

## DOCKETED

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PGandE GEYSERS UNIT 18 COMPLIANCE PLAN

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## PGandE GEYSERS UNIT 18 COMPLIANCE PLAN

### PART I: Introduction and General Provisions

Section 25532 of the Public Resources Code provides that the California Energy Commission (CEC) shall establish a monitoring system to assure that any facility certified is constructed and operated in compliance with air and water quality, public health and safety, and other applicable regulations, guidelines, and conditions adopted or established by the Commission or specified in the written decision on the application. The following plan is formulated to satisfy that directive for the PGandE Geysers Unit 18.

The Commission's jurisdiction extends to the power plant and related facilities, including the transmission tapline to the point of interconnection with the power grid. The Commission's jurisdiction does not extend to the steam-gathering or reinjection system, the well pads and access roads thereto, or the steam wells.

Significant features of the plan include:

- o Utilization of delegate agencies, where possible, to monitor specific elements of the compliance plan;
- o Compliance verification of each condition by a qualified professional;
- o Periodic compliance reports to be filed by PGandE;
- o An annual compliance report to be filed by PGandE; and
- o A dispute resolution procedure.

#### Delegate Agencies

The Warren-Alquist Act provides the CEC with exclusive siting authority for thermal power plants and related facilities. To the extent permitted by law, the CEC will delegate authority for compliance verification to various state and local agencies who have expertise in subject areas where specific requirements have been established as a condition of certification for the site and related facilities. In the event that a delegate agency is unwilling or unable to participate in this program, the CEC will establish an alternative method of verification.

#### Verification of Compliance

Verification of compliance with the terms and conditions of certification shall be accomplished either by periodic compliance reports filed by PGandE, or by appropriate letters from delegate agencies verifying compliance, or by auditing project records, or by inspecting the power plant site and related facilities.

#### Periodic Compliance Reports

Information required by the compliance plan to be submitted by PGandE to the CEC shall be filed as periodic compliance reports. These reports shall be filed at least once each quarter, numbered consecutively, and contain as a minimum:

- o The current project construction or operating status;
- o A listing of compliance plan requirements scheduled during the reporting period, with a corresponding description of the status of the requirement, i.e., completed, not started, or in progress;
- o For those compliance plan requirements which PGandE had expected to satisfy during the reporting period but which were not satisfied, include a statement of how and when PGandE intends to satisfy the requirement;
- o A listing of any changes to the compliance plan which has resulted from negotiations between PGandE and the CEC or its delegate agencies; and
- o Notification of any filings made with other governmental agencies having permitting authority over any aspect of the project.

#### Annual Compliance Report

PGandE will submit an annual compliance report to the CEC which will contain the information required by the compliance plan to be filed on an annual basis. An explanation will be provided for any missing information, including an estimate as to when the information will be provided. The annual report shall summarize the primary compliance activities during the previous year.

#### Compliance Auditor

The CEC shall designate a Compliance Auditor for the PGandE Geysers Unit 18 power plant. The auditor will be responsible for implementing the approved compliance plan after certification, for maintaining the compliance record files, and for initiating the dispute resolution procedure.

All correspondence pertaining to PGandE Geysers Unit 18 compliance matters should be addressed as follows:

Compliance Auditor (79-AFC-3C)  
California Energy Commission (MS-2000)  
1516 Ninth Street  
Sacramento, CA 95814

#### Noncompliance

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the CEC and can result in proceedings pursuant to Title 20, California Administrative Code Article 4, Sections 1230, et seq.

#### Enforcement

The Commission's legal authority to impose legal sanctions for noncompliance is specified in Title 20, CAC Sections 1230 et seq. and PRC Sections 25531(c), 25532, 25534, and 25900 et seq. Moreover, delegate agencies, as set forth in this document, are authorized to take any action allowed by law in accordance with the delegate agencies' statutory authority, regulations, and administrative procedures to ensure compliance with the terms and conditions of certification and applicable laws, ordinances, and standards.

CEC may exercise all administrative measures authorized by applicable law in the event of noncompliance.

#### Compliance Record

PGandE will maintain for the life of the project files of all "as-built" documents referenced in this report. Staff of the CEC and delegate agencies will, upon reasonable notification, be given access to the files.

