process piping leading from the Stretford System shall not exceed 40 ppmv H_2S (dry) unless operating under a District approved Alternative Compliance Plan (ACP) such as the protocol agreement. *ref. PTO 79-26 Cond. 19.*	**F S L**	**Yes**	**As above** **Method: N/A**
4.	The power plant and associated abatement systems 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)*	**F S L**	**Yes**	**As above** **Method: N/A**
	Emission Limits for Particulate Matter			

5.	The power plant and associated abatement systems shall comply 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)*	**F S L**	**Yes**	**Means: Calculation of the PM discharge rate is based upon monthly total solids analysis, cooling water flow rates and cooling tower drift eliminator design efficiencies. Calculation indicates compliance. Method: Calculation per Condition III.4.**
II.	**Operational Limits and Requirements**			
1.	The permit holder shall not operate the plants 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 condition I.1, I.2, I.3, I.4, and I.5. *ref. Rule 240.d, PTO 79-26 Cond. 19*	**F S L**	**Yes**	**Means: N/A Method: The H_2S abatement systems are operated and maintained in accordance with operating practices and a maintenance program described in the Title V application**
2.	The abatement solution storage tank shall have a minimum of 1000 gallons of abatement solution at all times when the plant is in operation. All continuously operated chemical 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. Flowmeters shall be calibrated quarterly. Alarm systems shall be tested quarterly. *ref. PTO 79-26 Cond. 19.*	**F S L**	**Yes**	**Means: A review of operator level readings indicates compliance with this condition. A program is in place to verify tank levels, and to order and deliver chemicals prior to reaching the minimum level. Method: Flow meters and alarms are tested per permit conditions II.4.**
3.	Except for justifiable reasons during performance testing or under operation of an ACP, for which the permit holder 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 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 I.1. *ref. PTO 79-26 Cond. 20.*	**F S L**	**Yes**	**Means: A review of operator level readings indicates compliance with this condition. A program is in place to verify tank levels, and to order and deliver chemicals prior to reaching the minimum level. Method: Operating practices are in place to maintain circulating iron concentrations.**
4.	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 permit holder's maintenance	**F S L**	**Yes**	**Means: Maintenance practices are in place to ensure compliance with this condition. Alarms are tested as required and documentation of the alarm function is kept in the operator logs.**

	schedule as needed to maintain the equipment in good working order. *ref. PTO 79-26 Cond. 16.*			**Method: N/A**
5.	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 start-ups 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 Condition I.1 and I.4. *ref. PTO 79-26 Cond. 17.*	**F S L**	**Yes**	**Means: Operating practices preclude the release of untreated vent gas during start-up conditions.**
6.	All areas in the immediate vicinity and under the permit holder's responsibility shall be properly treated to control fugitive dust. *ref. PTO 79-26 Cond. 21.*	**F S L**	**Yes**	**Means: Fugitive dust is controlled with general clean-up and housekeeping and mitigation procedures used during any construction activities.**
7.	Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of steam and 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. Valves, flanges, drip legs, threaded fittings and seals on pipelines shall be maintained to prevent or reduce the emission of steam, non-condensable gases and condensate to the atmosphere as noted below: Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minute. 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. Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1000 ppm (vol) H_2S nor 10,000 ppm (vol) 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	**F S L**	**Yes**	**Means: Daily inspection by operators ensures compliance. Repair orders are submitted when leaks occur and are repaired or minimized within 15 calendar days.**

	stopping or reducing leakage to the atmosphere, using best modern practices. The permit holder shall check the power plant for fugitive leaks at least once per quarter. *ref. PTO 79-26 Cond. 21.*			
	Alternative Compliance Plan			
8.	The permit holder 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 I.1, I.3, I.4. and I.5. 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 I.1, I.3, I.4, and I.5. The ACP shall list the specific operating conditions the ACP will supersede.	**F** **S** **L**	**Yes**	**Means: ACP dated 7/30/91 is followed for excursions above permitted limits of Condition I.3.**
9.	*Facilities Operation* All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions 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. *ref. PTO 79-26 Cond. 2.*	**F** **S** **L**	**Yes**	**Means: Daily O&M practices ensure all equipment is maintained and operated as efficiently as is possible.**
10.	The cooling tower shall be maintained in good operating condition. The permit holder 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)*	**F** **S** **L**	**Yes**	**Means: Routine plant inspections by operators include the cooling tower to identify areas that need to be repaired. Plant maintenance determines needs and makes repairs during plant overhauls.**
11.	The permit holder shall, in any 12 month period, limit unscheduled outages at Units 1 and 2 to no more than a total of 110 hours for each unit. 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 permit holder). b. steam supplier induced outages (such as pressure surge, strainer plugging, etc.). c. outages hours exceeding 4 hours where the steam supplier is violating Rule 455. d. Hydroelectric curtailment outages (if applicable or where it is shown that the levels of	**F** **S** **L**	**Yes**	**Means: Unscheduled (forced) outages where steam stacking is possible are avoided. Common ownership of power plants and steam field allows for shifting of steam between units and power plants and the throttling of wellhead valves, eliminating the need to stack. In the unlikely event stacking does occur, hours of stacking are reported quarterly. No steam stacking occurred during this period.**

curtailment prevented distribution of cutbacks among the available geothermal units, and thereby, causing a curtailment related stacking event at Unit 1 and/or Unit 2). e. outages which do not cause steam stacking. A violation of the above performance standards is considered a violation of this condition. The permit holder shall have on file with the District an approved operating protocol describing the methods that will be used to meet the 110 hour per year performance standard. The protocol must include a description of the operational procedures between the steam supplier and permit holder, permit holder's operational procedures, and equipment to meet the above standard. The terms and requirements of the protocol may be modified by the Control Officer for good cause upon written request from the permit holder. The permit holder shall allow the District 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 permit holder is not able to meet the standards specified above, the following shall be required: The permit holder 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 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 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. PT0 79-26 Cond.19.*			

III.	Monitoring, Testing and Analysis		Compliance?	Notes/Means/Methods
	Performance Tests			
1.	The permit holder shall, no less than every 30 days, conduct a source test of the cooling tower to determine the H_2S emission rate to verify compliance with condition I.1. and I.4. District Method 102 shall be utilized to determine the H_2S emission rate. *ref. PTO 79-26 Cond. 23.*	**F S L**	**Yes**	**Means: Quarterly compliance reports document that source tests were performed each month. Method: NSCAPCD Modified Method 102**
1a.	The permit holder 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 I.2. Performance tests shall be conducted in accordance with Northern Sonoma County APCD Method 102, unless otherwise specified by EPA. The permit holder shall furnish the Northern Sonoma County APCD, the California Air Resources Board and the EPA (Attn: Air-5) 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 EPA. *ref. PSD SFB 82-05 Cond. IX.D.*	**F S L**	**Yes**	**Means: Performance tests are conducted monthly and reported quarterly. Method: NSCAPCD Modified Method 102**
2.	The permit holder 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 79-26 Cond. 13, PSD SFB 82-05 Cond. IX D.3.*	**F S L**	**Yes**	**Means: N/A Method: N/A Note Sample taps used by plant personnel for chemical sampling and analysis are also available for use by ARB and District personnel.**
3.	The permit holder, as requested by the Control Officer, shall conduct a District 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 of the Control Officer, the permit holder shall submit to the District at least 45 days prior to testing a detailed performance test plan. The District shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The permit holder shall incorporate the District's comments or modifications to the plan which are required to assure compliance with the District's regulations. The 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 within 45 days of the test date unless a different submittal schedule is	**F S L**	**Yes**	**Means: Sampling and analyses were performed in 2010 at the request of the District to satisfy AB2588 requirements. The results were submitted on May 13, 2010 and a copy of these analyses are available at the Geothermal facilities and are used to inventory the subject emission.**

	approved in advance by the Control Officer. *ref. PTO 79-26 Cond 11 &12.*			
4.	Compliance with the particulate mass emission limitation shall be estimated using calculations based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.002 percent for the main cooling tower and 0.002% 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 79-26 Cond. 21*	**F S L**	**Yes**	**Means: Calculation of the particulate emissions based upon monthly samples and analysis of the cooling tower water TSS & TDS. These calculations indicate that the units are in compliance with the condition. Method: Monthly analysis by the plant chemistry staff and calculations done in accordance with the condition.**
5.	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. Rule 240(d).*	**F S L**	**Yes**	**Method: Main Steam H_2S determined weekly by titration.**
6.	The permit holder shall perform an abatement solution concentration test of the cooling tower circulating water at least once per operating shift or as required in the Protocol Agreement for Units 1, 2, 3 and 4 when use of abatement solution is necessary in order to achieve compliance with Condition I.1 and I.2. The testing equipment shall be kept calibrated per the manufacturer's specifications. *ref. PTO 79-26 Cond.20.*	**F S L**	**Yes**	**Means: Operators perform test each shift and log the results**
7.	Any type of instrument used for the measurement of H_2S or Total Organic Gases in order to satisfy District permit conditions or regulations shall be submitted for prior approval to the APCO. *ref. Rule 240(d)*	**F S L**	**Yes**	**Method: NSCAPCD Modified Method 102**
8.	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 I.1 and I.2 must be developed using good engineering judgment and supporting data. The APCO may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions I.1 and I.2, the APCO shall require the permit holder to develop revised protocols, feed charts, targets and guidelines. *ref. Rule 240(d)*	**F S L**	**Yes**	**Means: All protocols and feed charts are reviewed on a regular basis for currency to operating conditions, and are updated as necessary. Updates are submitted to the District for review and approval.**
	Continuous Compliance Monitoring (CCM)			