The CEC will maintain as a public record:

- o All attestments to the fulfillment of legal requirements;
- o All periodic and annual compliance reports filed by PGandE;
- o All documents relative to complaints of noncompliance filed with the CEC; and
- o All documents relative to this compliance plan brought before the Commission.

#### Confidential Information

Any information which PGandE deems proprietary shall be submitted to the Executive Director pursuant to 20 California Administrative Code Section 2505(d). Any information which is determined to be confidential shall be kept confidential as provided for in 20 California Administrative Code Section 2501 et seq.

#### Dispute Resolution Procedure

The following mediation procedure is designed to resolve informally, when possible, disputes concerning interpretation of compliance with the requirements of the PGandE Geysers Unit 18 Compliance Plan. Either PGandE, the CEC, or any other party may initiate this procedure when time is critical in resolving a problem or when the alleged noncompliance does not appear significant enough to warrant a more formal investigation and proceeding.

The procedure is not intended to be a substitute for or prerequisite to the more formal complaint and investigation procedure specified in Title 20, California Administrative Code Sections 1230 et seq. Nor may the procedure be used to change the terms and conditions of certification as approved by the California Energy Commission.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a matter cannot be resolved, then the matter must be referred to the Commission for consideration.

- o Request for Informal Investigation--Any individual, group, or agency may request the CEC to conduct an informal investigation of an alleged non-compliance with the CEC's terms and conditions of certification for the PGandE Geysers Unit 18. All requests for an informal investigation shall be made to the CEC Compliance Auditor by either telephone or letter.

Upon receipt of a request for investigation, the compliance auditor shall promptly notify PGandE by telephone and subsequently by letter of the allegation. All known and relevant information of the alleged noncompliance shall be provided to PGandE and to the CEC staff. PGandE shall promptly investigate the matter and within seven working days shall provide a written report of the results of the investigation, as well as all corrective measures undertaken, to the compliance auditor and the person requesting such investigation. If the exigencies of the noncompliance demand otherwise, the compliance auditor may request PGandE to provide an initial report within 48 hours by telephone, followed by a written report filed within 7 days.

- o Request for Informal Meeting--In the event that either the party requesting an investigation or the CEC staff is not satisfied with the PGandE report and investigation of the event, as well as the corrective measures undertaken, either may, by written request to the compliance auditor with a copy to PGandE, request a meeting with PGandE. Such request shall be made within 14 days of PGandE's filing of its written report as described above. Upon receipt of such a request, the compliance auditor shall:
  1. Immediately schedule a meeting with the requesting party and PGandE to be held promptly at a mutually convenient time and place.
  2. Secure the attendance of appropriate CEC staff and staff of any other agency with general jurisdiction and expertise in the subject area of concern.
  3. Conduct such meeting in an informal and objective manner to encourage the voluntary settlement of any dispute in a manner which is fair and equitable to the interests of all parties.
  4. Promptly after the conclusion of such meeting, prepare a memorandum which fairly and accurately sets forth the positions of all parties and any conclusions reached and distribute copies to all attendees.
- o Request for Compliance Committee Hearing--If either PGandE, CEC staff, or the party requesting an investigation is not satisfied with the results of said informal meeting, such party may, within 10 working days, request in writing a hearing before the Committee of the Commission designated for the hearing of such matters. The Committee shall, upon receipt of a written request stating the basis of the dispute and the attempt at informal resolution thereof, grant a prompt hearing on the matter consistent with the requirements of noticing provisions and shall have authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction.
- o Appeal from Committee to Commission--Pursuant to 20 California Administration Code Section 1215, PGandE, CEC staff, or the party requesting an investigation may request full Commission review of any committee order or decision.

## Section 1. AIR QUALITY

### A. Applicable Laws, Ordinances, Standards, and Practices

- o Northern Sonoma County Air Pollution Control District (NSCAPCD) Rules 400 (a), 410 (a), 420 (d), 430, 455 (a) and (b), 220 and 230 (New Source Review), and 540 (upset/breakdown).
- o Clean Air Act and implementing federal regulations.
- o California Health and Safety Code and implementing state regulations.

### B. Requirements

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

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

- 1-2. PGandE shall comply with the requirements specified in the "Stipulated Findings, Conclusions and Conditions on Air Quality," dated April 18, 1980, (specifically Findings 16 and 24) and in Appendix A of the Final Decision, conditions 52 through 58. The relevant conditions of these documents are listed below. Unless otherwise specified in the above documents, PGandE shall provide to NSCAPCD, ARB, and CEC a report identifying the monitoring or test procedures being used. NSCAPCD shall advise PGandE, ARB, and CEC on the acceptability of the plan and procedures (including recommendations on how to improve the plan) within 30 days of the receipt of the plan. PGandE shall implement the NSCAPCD recommendations unless a mutually agreed upon alternative is developed.

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

16. In the event of any unscheduled outage at Unit 18 once it is operational, PGandE agrees to immediately notify the steam supplier for Unit 18.
24. Based upon the review of the PGandE's amendment to the AFC, the NSCAPCD and the ARB have determined the following conditions to be necessary to assure compliance with applicable air quality standards:
- A. Hydrogen sulfide emissions from the power plant shall be no greater than 44.0 gm/gMW-hr.



- B. PGandE shall return all untreated steam and/or condensate to injection points such that hydrogen sulfide will be treated up to the standards of Rule 455 (a) during normal power plant operation, plant start-up, and plant shut-down.
- C. During downwash conditions, emissions of H<sub>2</sub>S shall not exceed 75 lbs H<sub>2</sub>S/hr. An excess of 75 lbs/hr, such as occurs during certain hydrogen sulfide control equipment failures, shall be avoided by means approvable by the district. Downwash conditions for the purpose of the condition shall be neutral stability winds between 5.0 to 10.0 meters/second from the west (270° ± 11.25°). PGandE with concurrence from the district shall establish and maintain a meteorological station and appropriate system to properly implement this 75 lb/hr limitation.

PGandE may propose an increase in the allowable emission rate for H<sub>2</sub>S during downwash conditions. Such proposal shall be submitted with supporting data to the NSCAPCD and the ARB.

No increase in the allowable emission rate for H<sub>2</sub>S may be permitted unless the written concurrence of the NSCAPCD and ARB is obtained.

- o Downwash conditions for the purpose of this requirement shall be maintained for an average period of 15 minutes.
- D. PGandE shall install and operate a continuous H<sub>2</sub>S monitoring device in the off-gas vent to the atmosphere and the off-gas vent to the cooling tower. The gas analyzer shall have an accuracy of ± 10 percent of full scale for the 1,000 - 5,000 ppmv range. The flow meter shall have an accuracy of ± 10 percent of full scale for the appropriate acfm range. Data shall be logged on a strip chart or other similar device which will be available for inspection on site upon request. PGandE shall design for a target data capture of 85 percent on an annual basis.
- E. Although Unit 18 may be licensed on the basis of a hydrogen peroxide/catalyst and Stretford/surface condenser system, PGandE may use other means to comply with the hydrogen sulfide emissions limitation of 44.0 gm/gMW-hr. PGandE will submit, no later than two years prior to the scheduled commercial operation date of Unit 18 project, the conceptual design of the finally selected abatement system, including data demonstrating that compliance with the emissions limitation 44.0 gm/gMW-hr can be met. Such data shall be submitted to the CEC, the ARB, and the NSCAPCD at least 30 days prior to the date intended for

commencement of the design of the proposed system. Design shall not proceed until the NSCAPCD APCO determines that the material submitted is adequate to demonstrate compliance with the H<sub>2</sub>S emissions limitation. The APCO shall render a determination no later than 15 days following the receipt of the material from PGandE.

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

G. PGandE shall:

(1) By September 1, 1980, determine the feasibility of a continuous condensate monitoring system for H<sub>2</sub>S, including estimated costs, which is capable of  $\pm 20$  percent accuracy and which requires reasonable maintenance. PGandE shall also provide test data substantiating the proper system to ensure compliance with Rule 455 and the 44.0 gm/gMW-hr limitation. PGandE shall submit quarterly reports to the APCD, the ARB, and the CEC on its efforts toward these determinations.