9.	The permit holder 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 I.1 and I.3. The monitoring system must alarm the operator when H_2S in the treated gas is in excess of 40 ppmv (dry basis). The permit holder shall respond to the alarm with appropriate mitigative measures. Mitigative measures taken shall be logged in the power plant abatement log book. In the event H_2S concentrations are in excess of 40 ppmv and the range of the CCM is exceeded, the permit holder shall test for H_2S using an approved alternative method (ex Draeger tester, wet chemical tests) once every load change during the excess. The monitor shall have a full range of at least 50 ppmv (dry basis). The monitor shall meet the following operational specifications: an accuracy of plus or minus 7.5 ppmv, 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%. 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 Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the permit holder as long as emissions from the power plant do not exceed the "total" H_2S emission limitations of condition I.1. Written notification from the Control Officer must be received by the permit holder prior to any change in monitoring specifications. *ref. PTO 79-26 Cond. 22*	**F S L**	**Yes**	**Means: A review of the plant Quarterly compliance reports indicated that the limits specified in this condition are routinely met. Excursions and exceedances are documented in the quarterly compliance reports. A monitor meeting the requirements of this condition is in place and is operational.**
	Ambient Air Monitoring			
10.	The permit holder shall maintain and operate one H_2S /meteorological monitoring station, PM-10 high volume station at a location approved in advance by the Control Officer for the life of the facility. The permit holder shall install and operate additional monitoring stations, such as a PM 2.5 monitoring station, if required by the Control Officer, California Air Resources Board or EPA. Participation by the permit holder 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 permit provided the term of monitoring is equivalent. The 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 79-26 Cond. 23*	**F S L**	**Yes**	**Means: NCPA participates in GAMP.**
IV.	**Recordkeeping**			
1.	All records and logs shall be retained for a period of at least 5 years from the date the	**F**	**Yes**	**Means: Files are stored for > 5 years.**

	record or log was made and shall be submitted to the NSCAPCD upon request.	**S L**		**No requests for files have been made.**
2.	The permit holder shall maintain a weekly abatement solution inventory log available for on-site inspection. *ref. Rule 240(d)*	**F S L**	**Yes**	**Means: On-site inspection. The chemical inventory files are available for inspection.**
3.	The permit holder 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 permit holder for at least five (5) years. The permit holder shall report all exceedances of Condition I.3 in the quarterly report as required in V.1. The report shall include a description of all measures taken to bring the Stretford system back into compliance with Condition I.3. The permit holder 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)*	**F S L**	**Yes**	**Means: On-site inspection. The strip chart records are maintained for > 5 years and are available. All exceedances are reported in the Quarterly reports as required.**
4.	The permit holder shall maintain copies of the source test results as required in condition III.1 for a minimum of 5 years. *ref. PTO 79-26 Cond. 23.*	**F S L**	**Yes**	**Means: On-site inspection. The source test data is maintained for > 5 years and is available.**
5.	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 II.12 which has been detected by the permit holder and is awaiting repair shall be identified in a manner which is readily verifiable by a District inspector. Any leak in the above listed pieces of equipment exceeding the limitations of II.12 and not identified by the permit holder and which is found by the District shall constitute a violation of this Permit. The permit holder shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District upon request. *ref. PTO 79-26 Cond. 21.*	**F S L**	**Yes**	**Means: On-site inspection. Daily plant inspections by operators identify leaks described by this condition. Plant maintenance records are available for inspection.**
6.	The permit holder shall maintain records detailing: a. hours of operation. b. any periods of significant abatement equipment malfunction, reasons for malfunctions and corrective action. c. 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. d. a summary of any irregularities that occurred with a continuous compliance monitor. e. the dates and hours in which the emission rates were in excess of the emission limitations specified in permit conditions I.1, I.2, I.3, I.4, and I.5.	**F S L**	**Yes**	**Means: On-site inspection, a review of plant logs and chemical lab records indicate that these items are consistently recorded.**

	f. periods of scheduled and unscheduled outages and the cause of the outages. g. fugitive steam and non-condensable gas emission source inspections, leak rates, repairs and maintenance. h. time and date of all pump and flowmeter calibrations required by this permit. i. total dissolved solids and total suspended solids in the circulating water. j. time and date of all alarm system tests. k. leaking equipment awaiting repair; time and date of detection and final repair. *ref. Rule 240(d)*			
V.	**Reporting**			
1.	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 exceed of 40 ppmv of H_2S. d. Source test results. e. Steam stacking events The quarterly report shall be submitted to the District 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)*	**F** **S** **L**	**Yes**	**Means: The quarterly reports provide the requested information, and the quarterly reports have been submitted within 30 days of the end of the quarter.**
2.	An annual report shall be submitted to the District 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. Gross megawatt hours generated. d. 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.	**F** **S** **L**	**Yes**	**Means: NCPA submitted the annual report for 2019 in January of 2020.**

	The annual report shall be submitted to the District within 45 days of the end of each calendar year. *ref. Rule 240(d)*			
3.	An initial report shall be submitted to the District within 30 days of issuance of the Title V Permit which contains the following information: a. Emission test methods, operating protocols for setting and optimizing chemical feed charts and targets, calibration and maintenance programs for test equipment and primary pressure gauges and flowmeters associated with abatement equipment.	**F** **S** **L**	**Yes**	**An initial report was submitted with the Annual Compliance Certification Report for the period July 17, 2000 thru July 16, 2001.**

B. STEAM TRANSMISSION LINE PERMIT CONDITIONS				
			Compliance?	**Notes/Means/Methods**
I.	**Emission Limits**			
	Emission Limits for H_2S			
1.	Stacking of steam to the atmosphere shall be limited to 33 pounds of H_2S per hour. *ref. PTO 79-21 Cond. 15.*	**F** **S** **L**	**Yes**	**Means: Operator logs and quarterly compliance reports indicate that there were no stacking events during this period.**
	Emission Limits for Particulate Matter			
2.	Particulate emissions from the transmission line shall not exceed the limitations of Rule 420 (d) or Rule 420 Table I, whichever is the most restrictive. *ref. Rule 420.*	**F** **S** **L**	**Yes**	**Means: Daily inspection by operators of valves and rock catchers insures compliance**
3.	Total particulate emissions during a calendar year shall not exceed 4400 pounds. This is based on a maximum emission rate of 40 lb/hr of particulate for 110 hours per year. *ref. Rule 420*	**F** **S** **L**	**Yes**	**Means: Daily inspection by operators of valves and rock catchers insures compliance.**
II.	**Operational Limits and Requirements**			
1.	Total hours of stacking shall not exceed 110 hours in any calendar year. *ref. PTO 79-21 Cond. 15.*	**F** **S** **L**	**Yes**	**Means: Operator logs and quarterly compliance reports indicate that there were no stacking events during this**

				period.
2.	Valves, flanges, drip legs, threaded fittings and seals on pipelines and condensate collection systems shall be maintained to prevent or reduce the emission of steam, non-condensable gases and condensate to the atmosphere as noted below: Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minute. 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. Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1000 ppm (vol) H_2S nor 10,000 ppm (vol) 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 The permit holder shall check the transmission lines for fugitive leaks at least once per quarter. *ref. PTO 79-21 Cond. 12.*	**F S L**	**Yes**	**Means: Daily inspections by operators ensure compliance. Repair orders are submitted when leaks occur and are repaired within 15 calendar days.**
3.	Fugitive steam and non-condensable gas sources shall be inspected, repaired, and maintained such that H_2S fugitive emissions comply with the emission limitations of Rule 455. The permit holder shall check the transmission lines for fugitive leaks at least once per quarter. *ref. PTO 79-21 Cond. 11.*	**F S L**	**Yes**	**Means: Daily inspections by operators ensure compliance. Maintenance is performed in a timely manner.**
4.	Condensate storage tanks shall be operated and maintained to prevent the release of H_2S in excess of the limitations of Rule 455. *ref. PTO 79-21 Cond. 14.*	**F S L**	**Yes**	**Means: Daily inspections by operators ensure compliance. Maintenance is performed in a timely manner.**
5.	Condensate bleeds shall be opened and utilized only as necessary during cold startup of the geothermal fluid transmission line. Other bleeds necessitated by continuous normal	**F S**	**Yes**	**Means: Condensate bleeds are only opened as needed for start-up**

	operation of this line shall not exceed the limitations of Rule 455. If necessary, condensate collection lines shall be installed to ensure fugitive H_2S emissions comply with Rule 455. *ref. PTO 79-21 Cond. 16.*	**L**		**operations.**
6.	All areas in the immediate vicinity and under the permit holder's responsibility shall be properly treated to control fugitive dust. *ref. PTO 79-21 Cond. 11.*	**F** **S** **L**	**Yes**	**Means: Fugitive dust is controlled with general clean-up and housekeeping and mitigation procedures used during construction activities.**
III.	**Monitoring, Testing and Analysis**			
1.	At such times as specified by the Control officer, the permit holder shall conduct District approved source tests for particulate (including composition) emissions from the stacking muffler or other pipeline segments and for H_2S and other compounds (listed under NESHAPS, AB 2588) and furnish the District a written report of the results of such tests. The Control Officer shall be notified at least 5 days prior to such tests to allow time to arrange for an observer to be present at the test. *ref. PTO 79-21 Cond. 13.*	**F** **S** **L**	**Yes**	**Note: No such requests have been made.**
2.	Compliance with the particulate mass emission limitation shall be based on the particulate concentration in the steam measured as ppm (wt), the steam emission rate measured in lbs/hr, duration of the stacking event and total hours of steam stacking per year. The source test method used to determine the concentration of particulate in the steam shall be approved in advance by the Control Officer. *ref. PTO 79-21 Cond. 17.*	**F** **S** **L**	**Yes**	**Means: Calculation of PM based upon monthly total solids analysis, in cooling tower water.** **Method: Calculation per Condition.**
IV.	**Recordkeeping**			
1.	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 upon request.	**F** **S** **L**	**Yes**	**Means: Files are stored for at least 5 years. No requests for files have been made.**
2.	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 II.2 which has been detected by the permit holder and is awaiting repair shall be identified in a manner which is readily verifiable by a District inspector. Any leak in the above listed pieces of equipment exceeding the limitations of II.2 and not identified by the permit holder and which is found by the District shall constitute a violation of this Permit. The permit holder shall maintain a record of fugitive steam and non-condensable gas emission source inspections, leak rate determinations, repairs and maintenance and a current listing of leaks awaiting repair. These items shall be made available to the District upon request. *ref. PTO 79-21 Cond. 12.*	**F** **S** **L**	**Yes**	**Means: On-site inspection. Daily inspections by operators identify leaks described by this condition. Maintenance records are available for inspection.**
3.	The permit holder shall maintain a log of stacking events and shall allow the District to	**F**	**Yes**	**Means: Operator logs and Quarterly**

	inspect the logs to verify the total number of stacking events.	**S L**		**compliance reports indicate no stacking events have been logged and may be inspected.**
V.	**Reporting**			
1.	A quarterly report shall be submitted to the District which contains the following information: a. Stacking event hours. b. Cause of stacking event. a. Balance of remaining allowable stacking hours. b. Emissions from pipeline bleeds, well pad bleeds (including maintenance venting). The quarterly report shall be submitted to the District 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. PTO 79-21 Cond. 15.*	**F S L**	**Yes**	**Means: The quarterly reports provide the requested information**
2.	The permit holder shall notify the District when a stacking event is greater than 33 lbs of H_2S /hr per Rule 540. *ref. PTO 79-21 Cond. 15*	**F S L**	**Yes**	**Means: Operator logs and Quarterly compliance reports indicate stacking events have not exceeded this limit.**
C.	**STEAM WELL PERMIT CONDITIONS**		**Compliance?**	**Notes/Means/Methods**
I.	**Emission Limits**			
	Emission Limits for H_2S			
1.	Wellhead H_2S bleed emissions are not to exceed the limitations of Rule 455, except as allowed under II.1. *ref. PTO 90-09, Cond. A.1 and A.2.*	**F S L**	**Yes**	**Means: Operator logs and Quarterly compliance reports indicate wellhead H_2S bleed emissions are in compliance with this condition.**
	Emission Limits for Particulate Matter			
2.	Fugitive dust emissions from this well pad and access roads under the operator's responsibility are to be controlled to meet the requirements of Rule 430 and 410(a). *ref. PTO 90-09, Cond. A.3.*	**F S L**	**Yes**	**Means: Fugitive dust is controlled with regular maintenance and mitigation procedures used during construction activities.**
II.	**Operational Limits and Requirements**			
1.	The permit holder shall notify the District prior to initiating any planned venting of this geothermal well which is associated with testing, wellhead or wellbore maintenance. The	**F S**	**Yes**	**Means: District is notified prior to each event, and each event is included**