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

H. PGandE shall operate or participate in operating an ambient H<sub>2</sub>S monitoring station at Whispering Pines (SRI #5) for the three-year period from May 1, 1981, through April 30, 1984, unless an alternative method of ambient monitoring mutually agreed upon by PGandE, the ARB, and the NSCAPCD is implemented, or monitoring at Whispering Pines (SRI #5) is performed by another party.

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

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

Relevant Conditions of the Final Decision Appendix A

52. Hydrogen sulfide emissions from the power plant shall be no greater than 44.0 gm/gMW-hr.
53. PGandE shall return all untreated steam and/or condensate to injection points such that hydrogen sulfide will be treated up to the standards of Rule 455(a) during normal power plant operation, plant start-up, and plant shut-down.
54. During downwash conditions, emissions of H<sub>2</sub>S shall not exceed 75 lbs H<sub>2</sub>S/hr. Excess of 75 lbs/hr, such as occurs during certain hydrogen sulfide control equipment failures, shall be avoided by means approvable by the district. Downwash conditions for the purpose of the condition shall be neutral stability winds between 5.0 and 10.0 meters/second from the west (270° ± 11.25°). PGandE shall establish and maintain a meteorological station and appropriate system to properly implement this 75 lb/hr limitation.
55. PGandE shall install and operate a continuous H<sub>2</sub>S monitoring device in the off-gas vent to the atmosphere and the off-gas vent to the cooling tower. The gas analyzer shall have an accuracy of ± 10 percent of full scale for the 1,000 - 5,000 ppmv range. The flow meter shall have an accuracy of ± 10 percent of full scale for the appropriate acfm range. Data shall be logged on a strip chart or other similar device which will be available for inspection on site upon request. PGandE shall design for a target data capture of 85 percent on an annual basis.
56. Although Unit 18 may be licensed on the basis of a hydrogen peroxide/catalyst and Stretford/surface condenser system, the Applicant may use other means to comply with the hydrogen sulfide emissions limitation of 44.0 gm/gMW-hr. PGandE will submit, no later than two years prior to the scheduled commercial operation date of Unit 18 project, the conceptual design of the finally selected abatement system, including data demonstrating that compliance with the emissions limitation of 44.0 gm/gMW-hr can be met. Design shall not proceed until it is determined that the material submitted is adequate to demonstrate compliance with the H<sub>2</sub>S emissions limitation. Such data shall be submitted at least 30 days prior to the date intended for commencement of design of the proposed system.
57. PGandE approved-for-construction drawings of the secondary abatement system shall be submitted at least 30 days prior to

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the date intended for commencement of the system. Construction shall not proceed until it is determined that the drawings submitted are adequate to demonstrate compliance with the applicable limitations.

58.

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

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

- 1-3. PGandE shall obtain NSCAPCD and CEC written approval before using any equipment other than the hydrogen peroxide/catalyst and Stretford/surface condenser system as approved in the CEC Decision, to control H<sub>2</sub>S emissions.

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

- 1-4. PGandE shall submit approved-for-construction drawings of the power plant secondary H<sub>2</sub>S control system, to the CEC only if requested by the CEC.

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

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

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



Section 2: PUBLIC HEALTH

A. Applicable Laws, Ordinances, Standards, and Practices

- o Health and Safety Code Section 25607,
- o Title 17, California Administrative Code Section 30355,
- o Public Resources Code, Chapter 6, Section 25532.

B. Requirements

- 2-1. PGandE shall conduct quarterly sampling and analysis of radon-222 concentrations in noncondensable gases entering the power plant in incoming steam or vent off-gas or H<sub>2</sub>S abatement in accordance with the most recent California Department of Health Services, Radiologic Health Service (CDHS/RHS) requirements for monitoring and reporting on radon-222. The radon-222 steam monitoring program will be conducted for at least the first two years of commercial operation.

If monitoring results indicate that the radon-222 release from Unit 18 is well within applicable standards, the monitoring program may be modified, reduced in scope, or eliminated, provided PGandE obtains the permission of CDHS/RHS. With concurrence of the utility and CDHS/RHS, changes may be made to the program as new information and techniques become available.