	operator shall also present to the Control Officer and receive approval of, an emissions release protocol governing emissions and notifications for such operations. Until such time as this protocol is approved the Operator shall obtain permission from the District for each event at least 24 hours prior to starting the venting operation. Operations resulting in an excess of 15 pounds per hour of H_2S shall be subject to a meteorological forecast, by a meteorological consultant acceptable to the District, and shall only proceed after approval by the Control Officer. *ref. PTO 90-09 Cond. B.1.*	**L**		**in Quarterly Emissions report.**
2.	The permit holder shall apply for and receive an Authority to Construct/Temporary Permit to Operate for an air pollution control device prior to reworking or redrilling this well, unless a valid well maintenance permit is held by the permit holder. *ref. PTO 90-09 Cond. B.2.*	**F S L**	**Yes**	**Well P-9 was plugged and abandoned Wells P-4, P-5, P-6 were cleaned out Well Q-10 received a new liner Well Q-4 was cleaned out**
3.	The permit holder shall properly maintain the wellhead, its associated valves, flanges, threaded fittings, liquid lines and other components including the wellhead muffler so as to eliminate leakage of steam, condensate and non-condensable gases as noted below: Liquid leak rate shall not exceed 20 ml in 3 min. Liquid leak rates in excess of 20 ml in 3 min. shall be repaired or replaced within 15 calendar days. Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1000 ppm (vol) H_2S nor 10,000 ppm (vol) methane nor (ii) exceed emission limits of Rule 455. Non-condensable gas leak rates in excess of 1000 ppm (vol) H_2S or 10,000 ppm (vol) TOG shall be repaired with 24 hrs. *ref. PTO 90-09 Cond. B.3.*	**F S L**	**Yes**	**Means: Daily inspections by operators ensure compliance. Repair orders are submitted when leaks occur and are repaired within 15 calendar days.**
4.	All wells shall be identified in a manner acceptable to the Control Officer. *ref. PTO 90-09 Cond. B.4.*	**F S L**	**Yes**	**Means: All wells have permanent identification on associated well guards.**
III.	**Monitoring, Testing and Analysis**			
1.	At the request of the Control Officer and per Rule 240, the Operator will perform, or have performed, source test(s) for air contaminants as specified. District concurrence with test procedure and method(s) is to be obtained prior to testing. The operator shall provide the District 48 hours notification prior to any sampling requested by the Control Officer. The Operator shall provide adequate facilities for District sampling. *ref. PTO 90-09 Cond. C.1.*	**F S L**	**Yes**	**Means: NCPA's State approved lab (ELAP # 2806) performs annual analysis on each steam well. Results are kept on file.**
2 .	If this well employs an aspirator as allowed under rule 455(aa) it shall be source tested annually to determine H_2S mass emissions and exit concentration. If an aspirator is utilized for less than 24 consecutive hours the well shall be source tested for H_2S once every 5 years. *ref. PTO 90-09 Cond. C.2.*	**F S L**	**Yes**	**Means: NCPA's State approved lab (ELAP # 2806) performs annual analysis on each steam well (sampled at well head). Results are kept on file.**

3.	Any instrument used for the measurement of H_2S or Total Organic Gases shall be approved by the Control Officer. *ref. PTO 90-09 Cond. C.3.*	**F S L**	**Yes**	**Means: NCPA's State approved lab (ELAP # 2806) performs annual analysis on each steam well. Results are kept on file.**
IV.	**Recordkeeping**			
1.	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 upon request.	**F S L**	**Yes**	**Means: Files are stored for >5 years. No requests for files have been made.**
2.	The permit holder shall maintain a record of information needed to provide the District under Condition V.1.	**F S L**	**Yes**	**Means: Files are maintained and stored for >5 years.**
V.	**Reporting**			
1. 2.	A quarterly report shall be submitted to the District which contains the following information: *Well Bleeds* a. Source name. b. Hours of bleed emissions. c. Amount of H_2S, ammonia and total organic gases, expressed as methane, released during bleeding. d. Reason for bleeding. e. *Wells employing an aspirator* f. Hours of bleeding through aspirator, if applicable. g. H_2S emission rate expressed as lb/hr, H_2S exit concentration and date tested. *Wellbore maintenance* h. Emissions event associated with wellbore maintenance (blowdown). i. Time and date of event. j. Duration of event. k. Emissions rate during event, steam and H_2S, expressed as pounds per hour. l. Total mass of H_2S, ammonia and TOG, expressed as methane, released during event. m. Reason for event. The quarterly report shall be submitted to the District 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. PTO 79-21 Cond. D.1.*	**F S L**	**Yes**	**Means: The quarterly reports provide the requested information, and the quarterly reports have been submitted within 30 days of the end of the quarter.**

D.	**STEAM WELL REWORK PERMIT CONDITIONS**		**Compliance?**	**Notes/Means/Methods**
I.	**Emission Limits**			
	Emission Limits for H_2S			
1.	Emissions of H_2S from the blooie line shall not exceed 5.5 pounds per hour. *ref. Rule 455(b).*	**S L**	**Yes**	**All well workovers did not exceed this requirement**
	Emission Limits for Particulate Matter			
2.	Particulate emissions from the blooie line shall not exceed the limitations of Rule 420 (e). *ref. Rule 420(e).*	**S L**	**Yes**	**All well workovers did not exceed this requirement**
II.	**Operational Limits and Requirements**			
1.	Total combined engine and compressor hours of operation shall not exceed 6,015 hours for total steamfield rework activities in any calendar year. *ref. Rule 240.*	**F S L**	**Yes**	**All well workovers did not exceed this requirement.**
III.	**Monitoring, Testing and Analysis**			
1.	The permit holder shall measure the H_2S concentration and emissions rate in the effluent well steam using wet chemistry methods outlined in the Abatement Plan submitted with the well redrill permit application. *ref. Rule 240.*	**S L**	**Yes**	**Well workover emissions were monitored and did not exceed limits**
IV.	**Recordkeeping**			
1.	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 upon request.	**F S L**	**Yes**	**Means: Files are maintained and stored for >5 years.**
2.	The permit holder shall maintain a record of information needed to provide the District under Condition V.1.	**S L**	**Yes**	**Means: Files are maintained and stored for >5 years.**
V.	**Reporting**			
1.	A quarterly report shall be submitted to the District which contains the following information:	**F S**	**Yes**	**The local air district was kept informed of all well workover activity**

a. Steam well rework activities, if any. b. Final production H_2S concentration in ppmw and steam flow rate in lb/hr. c. Total engine hours. d. Total compressor hours. e. Balance of remaining engine and compressor hours available for calendar year. f. Total pounds of total organic gas, including methane, emitted during rig operations, including flow test. g. An estimate of the total H_2S, NOx and particulate matter released during the redrilling or workover operations. The quarterly report shall be submitted to the District 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. PTO 79-21 Cond. 15.*	**L**		

E. PLANT WIDE PERMIT CONDITIONS	**F S L**	**Compliance?**	**Notes/Means/Methods**
The plant shall comply with the following District regulations. The text of the referenced regulations can be found in Appendix A of this Title V Operating Permit. 1. Regulation 1 Rule 400-General Limitations 2. Regulation 1 Rule 410-Visible Emissions 3. Regulation 1 Rule 430-Fugitive Dust Emissions 4. Regulation 1 Rule 492 (40 CFR part 61 Subpart M)-Asbestos 5. Regulation 1 Rule 540-Equipment Breakdown 6. Regulation 2- Open Burning 7. 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 parts 70 or 71.		**Yes**	**Means and Notes:** **1-3. Quarterly compliance reports and District Inspections.** **4. No notifications were required during the reporting period** **5. Reviewed Quarterly compliance records** **6. No burn permit was requested or issued during this period for brush control. The Konocti Conservation Camp and Cal Fire did not burn any brush.** **7. This plant is exempted from a Risk Management Plan because quantities of flammable hydrocarbons are less than 67,000 lbs.**

8. 40 CFR Part 82- Chlorinated Fluorocarbons 9. 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 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.			**8. This plant does not perform work using chlorinated fluorocarbons.** **9. N/A**

F. ADMINISTRATIVE REQUIREMENTS		**Compliance?**	**Notes/Means/Methods**
Payment of Fees 1. This Permit shall remain valid during the 5 year term as long as the annual renewal fees are paid in accordance with Regulation 1 Rule 300 and Rule 360 of the District. Failure to pay these fees will result in forfeiture of this permit. Operation without a permit subjects the source to potential enforcement action by the District and the EPA pursuant to section 502(a) of the Clean Air Act. *Ref. Reg 5.670*	**F** **S** **L**	**Yes**	**Means: Rule 300 Annual Permit to Operate Fees will be paid for the period July 1, 2019 to June 30, 2020 by check submitted by June 1, 2020.** **Means: Rule 360 Federal Program Fees will be paid for the period July 1, 2019 to June 30, 2020 by check submitted by June 30, 2020.**
Right to Entry and Inspection 2. The Control Officer, the Chairman of the California Air Resources Board, The Regional Administrator of the EPA 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 areas in which any records are required to be kept under the terms and conditions of this Permit; 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; and C. to inspect any equipment, operation, or method required in this Permit; and D. to sample emissions from the source. *Ref. Reg 5.610(e)*	**F** **S** **L**	**Yes**	**N/A**
Compliance with Permit Conditions 3. This Title V Operating Permit expires on July 14, 2025. The permit holder shall submit a complete application for renewal of this Title V Operating Permit no later than 6 months prior to expiration and no earlier than one year prior to expiration. If a complete application for renewal has not been submitted in accordance with these deadlines, the facility may not operate	**F** **S** **L**	**Yes**	**The current Permit was issued July 14, 2020.**

after July 14, 2025. *ref Reg 5.660*			
4. The permit holder shall comply with all conditions of this permit. Any non-compliance with the terms and conditions of this 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. R*ef. Reg 5.610(f)(3)*	**F S L**	**Yes**	**N/A**
5. In the event any enforcement action is brought as a result of a violation of any term or condition of this permit, the fact that it would have been necessary for the permit holder 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. R*ef. Reg 5.610(f)(4)*	**F S L**	**Yes**	**N/A**
6. 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. R*ef. Reg 5.610 f)(5)*	**F S L**	**Yes**	**N/A**
7. This permit does not convey any property rights of any sort, nor any exclusive privilege. *Ref. Reg 5.610(f)(2)*	**F S L**	**Yes**	**N/A**
8. The permit holder shall supply within 30 days any information that the District requests in writing 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 1 Rule 200, Reg 5.430*	**F S L**	**Yes**	**Note: There were no active information requests.**
Reporting 9. All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District at least once every six months. 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*	**F S L**	**Yes**	**Note: There were no deviations from the permit requirements.**
Severability 10. In the event that any provision of this permit is held invalid all remaining portions of the	**F S L**	**Yes**	**N/A**

permit shall remain in full force and effect. *Ref. Reg 5.610(g)*			
Transfer of Ownership 11. In the event of any changes in control or ownership of facilities to be modified and/or operated, this Permit is transferable and shall be binding on all subsequent owners and operators. The permit holder shall notify the succeeding owner and operator of the existence of this Permit and its conditions by letter, a copy of which shall be forwarded to the Control Officer. *Ref. Rule 240(j)*	**F** **S** **L**	**Yes**	**N/A**
Records 12. 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*	**F** **S** **L**	**Yes**	**Means: NCPA plant policy requires that files be maintained for at least five years to meet the requirements of this condition.**
Emergency Provisions 13. The permit holder 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). *Ref. Reg 5.640*	**F** **S** **L**	**Yes**	**N/A**
14. The permit holder may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond permit holder'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*	**F** **S** **L**	**Yes**	**N/A**
15. 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*	**F** **S** **L**	**Yes**	**N/A**
Malfunction	**F**	**Yes**	**N/A**

16. 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 I.2. 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 I.2, 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 82-05 Cond. IV.*	**S L**		
Permit Posting 17. Operation under this permit must be conducted in compliance with all data specifications included in the application which attest to the operator's ability to comply with District rules and regulations. This permit 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 permit cannot be so placed, the permit shall be maintained readily available at all times on the operating premises. *ref. Rule 240(i)*	**F S L**	**Yes**	**Note: Permit is maintained and is readily available in the Geothermal Facility Administration Building.**
Compliance Certification 18. Compliance certifications shall be submitted annually by the responsible official of this facility to the Northern Sonoma County Air Pollution Control District and to the EPA. Each compliance certification shall be accompanied by a written statement from the responsible official who certifies the truth, accuracy, and completeness of the report. r*ef. Reg 5.650*	**F S L**	**Yes**	**Means: This report constitutes compliance with this condition for the period July 18, 2019 through July 17, 2020.**
19. This Permit does not authorize the emission of air contaminants in excess of those allowed by the Health & Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. This Permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other governmental agencies. *ref. Rule 240(d)*	**F S L**	**Yes**	**N/A**
Permit Modification 20. The permit holder shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. *ref. Regulation 1 Rule 200*	**F S L**	**Yes**	**Note: No applications for facility modifications or permit modifications were requested during this reporting period.**

Northern Sonoma County Air Pollution Control District

150 Matheson Street
Healdsburg, CA 95448
(707) 433-5911

TITLE V OPERATING PERMIT

Northern California Power Agency
Geysers Power Plant 1 and Associated
Steamfield

PLANT ADDRESS:

12000 Ridge Road
Middletown, CA 95461
(707) 987-4032

MAILING ADDRESS:

P.O. Box 663
Middletown, CA 95461

Responsible Official – Joel Ledesma
Facility Contact- Anthony Allegra

Type of Facility:	Geothermal Power Plant	Issue Date:	July 14, 2020
Primary SIC:	4911	Effective Date:	July 17, 2020
Product:	Electricity	Expiration Date:	July 17, 2025

ISSUED BY THE NORTHERN SONOMA COUNTY AIR POLLUTION CONTROL DISTRICT

Rob Bamford, Air Pollution Control Officer

7/14/2020
Date

TABLE OF CONTENTS

I. EQUIPMENT LIST

A. PERMITTED SOURCE LIST Each of the following sources has been issued a Permit to Operate pursuant to the requirements of NSCAPCD Regulation 1, Chapter II Permits. The equipment and capacities listed in Tables I.A and I.B are based on information provided by the permit holder. Routine maintenance, repair, or replacement with identical or equivalent equipment that does not result in an increase, or potential increase, in emissions of any air pollutant subject to District control does not require a permit modification. Replacement equipment that is within 5% of the listed capacity shall be considered equivalent for the purposes of this permit.

Pumps listed with a capacity range may be replaced with pumps within the listed range without notification to the District. Any replacement of pumps outside the listed range shall receive District approval prior to replacement;

Power Plant		
PLANT 1		
		UNIT 1
S-#	**Description**	**Capacity**
1	Steam Turbine	986,267 lb Steam/hr
2	Generator	55 MW gross nameplate capacity
3	Surface Condenser with Steam Operated 3 Stage Hybrid Gas Ejector/Vacuum Pump System	1,170,000,000 BTU/Hr
4	Cooling Tower, Cross Flow Mechanical Draft Type with 0.002% rated drift eliminators and with 6x150 hp fans	63,000 gpm maximum
		UNIT 2
S-#	**Description**	**Capacity**
1	Steam Turbine	985,000 lb Steam/hr
2	Generator	55 MW gross nameplate capacity
3	Surface Condenser with Steam Operated 2 Stage Low Pressure Gas Ejector System	1,170,000,000 BTU/Hr
4	Cooling Tower, Cross Flow Mechanical Draft Type with 0.002% rated drift eliminators and with 6x150 hp fans	63,000 gpm maximum

Geothermal Steam Transmission Lines				
POWER PLANT 1 STEAM TRANSMISSION LINE				
S-#	**Description**	**Make**	**Model**	**Capacity**
T-1	Transmission Line connected to 34 or more wells with individual rock catchers/separators, shut-in valves, root valves, and throttling valves	Custom		2.10 million lb steam/hr
T-2	Transmission Line Drain Valves, Various Diameters at Various Pipeline Low Spots	Custom		
T-3	Main Separators, Particulate and Condensate	Custom		
T-4	Stacking Mufflers, Rock	Custom		
T-5	Waste Water Sump/Pond/ Injection Wells	Custom		
T-6	Central Computer Control with Power Back-Up	Custom		
T-7	Condensate Collection System and Storage Tanks	Custom		
T-8	Pipeline Rupture Discs	Custom		
T-9	Intertie to Power Plant 2 Steam Transmission Line	Custom		

Individual Steam Wells				
S-#	**Description**	**Make**	**Model**	**Capacity**
W-1	A-1	Custom		
W-2	A-3	Custom		
W-3	A-4	Custom		
W-4	A-5	Custom		
W-5	A-6	Custom		
W-6	C-1	Custom		
W-7	C-2	Custom		
W-8	C-4	Custom		
W-9	C-5	Custom		
W-10	C-6	Custom		
W-11	C-7	Custom		
W-12	C-8	Custom		
W-13	C-9	Custom		
W-14	C-10	Custom		
W-15	C-11	Custom		
W-16	D-1	Custom		
W-17	D-2	Custom		
W-18	D-5	Custom		
W-19	D-6	Custom		
W-20	D-7	Custom		
W-21	D-8	Custom		
W-22	F-1	Custom		
W-23	F-2	Custom		
W-24	F-3A	Custom		
W-25	F-4	Custom		
W-26	F-5	Custom		
W-27	F-6	Custom		
W-28	F-7	Custom		
W-29	H-1	Custom		
W-30	H-2	Custom		
W-31	H-3	Custom		
W-32	H-4	Custom		
W-33	H-5	Custom		
W-34	J-2	Custom		
W-35	J-3	Custom		
W-36	J-4	Custom		
W-37	J-5	Custom		
W-38	J-6	Custom		
W-39	N-1	Custom		
W-40	N-2	Custom		

W-41	N-3	Custom		
W-42	N-4	Custom		
W-43	N-5	Custom		
W-44	N-6	Custom		
W-45	Y-1	Custom		
W-46	Y-2	Custom		
W-47	Y-3	Custom		
W-48	Y-4	Custom		
W-49	Y-5	Custom		

B. ABATEMENT DEVICE LIST

Hydrogen Sulfide Control System consisting of:		
POWER PLANT 1 STRETFORD SYSTEM		
A-#	**Description**	**Capacity**
1	**Stretford Air Pollution Control System consisting of:**	
A	Venturi Scrubber, 12" D	8,410 lb/hr gas 276,000 lb/hr liquid
B	H2S Absorber, 10' and 4' D x 59' H.	674,000 lb/hr liquid flow 4,900 gallon capacity 7,600 lb/hr gas flow 318,000 lb/hr liquid spray
C	Two Oxidizer Tanks 15'D x 19'H, with oxidizer air blowers and spare, 150 HP each	2040 lb/hr air each 25,000 gallon capacity each
D	Sulfur Slurry Tank 12"D x 14' H	9,900 gallon capacity
E	Sulfur Filter, Vacuum Rotary Type, 5 SQ.' 1.5 HP	370 lb/hr wet cake ejected
F	Pump Tank 11' D x 13' H	18,500 gallon capacity
G	Pump Tank Evaporative Cooler with 3.0/0.75 HP fan and 0.002% Drift Eliminator	156 gpm maximum flow liquid
H	Make-Up Tank 4' D x 5.5' Deep	450 gallon capacity
I	Main Pumps consisting of	
a	Scrubbing Solution Circulating Pump and Spare, 100 HP each	1,320 gpm each
b	Vacuum Pumps and Spare, 10 HP each	130 cfm each
c	Make-Up Tank Transfer Pump, 5 HP	10 gpm
d	Sulfur Slurry tank pump and Spare, 1.5 HP each	20 gpm
2	**Circulating Water H2S Abatement Solution Injection (For H2S Control) System Consisting of:**	
A	Iron Chelate Injection/Storage System	7,000 gallon capacity 3 metering pumps, 16.7 gph each
3	**Mercury Removal System Consisting of:**	
A	Vapor Liquid Separator Assembly	4' D x 6" mister
B	Mercury Adsorption Vessel	Sulfur pastille and/or sulfur impregnated carbon filter media, 6' minimum media depth

II. PERMIT CONDITIONS

Permit conditions are designated federally (**F**), state (**S**), and/or locally (**L**) enforceable. Where a condition references a specific District regulation, the text of the referenced regulation can be found in Appendix A.

A. POWER PLANTS AND ABATEMENT SYSTEMS

I. Emission Limits

Emission Limits for H2S

1.	The power plants and associated abatement systems shall comply with Regulation 1 Rule 455 (b)-Geothermal Emission Standards. In accordance with the Protocol Method specified in Rule 455(b) Note 8, total emissions of H2S from Unit's 1and 2 shall not exceed 5.5 pounds per hour, respectively, averaged over any one hour period with Unit 3 curtailed or as specified in Appendix A of Units 1, 2, 3, and 4 Protocol Agreement. The maximum cumulative H2S emissions from Unit's 1, 2, 3, and 4 shall not exceed 21.0 pounds per hour. Total H2S emissions shall be the cumulative emissions to the atmosphere from the power plants and associated abatement equipment. *ref. Rule 455(b), PTO 79-26 Cond. 20.*	**F**	**S**	**L**
2.	The maximum cumulative H2S emissions from Units 1, 2, 3 and 4 shall not exceed 21.0 pounds per hour. *ref. PSD SFB 82-05 Cond. IX.C.*	**F**	**S**	**L**
3.	The exit concentration in the process piping leading from the Stretford System shall not exceed 40 ppmv H2S (dry) unless operating under a District approved Alternative Compliance Plan (ACP) such as the protocol agreement. *ref. PTO 79-26 Cond. 19.*	**F**	**S**	**L**
4.	The power plant and associated abatement systems 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)*	**F**	**S**	**L**

Emission Limits for Particulate Matter

5.	The power plant and associated abatement systems shall comply 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)*	**F**	**S**	**L**

II. Operational Limits and Requirements

1.	The permit holder shall not operate the plants unless emissions 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 H2S and particulate emissions on a continuous basis from the power plant as specified in condition I.1, I.2, I.3, I.4, and I.5. *ref. Rule 240.d, PTO 79-26 Cond. 19*	**F**	**S**	**L**

2. The abatement solution storage tank shall have a minimum of 1000 gallons of abatement solution at all times when the plant is in operation. All continuously operated chemical 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. Flowmeters shall be calibrated quarterly. Alarm systems shall be tested quarterly. *ref. PTO 79-26 Cond. 19.* **F S L**

3. Except for justifiable reasons during performance testing or under operation of an ACP, for which the permit holder 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 recommended in the power plant operating guidelines as necessary to abate H2S emissions from the power plant to the emission limit specified in Condition I.1. *ref. PTO 79-26 Cond. 20.* **F S L**

4. 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 permit holder's maintenance schedule as needed to maintain the equipment in good working order. *ref. PTO 79-26 Cond. 16.* **F S L**

5. 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 start-ups the vent gas H2S 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 Condition I.1 and I.4. *ref. PTO 79-26 Cond. 17.* **F S L**

6. All areas in the immediate vicinity and under the permit holder's responsibility shall be properly treated to control fugitive dust. *ref. PTO 79-26 Cond. 21.* **F S L**

7. Valves, flanges, seals on pumps and compressors, piping and duct systems shall be inspected, maintained and repaired to prevent the emission of steam and 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. Valves, flanges, drip legs, threaded fittings and seals on pipelines shall be maintained to prevent or reduce the emission of steam, non-condensable gases and condensate to the atmosphere as noted below: **F S L**

   Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in a 3 minute period. 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.

   Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1000 ppm(vol) H2S nor 10,000 ppm(vol) 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.

The permit holder shall check the power plant for fugitive leaks at least once per quarter. *ref. PTO 79-26 Cond. 21.*

Alternative Compliance Plan

8. The permit holder 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 I.1, I.3, I.4. and I.5. 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 I.1, I.3, I.4, and I.5. The ACP shall list the specific operating conditions the ACP will supersede. **F S L**

Facilities Operation

9. All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions 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. *ref. PTO 79-26 Cond. 2.* **F S L**

10. The cooling tower shall be maintained in good operating condition. The permit holder 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)* **F S L**

11. The permit holder shall, in any 12 month period, limit unscheduled outages at Units 1 and 2 to no more than a total of 110 hours for each unit. The following shall not be used in computing the total outages. **F S L**

    a. Scheduled outages (defined as outages with 24 hour advance notice between the steam supplier and permit holder).

    b. steam supplier induced outages (such as pressure surge, strainer plugging, etc.).

    c. outages hours exceeding 4 hours where the steam supplier is violating Rule 455.

    d. Hydroelectric curtailment outages (if applicable or where it is shown that the levels of curtailment prevented distribution of cutbacks among the available geothermal units, and thereby, causing a curtailment related stacking event at Unit 1 and/or Unit 2).

    e. outages which do not cause steam stacking.

    A violation of the above performance standards is considered a violation of this condition.

    The permit holder shall have on file with the District an approved operating protocol describing the methods that will be used to meet the 110 hour per year performance standard. The protocol must include a description of the operational procedures between the steam supplier and permit holder, permit holder's operational procedures, and equipment to meet the above standard. The terms and requirements of the protocol may be

modified by the Control Officer for good cause upon written request from the permit holder.

The permit holder shall allow the District 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 permit holder is not able to meet the standards specified above, the following shall be required:

The permit holder 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 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 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. PT0 79-26 Cond.19.

III. Monitoring, Testing and Analysis

Performance Tests

1. The permit holder shall, no less than every 30 days, conduct a source test of the cooling tower to determine the H2S emission rate to verify compliance with condition I.1. and I.4. District Method 102 shall be utilized to determine the H2S emission rate. *ref. PTO 79-26 Cond. 23.* **F S L**

1a. The permit holder shall conduct or cause to be conducted performance tests on the turbine exhaust system to determine the H2S emission rate to verify compliance with condition I.2. Performance tests shall be conducted in accordance with Northern Sonoma County APCD Method 102, unless otherwise specified by EPA. The permit holder shall furnish the Northern Sonoma County APCD, the California Air Resources Board and the EPA (Attn: Air-5) 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 EPA. **F S L**

ref. PSD SFB 82-05 Cond. IX.D.

2. The permit holder 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 79-26 Cond. 13, PSD SFB 82-05 Cond. IX D.3.* **F S L**

3. The permit holder, as requested by the Control Officer, shall conduct a District approved performance test for particulate matter (PM), H2S, 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 of the Control Officer, the permit holder shall submit to the District at least 45 days prior to testing a detailed performance test plan. The District shall approve, disapprove or modify the plan within 45 days of receipt of the plan. The permit holder shall incorporate the District's comments or modifications to the plan which are required to assure compliance with the District's regulations. The 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 within 45 days of the test date unless a different submittal schedule is approved in advance by the Control Officer. *ref. PTO 79-26 Cond 11 &12.* **F S L**

4. Compliance with the particulate mass emission limitation shall be estimated using calculations based on the evaporative cooling tower manufacturers design drift eliminator drift rate, 0.002 percent for the main cooling tower and 0.002% 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 79-26 Cond. 21* **F S L**

5. Main steam supply H2S concentrations shall be determined minimally on a weekly basis and any additional times as required by the operating protocol or ACP. *ref. Rule 240(d).* **F S L**

6. The permit holder shall perform an abatement solution concentration test of the cooling tower circulating water at least once per operating shift or as required in the Protocol Agreement for Units 1, 2, 3 and 4 when use of abatement solution is necessary in order to achieve compliance with Condition I.1 and I.2. The testing equipment shall be kept calibrated per the manufacturer's specifications. *ref. PTO 79-26 Cond.20.* **F S L**

7. Any type of instrument used for the measurement of H2S or Total Organic Gases in order to satisfy District permit conditions or regulations shall be submitted for prior approval to the APCO. *ref. Rule 240(d)* **F S L**

8. All sampling protocols, chemical feed charts, targets and operational guidelines for using said charts and targets, necessary to abate H2S emissions from the power plant to the emission limits specified in Conditions I.1 and I.2 must be developed using good engineering judgment and supporting data. The APCO may review such sampling protocols, chemical feed charts, targets and guidelines upon request. If the APCO determines that any of the protocols, feed charts, targets, or guidelines are not sufficient to maintain compliance with Conditions I.1 and I.2, the APCO shall require the permit holder to develop revised protocols, feed charts, targets and guidelines. *ref. Rule 240(d)* **F S L**

Continuous Compliance Monitoring (CCM)

9. The permit holder shall operate a continuous compliance monitor capable of measuring the concentrations of H2S in the exhaust stream from the Stretford absorber in order to verify compliance with conditions I.1 and I.3. The monitoring system must alarm the operator when H2S in the treated gas is in excess of 40 ppmv (dry basis). The permit holder shall respond to the alarm with appropriate mitigative measures. Mitigative measures taken shall be logged in the power plant abatement log book. In the event H2S concentrations are in excess of 40 ppmv and the range of the CCM is exceeded, the permit holder shall test for H2S using an approved alternative method (ex Draeger tester, wet chemical tests) once every load change during the excess. The monitor shall have a full range of at least 50 ppmv (dry basis). The monitor shall meet the following operational specifications: an accuracy of plus or minus 7.5 ppmv, 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%. **F S L**

   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 Control Officer may allow modifications to the above specifications under an ACP upon written request with justification by the permit holder as long as emissions from the power plant do not exceed the "total" H2S emission limitations of condition I.1. Written notification from the Control Officer must be received by the permit holder prior to any change in monitoring specifications. *ref. PTO 79-26 Cond. 22.*

Ambient Air Monitoring

10. The permit holder shall maintain and operate one H2S/meteorological monitoring station, PM-10 high volume station at a location approved in advance by the Control Officer for the life of the facility. The permit holder shall install and operate additional monitoring stations, such as a PM 2.5 monitoring station, if required by the Control Officer, California Air Resources Board or EPA. Participation by the permit holder 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 permit provided the term of monitoring is equivalent. The 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 79-26 Cond. 23* **F S L**

IV. Recordkeeping

1. 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 upon request. **F S L**

2. The permit holder shall maintain a weekly abatement solution inventory log available for on-site inspection. *ref. Rule 240(d)* **F S L**

3. The permit holder shall maintain a strip chart or other District approved data recording device of H2S readings measured by the CCM. All measurements, records, and data shall be maintained by the permit holder for at least five (5) years. The permit holder shall report all exceedances of Condition I.3 in the quarterly report as required in V.1. The report shall include a description of all measures taken to bring the Stretford system back into compliance with Condition I.3. The permit holder shall include in the report a copy of the output from the H2S CCM or alternative District approved data during the upset condition. *ref. Rule 240(d)* **F S L**

4. The permit holder shall maintain copies of the source test results as required in condition III.1 for a minimum of 5 years. *ref. PTO 79-26 Cond. 23.* **F S L**

5. 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 II.12 which has been detected by the permit holder and is awaiting repair shall be identified in a manner which is readily verifiable by a District inspector. Any leak in the above listed pieces of equipment exceeding the limitations of II.12 and not identified by the permit holder and which is found by the District shall constitute a violation of this Permit. The permit holder shall maintain a current listing of such leaks awaiting repair and shall make this list available to the District upon request. *ref. PTO 79-26 Cond. 21.* **F S L**

6. The permit holder shall maintain records detailing: **F S L**

   a. hours of operation.
   b. any periods of significant abatement equipment malfunction, reasons for malfunctions and corrective action.
   c. 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.
   d. a summary of any irregularities that occurred with a continuous compliance monitor.

e. the dates and hours in which the emission rates were in excess of the emission limitations specified in permit conditions I.1, I.2, I.3, I.4, and I.5.
f. periods of scheduled and unscheduled outages and the cause of the outages.
g. fugitive steam and non-condensable gas emission source inspections, leak rates, repairs and maintenance.
h. time and date of all pump and flowmeter calibrations required by this permit.
i. total dissolved solids and total suspended solids in the circulating water.
j. time and date of all alarm system tests.
k. leaking equipment awaiting repair; time and date of detection and final repair.
ref. Rule 240(d)

V. Reporting

1. A quarterly report shall be submitted to the District which contains the following information: **F S L**

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 exceed of 40 ppmv of H2S.
d. Source test results.
e. Steam stacking events

The quarterly report shall be submitted to the District 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)

2. An annual report shall be submitted to the District which contains the following information: **F S L**

a. Average mainsteam H2S and ammonia concentrations.
b. Average total dissolved and suspended solids and average flowrate of the cooling tower water.
c. Gross megawatt hours generated.
d. 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.

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

ref. Rule 240(d)

3. An initial report shall be submitted to the District within 30 days of issuance of the Title V Permit which contains the following information: **F S L**

   a. Emission test methods, operating protocols for setting and optimizing chemical feed charts and targets, calibration and maintenance programs for test equipment and primary pressure gauges and flowmeters associated with abatement equipment.

B. STEAM TRANSMISSION LINE PERMIT CONDITIONS

I. Emission Limits

Emission Limits for H2S

1. Stacking of steam to the atmosphere shall be limited to 33 pounds of H2S per hour. *ref. PTO 79-21 Cond. 15.* **F S L**

Emission Limits for Particulate Matter

2. Particulate emissions from the transmission line shall not exceed the limitations of Rule 420 (d) or Rule 420 Table I, whichever is the most restrictive. *ref. Rule 420.* **F S L**

3. Total particulate emissions during a calendar year shall not exceed 4400 pounds. This is based on a maximum emission rate of 40 lb/hr of particulate for 110 hours per year. *ref. Rule 420* **F S L**

II. Operational Limits and Requirements

1. Total hours of stacking shall not exceed 110 hours in any calendar year. *ref. PTO 79-21 Cond. 15.* **F S L**

2. Valves, flanges, drip legs, threaded fittings and seals on pipelines and condensate collection systems shall be maintained to prevent or reduce the emission of steam, non-condensable gases and condensate to the atmosphere as noted below: **F S L**

   Liquid leak rate in pressurized steam and condensate lines shall not exceed 20 ml in 3 minute. 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.

   Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1000 ppm(vol) H2S nor 10,000 ppm(vol) 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

The permit holder shall check the transmission lines for fugitive leaks at least once per quarter. *ref. PTO 79-21 Cond. 12.*

3. Fugitive steam and non-condensable gas sources shall be inspected, repaired, and maintained such that H2S fugitive emissions comply with the emission limitations of Rule 455. The permit holder shall check the transmission lines for fugitive leaks at least once per quarter. *ref. PTO 79-21 Cond. 11.* **F S L**

4. Condensate storage tanks shall be operated and maintained to prevent the release of H2S in excess of the limitations of Rule 455. *ref. PTO 79-21 Cond. 14.* **F S L**

5. Condensate bleeds shall be opened and utilized only as necessary during cold startup of the geothermal fluid transmission line. Other bleeds necessitated by continuous normal operation of this line shall not exceed the limitations of Rule 455. If necessary, condensate collection lines shall be installed to ensure fugitive H2S emissions comply with Rule 455. *ref. PTO 79-21 Cond. 16.* **F S L**

6. All areas in the immediate vicinity and under the permit holder's responsibility shall be properly treated to control fugitive dust. *ref. PTO 79-21 Cond. 11.* **F S L**

III. Monitoring, Testing and Analysis

1. At such times as specified by the Control officer, the permit holder shall conduct District approved source tests for particulate (including composition) emissions from the stacking muffler or other pipeline segments and for H2S and other compounds (listed under NESHAPS, AB 2588) and furnish the District a written report of the results of such tests. The Control Officer shall be notified at least 5 days prior to such tests to allow time to arrange for an observer to be present at the test. *ref. PTO 79-21 Cond. 13.* **F S L**

2 . Compliance with the particulate mass emission limitation shall be based on the particulate concentration in the steam measured as ppm(wt), the steam emission rate measured in lbs/hr, duration of the stacking event and total hours of steam stacking per year. The source test method used to determine the concentration of particulate in the steam shall be approved in advance by the Control Officer. *ref. PTO 79-21 Cond. 17.* **F S L**

IV. Recordkeeping

1. 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 upon request. **F S L**

2. 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 II.2 which has been detected by the permit holder and is awaiting repair shall be identified in a manner which is readily verifiable by a District inspector. Any leak in the above listed pieces of equipment exceeding the limitations of II.2 and not identified by the permit holder and which is found by the District shall constitute a violation of this Permit. The permit holder shall maintain a record of fugitive steam and non-condensable gas emission source inspections, leak rate determinations, repairs and maintenance and a current listing of leaks awaiting repair. These items shall be made available to the District upon request. *ref. PTO 79-21 Cond. 12.* **F S L**

3. The permit holder shall maintain a log of stacking events and shall allow the District to inspect the logs to verify the total number of stacking events. **F S L**

V. Reporting

1. A quarterly report shall be submitted to the District which contains the following information: **F S L**

   a. Stacking event hours.
   b. Cause of stacking event.
   a. Balance of remaining allowable stacking hours.
   b. Emissions from pipeline bleeds, well pad bleeds (including maintenance venting).

   The quarterly report shall be submitted to the District 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. PTO 79-21 Cond. 15.*

2. The permit holder shall notify the District when a stacking event is greater than 33 lbs of H2S/hr per Rule 540. *ref. PTO 79-21 Cond. 15* **F S L**

C. STEAM WELL PERMIT CONDITIONS

I. Emission Limits

Emission Limits for H2S

1. Wellhead H2S bleed emissions are not to exceed the limitations of Rule 455, except as allowed under II.1. *ref. PTO 90-09, Cond. A.1 and A.2.* **F S L**

Emission Limits for Particulate Matter

2. Fugitive dust emissions from this well pad and access roads under the operator's responsibility are to be controlled to meet the requirements of Rule 430 and 410(a). *ref. PTO 90-09, Cond. A.3.* **F S L**

II. Operational Limits and Requirements

1. The permit holder shall notify the District prior to initiating any planned venting of this geothermal well which is associated with testing, wellhead or wellbore maintenance. The operator shall also present to the Control Officer and receive approval of, an emissions release protocol governing emissions and notifications for such operations. Until such time as this protocol is approved the Operator shall obtain permission from the District for each event at least 24 hours prior to starting the venting operation. Operations resulting in an excess of 15 pounds per hour of H2S shall be subject to a meteorological forecast, by a meteorological consultant acceptable to the District, and shall only proceed after approval by the Control Officer. *ref. PTO 90-09 Cond. B.1.* **F S L**

2. The permit holder shall apply for and receive an Authority to Construct/Temporary Permit to Operate for an air pollution control device prior to reworking or redrilling this well, unless a valid well maintenance permit is held by the permit holder. *ref. PTO 90-09 Cond. B.2.* **F S L**

3. The permit holder shall properly maintain the wellhead, its associated valves, flanges, threaded fittings, liquid lines and other components including the wellhead muffler so as to eliminate leakage of steam, condensate and non-condensable gases as noted below: **F S L**

   Liquid leak rate shall not exceed 20 ml in 3 minutes. Liquid leak rates in excess of 20 ml in

3 minutes shall be repaired or replaced within 15 calendar days.

Non-condensable gas leaks shall not (i) exceed (as measured within 1 cm of such leak) 1000 ppm(vol) H2S nor 10,000 ppm(vol) methane nor (ii) exceed emission limits of Rule 455. Non-condensable gas leak rates in excess of 1000 ppm (vol) H2S or 10,000 ppm (vol) TOG shall be repaired with 24 hrs. *ref. PTO 90-09 Cond. B.3.*

4. All wells shall be identified in a manner acceptable to the Control Officer. *ref. PTO 90-09 Cond. B.4.* **F S L**

III. Monitoring, Testing and Analysis

1. At the request of the Control Officer and per Rule 240, the Operator will perform, or have performed, source test(s) for air contaminants as specified. District concurrence with test procedure and method(s) is to be obtained prior to testing. The operator shall provide the District 48 hours notification prior to any sampling requested by the Control Officer. The Operator shall provide adequate facilities for District sampling. *ref. PTO 90-09 Cond. C.1.* **F S L**

2 . If this well employs an aspirator as allowed under rule 455(aa) it shall be source tested annually to determine H2S mass emissions and exit concentration. If an aspirator is utilized for less than 24 consecutive hours the well shall be source tested for H2S once every 5 years. *ref. PTO 90-09 Cond. C.2.* **F S L**

3 . Any instrument used for the measurement of H2S or Total Organic Gases shall be approved by the Control Officer. *ref. PTO 90-09 Cond. C.3.* **F S L**

IV. Recordkeeping

1. 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 upon request. **F S L**

2. The permit holder shall maintain a record of information needed to provide the District under Condition V.1. **F S L**

V. Reporting

1. A quarterly report shall be submitted to the District which contains the following information: **F S L**

Well Bleeds

a. Source name.
b. Hours of bleed emissions.
c. Amount of H2S, ammonia and total organic gases, expressed as methane, released during bleeding.
d. Reason for bleeding.

Wells employing an aspirator

e. Hours of bleeding through aspirator, if applicable.
f. H2S emission rate expressed as lb/hr, H2S exit concentration and date tested.

Wellbore maintenance

g. Emissions event associated with wellbore maintenance (blowdown).
h. Time and date of event.
i. Duration of event.
j. Emissions rate during event, steam and H2S, expressed as pounds per hour.
k. Total mass of H2S, ammonia and TOG, expressed as methane, released during event.
l. Reason for event.

The quarterly report shall be submitted to the District 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. PTO 79-21 Cond. D.1.*

D. STEAM WELL REWORK PERMIT CONDITIONS

I. Emission Limits

Emission Limits for H2S

1. Emissions of H2S from the blooie line shall not exceed 5.5 pounds per hour. *ref. Rule 455(b).* **S L**

Emission Limits for Particulate Matter

2. Particulate emissions from the blooie line shall not exceed the limitations of Rule 420 (e). *ref. Rule 420(e).* **S L**

II. Operational Limits and Requirements

1. Total combined engine and compressor hours of operation shall not exceed 6,015 hours for total steamfield rework activities in any calendar year. *ref. Rule 240.* **F S L**

III. Monitoring, Testing and Analysis

1. The permit holder shall measure the H2S concentration and emissions rate in the effluent well steam using wet chemistry methods outlined in the Abatement Plan submitted with the well redrill permit application. *ref. Rule 240.* **S L**

IV. Recordkeeping

1. 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 upon request. **F S L**

2. The permit holder shall maintain a record of information needed to provide the District under Condition V.1. **S L**

V. Reporting

1. A quarterly report shall be submitted to the District which contains the following information: **F S L**

   a. Steam well rework activities, if any.
   b. Final production H2S concentration in ppmw and steam flow rate in lb/hr.
   c. Total engine hours.
   d. Total compressor hours.
   e. Balance of remaining engine and compressor hours available for calendar year.
   f. Total pounds of total organic gas, including methane, emitted during rig operations, including flow test.
   g. An estimate of the total H2S, NOx and particulate matter released during the redrilling or workover operations.

   The quarterly report shall be submitted to the District 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. PTO 79-21 Cond. 15.*

E. PLANT WIDE PERMIT CONDITIONS

F S L

The plant shall comply with the following District regulations. The text of the referenced regulations can be found in Appendix A of this Title V Operating Permit.

1. Regulation 1 Rule 400-General Limitations

2. Regulation 1 Rule 410-Visible Emissions

3. Regulation 1 Rule 430-Fugitive Dust Emissions

4. Regulation 1 Rule 492 (40 CFR part 61 Subpart M)-Asbestos

5. Regulation 1 Rule 540-Equipment Breakdown

6. Regulation 2- Open Burning

7. 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.

8. 40 CFR Part 82- Chlorinated Fluorocarbons

9. 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 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.

F. ADMINISTRATIVE REQUIREMENTS

Payment of Fees **F S L**

1. This Permit shall remain valid during the 5 year term as long as the annual renewal fees are paid in accordance with Regulation 1 Rule 300 and Rule 360 of the District. Failure to pay these fees will result in forfeiture of this permit. Operation without a permit subjects the source to potential enforcement action by the District and the EPA pursuant to section 502(a) of the Clean Air Act. *ref. Reg 5.670*

Right to Entry and Inspection **F S L**

2. The Control Officer, the Chairman of the California Air Resources Board, The Regional Administrator of the EPA 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 areas in which any records are required to be kept under the terms and conditions of this Permit; 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; and
   C. to inspect any equipment, operation, or method required in this Permit; and
   D. to sample emissions from the source. *ref. Reg 5.610(e)*

Compliance with Permit Conditions

3. This Title V Operating Permit expires on July 17, 2025. The permit holder shall submit a complete application for renewal of this Title V Operating Permit no later than 6 months prior to expiration and no earlier than one year prior to expiration. If a complete application for renewal has not been submitted in accordance with these deadlines, the facility may not operate after July 16, 2025. *ref Reg 5.660* **F S L**

4. The permit holder shall comply with all conditions of this permit. Any non-compliance with the terms and conditions of this 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. r*ef. Reg 5.610(f)(3)* **F S L**

5. In the event any enforcement action is brought as a result of a violation of any term or condition of this permit, the fact that it would have been necessary for the permit holder 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. r*ef. Reg 5.610(f)(4)* **F S L**

6. 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. r*ef. Reg 5.610 f)(5)* **F S L**

7. This permit does not convey any property rights of any sort, nor any exclusive privilege. *ref. Reg 5.610(f)(2)* **F S L**

8. The permit holder shall supply within 30 days any information that the District requests in writing 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 1 Rule 200, Reg 5.430* **F S L**

Reporting

9. All deviations from permit requirements, including those attributable to upset conditions (as defined in the permit) must be reported to the District 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. **F S L**
ref. Reg 5.625

Severability

10. In the event that any provision of this permit is held invalid all remaining portions of the permit shall remain in full force and effect. *ref. Reg 5.610(g)* **F S L**

Transfer of Ownership

11. In the event of any changes in control or ownership of facilities to be modified and/or operated, this Permit is transferable and shall be binding on all subsequent owners and operators. The permit holder shall notify the succeeding owner and operator of the existence of this Permit and its conditions by letter, a copy of which shall be forwarded to the Control Officer. *ref. Rule 240(j)* **F S L**

Records

12. 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* **F S L**

Emergency Provisions

13. The permit holder 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). *ref. Reg 5.640* **F S L**

14. The permit holder may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond permit holders 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* **F S L**

15. 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* **F S L**

Malfunction

16. 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 I.2. 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 I.2, 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 82-05 Cond. IV.* **F S L**

Permit Posting

17. Operation under this permit must be conducted in compliance with all data specifications included in the application which attest to the operator's ability to comply with District rules and regulations. This permit 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 permit cannot be so placed, the permit shall be maintained readily available at all times on the operating premises. *ref. Rule 240(i)* **F S L**

Compliance Certification

18. Compliance certifications shall be submitted annually by the responsible official of this facility to the Northern Sonoma County Air Pollution Control District and to the EPA. Each compliance certification shall be accompanied by a written statement from the responsible official which certifies the truth, accuracy, and completeness of the report. r*ef. Reg 5.650* **F S L**

19. This Permit does not authorize the emission of air contaminants in excess of those allowed by the Health & Safety Code of the State of California or the Rules and Regulations of the Northern Sonoma County Air Pollution Control District. This Permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other governmental agencies. *ref. Rule 240(d)* **F S L**

Permit Modification

20. The permit holder shall comply with all applicable requirements in NSCAPCD Regulation 1 Chapter II- Permits and New Source Review. *ref. Regulation 1 Rule 200* **F S L**

III. APPLICABLE EMISSION LIMITS & COMPLIANCE MONITORING REQUIREMENTS SUMMARY

The following table provides an informational summary of the permit terms and conditions specified in Part II, Permit Conditions.

SOURCES: POWER PLANT (S-1 THROUGH S-4)						
Pollutant	**Emission Limit**	**Emission Limit/ Citation**	**Monitoring Type**	**Monitoring Frequency**	**Monitoring Requirement Citation**	**FE Y/N**
Hydrogen Sulfide	1000 ppm	Regulation 1 Rule 455(a)	Source Test	Monthly	N/A	Y
	50 g/hr/GMW	Regulation 1 Rule 455(b)	Source Test	Monthly	Permit Condition A.III.1	N
	5.5 lb/hr	Permit Condition A.I.1	Source Test	Monthly	Permit Condition A.III.1	N
	5.5 lb/hr	Permit Condition A.I.1	Main Steam H2S Sample	Weekly	Permit Condition A.III.5	N
	21 lb/hr from all units	Permit Condition A.I.2	Source Test	Annual	Permit Condition A.III.1a	Y
	exit conc. From Stretford Absorber shall not exceed 40 ppmv H2S	Permit Condition A.I.2	CCM	Continuous	Permit Condition A.III.7	N
Particulate Matter (PM)	0.20 grains/scf	Regulation 1 Rule 420(d)	Source Test	As Requested	N/A	Y
	40 lb/hr from cooling tower	Permit Condition A.I.5	TDS & TSS Sample	Monthly	Permit Condition A.III.4	Y
Visible Emissions	Ringlemann 2	Regulation 1 Rule 410	VEE	As Requested	N/A	Y

IV. Test Methods

The following table indicates the test methods associated with emission limits referenced in Section V, Applicable Emission Limits and Compliance Monitoring Requirements

Applicable Requirement	Description of Requirement	Acceptable Test Methods	SIP-Approved
Regulation 1 Rule 455	Geothermal Emission Standards	NSCAPCD Method 102	No

V. GLOSSARY

Abatement Solution
Iron chelate or any other District approved compound used to chemically treat H2S 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 H2S 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.

District
The Northern Sonoma County Air Pollution Control District

EPA
The federal 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.

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.

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.

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

TSS
Total Suspended Solids

Units of Measure:

ft^3	=	cubic feet
g	=	grams
gal	=	gallon
hr	=	hour
lb	=	pound
in	=	inches
psia	=	pounds per square inch, absolute
ppmv	=	parts per million, volume
scfm	=	standard cubic feet per minute
yr	=	year

VEE
Visible Emissions Evaluation

VI. Appendix A

The following applicable regulations are referenced in Section II; Permit Conditions.

VII. Appendix B

CA2001-031

RIDGE ROAD IMPROVEMENT AND MAINTENANCE AGREEMENT

AMONG

Aminoil Inc., Grace Geothermal Corporation and
Northern California Power Agency as Operator
Lake and Sonoma Counties, California

THIS AGREEMENT, made this 27th day of July, 1984, by and between AMINOIL INC. (hereinafter called "Aminoil") and GRACE GEOTHERMAL CORPORATION, a corporation, (hereinafter called "Grace") and Northern California Power Agency, a public agency of the State of California, as Operator, (hereinafter called "Operator");

W I T N E S S E T H

WHEREAS, the parties hereto are steam producers, and/or Electric Producers and/or sellers of steam for electric generation purposes in the Geysers Field, California; and

WHEREAS, it is the mutual desire of the parties hereto to provide for both the improvement and ongoing maintenance of the existing Ridge Road hereinafter referred to as "the Road") in Lake and Sonoma Counties, California, in order to facilitate their respective geothermal operations;

NOW, THEREFORE, in consideration of the premises, and of the mutual covenants herein contained the parties hereto agree as follows:

I. PROJECT

A. The Road is a private road as shown on the attached Exhibit "A", covering a distance of approximately 1.2 miles from a point on the easterly right of way on Socrates Mine Road (A county road) to its intersection with the south line of Section 34, T11N, R8W, MDM&M, being the lease line dividing Aminoil and Graces Federal leases. The parties have done minimal maintenance on the Road and Aminoil and Grace have appropriate easements giving them the right to construct, operate, and maintain the Road as provided herein.

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41,42

B. It is proposed that said Road be paved in a manner mutually agreeable to the parties at a total cost now estimated to be approximately $ 110,000.

C. This Agreement will supersede paragraph I.B of that certain Grant of Easement and Joint Road Agreement dated September 1, 1974, among Frances W. Vought and Helen Dillingham, Burmah Oil and Gas Company (predecessor to Aminoil) and Shell Oil

Company (predecessor to Grace) insofar as the respective obligations of use and maintenance of Aminoil and Grace are concerned. The Grant of Easement and Joint Road Agreement otherwise remains in effect. To the extent necessary to carry out the provisions of this Ridge Road Agreement, Operator shall be deemed an assignee under the Grant of Easement and Joint Road Agreement.

II. INTEREST OF THE PARTIES

A. As of the date of this Agreement, the cost and obligations to be incurred hereunder by the parties will be shared as follows:

Aminoil USA, Inc. (Aminoil)	40%
Grace Geothermal Corporation (Grace)	12%
Northern California Power Agency, (Operator)	48%
TOTAL	100%

B. Notwithstanding the obligation to pay 40% and 12% of the "cost and obligations" to be incurred hereunder, Aminoil's and Grace's respective share for road paving shall not exceed $44,000.00 and $13,200.00 each.

C. If subsequent to the date hereof, a non-party elects to participate herein, the amount of its contribution shall initially be distributed to the original parties hereto in accordance with the foregoing formula.

III. OPERATOR

A. Northern California Power Agency is designated Operator under this Agreement and in that capacity shall alone be responsible for the following:

1. Arranging for bidding and awarding the construction contract based on the lowest bid received from an acceptable bidder with required experience, reputation and ability to perform in a timely and satisfactory manner.

2. Providing field supervision and liaison with Lake and/or Sonoma Counties.

3. Obtaining required permits and approvals.

4. Managing each contract for paving and maintaining the Road.

B. An operating committee (the "Committee") shall be established, composed of one designated representative (to be appointed by written notice to Operator) from each participant. The Committee shall meet from time to time, upon call of any one or more of its members, and shall generally review the improvement and maintenance of the Road or consider any major contingencies that may arise.

C. Operator is authorized for the account of the parties to this Agreement to perform, and enter into contracts for, paving, surveying, realigning and maintaining the Road, provided, however, that all such contracts calling for payments in excess of $10,000.00 in a 12 month period, must be approved in advance by all parties to this Agreement. Operator will not be required to obtain such approval, however, for any work which Operator in its discretion believes to be necessary in an emergency.

IV. COSTS AND EXPENSES

A. The obligation of the parties to bear their respective cost shares shall extend to all costs, expenses, and liabilities incurred in connection with the activities contemplated hereunder, except those arising from the willfull misconduct of any party and except as otherwise provided in this Agreement.

B. Operator shall:

1. Approve invoices and disperse progress payments to contractors in accordance with Operator's standard accounting practices.

2. Bill parties for their proportionate share of authorized expenditures.

3. Be entitled to charge the parties an overhead charge of three percent of all third-party contract charges for said Road project on a fixed rate basis as compensation for administrative and supervision costs.

4. Have the right from time to time to demand and receive from the parties payment in advance of parties' share of the estimated amount of the costs to be incurred in operations hereunder during the next succeeding month, which right may be exercised only by submission to each party of a statement of such estimated costs, together with an invoice for its share thereof. Each such statement and invoice for the payment in advance of estimated costs shall be submitted on or before the 20th day of the month next preceeding the month during which the costs will be incurred. The amount of such invoice shall be due and payable by each party to Operator on the first day of the next succeeding month. The amount due shall bear interest at the rate of twelve percent per annum (or the legal rate of interest, if lesser) from the due date until paid. Proper adjustment shall be made monthly between advances and actual cost, to the end that each party shall bear and pay its proportionate share of actual cost incurred, and no more. Each party hereto shall have the right to audit the pertinent books, invoices, records, and other documents of Operator to verify the accuracy of any statement, payment, calculation, or determination made pursuant to the provisions of this Agreement.

C. Any party which pays, or incurs liability for, any costs which are to be shared, or which are the responsibility of other parties, pursuant to this Agreement shall be reimbursed by each other party in the amount of each party's respective share plus interest at the rate of twelve percent per annum (or the legal rate of interest, if lesser) from the fifteenth day following the receipt of an invoice therefor until paid. No party other than Operator shall assume liability for any such costs without the prior approval of the Committee.

D. Operator shall maintain a true and correct set of records pertaining to the activities to be performed hereunder, which shall be subject to inspection by the other parties or their representatives hereunder. The other parties may, upon request, audit any and all of Operator's records relating to activities performed hereunder, which records shall be retained for at least two years after the termination of this Agreement.

V. RESIGNATION OR REMOVAL OF OPERATOR

A. Operator may resign from its duties and obligations as Operator at any time upon written notice of not less than ninety (90) days given to the other parties. Operator may be removed if it fails or refuses to carry out its duties hereunder. In any such case, the parties hereto shall appoint a new Operator who shall assume the responsibilities and duties, and have the rights prescribed for Operator by this Agreement. The retiring Operator shall deliver to its successor all records and information necessary for the discharge by the new Operator of its duties and obligations.

VI. LIABILITY OF PARTIES

A. The liability of the parties hereto shall be several, not joint or collective. Except as hereinafter set forth, each party shall be responsible only for its obligations, and shall be liable only for its proportionate share of the costs of the project.

B. Each party respectively, as indemnitor, will indemnify the others, as indemnities, and save them harmless from any and all loss, damage, expense and liability resulting from injuries to or death of persons, including but not limited to employees of any party hereto, and damage to or destruction of property, including but not limited to the property of any party hereto, arising out of or in any way connected with the performance of this agreement or any operations hereunder by indemnitor, its agents or employees, excepting only such injury, death, damage or destruction as may be caused by the sole negligence or willful misconduct of any of the indemnitees, their agents or employees. Indemnitor, shall, upon an indemnitee's request, defend any suit asserting a claim covered by this indemnity.

C. It is not the intention of the parties to create, nor shall this Agreement be construed as creating, a partnership.

VII. INSURANCE

A. At all times while operations are conducted hereunder, Operator shall comply with the Workers' Compensation Law of the State of California. Operators' Workers Compensation policies shall contain a waiver of subrogation in favor of the Aminoil and Grace. Any additional costs for insurance premiums shall be a project cost to be shared by the parties.

B. At all times while operations are conducted hereunder, all parties shall provide:

1. Workers' Compensation insurance in accordance with the Laws of the State of California.

2. CGL insurance (Including Automobile liability) in the amount agreeable to the Participants. Policies shall be endorsed to include Contractual Liability for liability assumed under the contract.

C. Operator shall require all contractors and/or subcontractors engaged in work on or for said Road Project to comply with the Workers' Compensation Law of the State of California with a waiver of subrogation in favor of all parties. In addition, contractors and subcontractors must maintain Comprehensive and Auto Liability policy and shall name all parties as Additional Named Insureds under their Liability policies. Any additional cost for insurance premiums shall be the project cost shared by all parties.

D. All Participants to this contract agree to name each other Participant as an Additional Name Insured on its comprehensive general liability policy and to waive their right of subrogation against each other in Section B above.

VIII. CLAIMS AND LAWSUITS

A. If any party to this Agreement is sued as a result of an action arising out of performance of the activities contemplated hereunder, including without limitation any action related to conditions or placement of the Road, or from an action involving any permit in respect of the Road, it shall give prompt written notice of the suit to the other parties.

B. Notwithstanding the provisions of Article VI hereof, any claim or lawsuit brought against Operator resulting from operations hereunder shall be considered as brought against Operator in its representative capacity and all parties hereto shall bear the cost of defending such claim or suit and any settlement, damages or judgement which may result therefrom (except those resulting from the gross negligence or willful misconduct of Operator) in accordance with their respective shares hereunder at the time the event occurred which gave rise to the claim, damage or lawsuit.

C. The handling (or defense) of claims caused by and arising out of operations on said Road project conducted for the joint account for all parties shall be supervised by Operator and its attorneys (including outside counsel engaged by Operator), and the settlement of claims of this kind shall be within the discretion of Operator so long as the amount paid in settlement of any one claim does not exceed ten thousand dollars ($10,000.00).

IX. NOTICES

A. All notices authorized or required between the parties and required by any of the provisions of this Agreement, shall unless otherwise specifically provided, be given in writing by certified mail, return receipt requested, or by telegram, postage or charges prepaid, and addressed to the party to whom the notice is given at the following addresses:

Aminoil Inc.
ATTN: Mr. G. A. Vaughan
P.O. Box 11279
Santa Rosa, CA 95406

Grace Geothermal Corporation
ATTN: Mr. D. J. Woolley
P.O. Box 17580
Salt Lake City, UT 84117

Northern California Power Agency
ATTN: James W. Whalen
8421 Auburn Blvd, Suite 160
Citrus Heights, CA 95610

X. TERMS OF AGREEMENT

A. This Agreement shall remain in full force and effect until completion of the paving of the Road and thereafter until terminated by ninety (90) days' written notice by any party. It is agreed, however, that the termination of this Agreement shall not relieve the parties hereto from any liability which has accrued or attached prior to the date of such termination.

XI. MISCELLANEOUS

A. This Agreement shall be binding upon the successors, representatives and assigns of the parties hereto.

B. This Agreement may be executed in counterpart with the same effect as if all parties had signed the same document.

IN WITNESS WHEREOF, this Agreement has been executed by the duly authorized officers or representatives of the parties hereto as of the date first hereinabove written.

AMINOIL INC.

By_____

GRACE GEOTHERMAL CORPORATION

By_____
Its_____

NORTHERN CALIFORNIA POWER AGENCY

By_____
Its General Manager

X. TERMS OF AGREEMENT

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AMINOIL INC.

By_____

GRACE GEOTHERMAL CORPORATION

By_____
Its Executive Vice President

NORTHERN CALIFORNIA POWER AGENCY

By_____
Its_____

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AMINOIL INC.

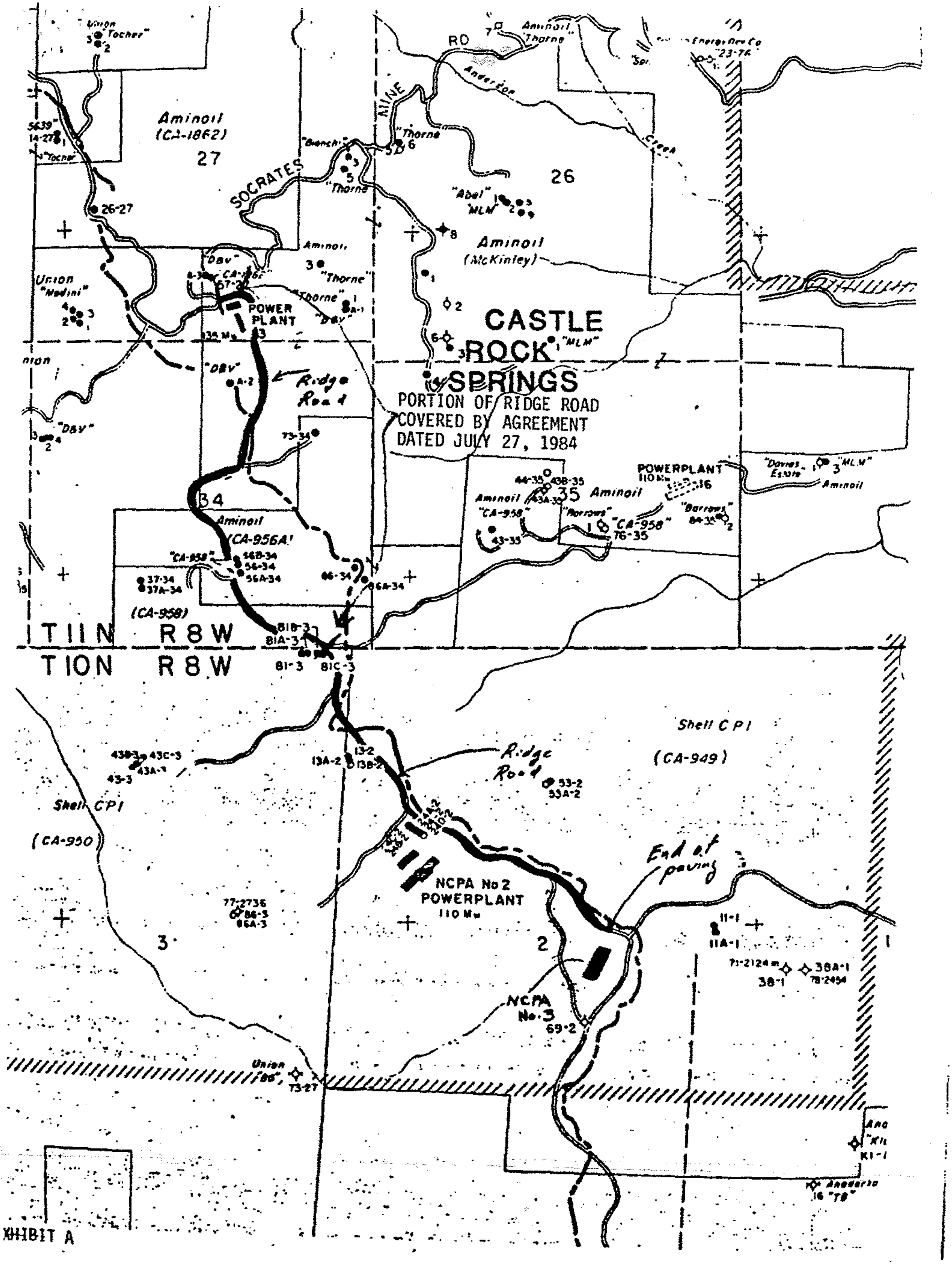
By _____
Contract Agent

GRACE GEOTHERMAL CORPORATION

By _____
Its _____

NORTHERN CALIFORNIA POWER AGENCY

By _____
Its _____


CASTLE
ROCK
SPRINGS
PORTION OF RIDGE ROAD
COVERED BY AGREEMENT
DATED JULY 27, 1984
POWER
PLANT
Ridge
Road
POWERPLANT
110 Mw
Aminoil
(CA-1862)
27
26
34
35
SOCRATES
MINE
RD
Anderson
Creek
Aminoil
(McKinley)
Aminoil
(CA-956A)
(CA-958)
T11N R8W
T10N R8W
Shell CPI
(CA-949)
Shell CPI
(CA-950)
NCPA No 2
POWERPLANT
110 Mw
NCPA
No 3
End of
paving
3
2

XHIBIT A