Verification: PGandE will provide annual reports to CDHS/RHS (with an informational copy to the CEC) which will comply in format and content with the most recent CDHS/RHS reporting requirements.

- 2-2. If the radon-222 concentration exceeds 3.0 pCi/liter in the cooling tower exhaust, PGandE must inform the CDHS/RHS with an advisory report.

Verification: PGandE shall provide a written report to CDHS/RHS of sample results within 30 days of confirmation of an exceedance of 3.0 pCi/liter radon-222 in the cooling tower exhaust.

- 2-3. If the radon-222 concentrations exceed 6.0 pCi/liter in the cooling tower exhaust, PGandE shall notify the CDHS/RHS and the CEC by telegram or telephone upon confirmation of the sample result. Confirmation includes the reanalysis, of the sample by PGandE or another qualified laboratory. The confirmation procedures used shall be the same as the normal analysis, but may include sending samples to CDHS/RHS or other qualified laboratories for analysis. Confirmation of sample results must be accomplished in the most expedient manner possible and should take less than five calendar days.

Verification: PGandE shall notify CDHS/RHS and the CEC within 24 hours of the confirmation of the sample. PGandE shall provide an advisory report to CDHS/RHS and the CEC within 30 days outlining corrective actions taken.

- 2-4. The CEC shall arrange meetings with PGandE, CARB, CDHS, NSCAPCD, and other interested parties for determining significant ambient and/or emission concentration guidelines for mercury, arsenic, ammonia, vanadium, and boron. These ambient and/or emission concentration guidelines will be established based upon recommendations by these agencies mandated to protect public health from exposure to such unregulated pollutants.

Verification: The CEC shall notify the above parties prior to commercial operation of Unit 18.

- 2-5. PGandE shall prepare and implement an ambient monitoring program or participate in developing and implementing a generic program for monitoring ambient baseline concentrations of mercury (vapor and particulate state), arsenic, ammonia and vanadium at the populated areas of Whispering Pines and Anderson Springs. PGandE shall consult the CARB, CDHS and the NSCAPCD if they develop their own monitoring program and shall submit the program to those agencies for review.

Baseline ambient monitoring for mercury (vapor and particulate), arsenic, ammonia and vanadium should occur for one quarter (3rd quarter) of the year prior to commercial operation. Monitoring may be extended up to one year if ambient concentrations are considered significant per 2-4.

Verification: If PGandE does not participate in a generic monitoring program PGandE shall submit their monitoring program for approval to the CARB, CDHS and NSCAPCD 90 days prior to the initiation of the monitoring program. After the CARB, CDHS and NSCAPCD review the program, PGandE shall inform the CEC of the program's status.

The NSCAPCD and the ARB shall determine if any quality assurance program associated with the ambient monitoring program is necessary. PGandE shall submit documentation to the CEC containing the NSCAPCD and the ARB decision in this regard within 30 days prior to the initiation of the monitoring program.

PGandE shall submit a quarterly report, or if monitoring occurs for one year, PGandE shall submit quarterly reports containing the results of the ambient monitoring to the CARB, CDHS, NSCAPCD and CEC regardless if PGandE participates in a generic monitoring program or undertakes their own monitoring program.

- 2-6. PGandE shall perform a quarterly steam analysis for ammonia, arsenic, mercury, and boron. The quarterly steam analysis program shall commence within 45 days after commercial operation of Unit 18 and shall run for 1 year.

PGandE shall perform annual steam analysis for ammonia, arsenic, mercury, and boron for the second and third year after commercial operation of Unit 18. Thereafter tests to determine the content of these steam components shall occur upon written request of the NSCAPCD.

Verification: PGandE shall submit quarterly and annual steam reports and analysis to the CEC, NSCAPCD and the CDHS. All reports shall be submitted within 30 days after sampling.

- 2-7. If results of the quarterly steam analyses indicate significant concentrations of ammonia, arsenic, mercury, and boron, and/or if results of the baseline ambient monitoring indicate significant concentrations of ammonia, arsenic, mercury, and vanadium, then PGandE shall monitor or participate in operational ambient monitoring of pollutants in question in populated areas of Whispering Pines and Anderson Springs during the second year following commercial operation.

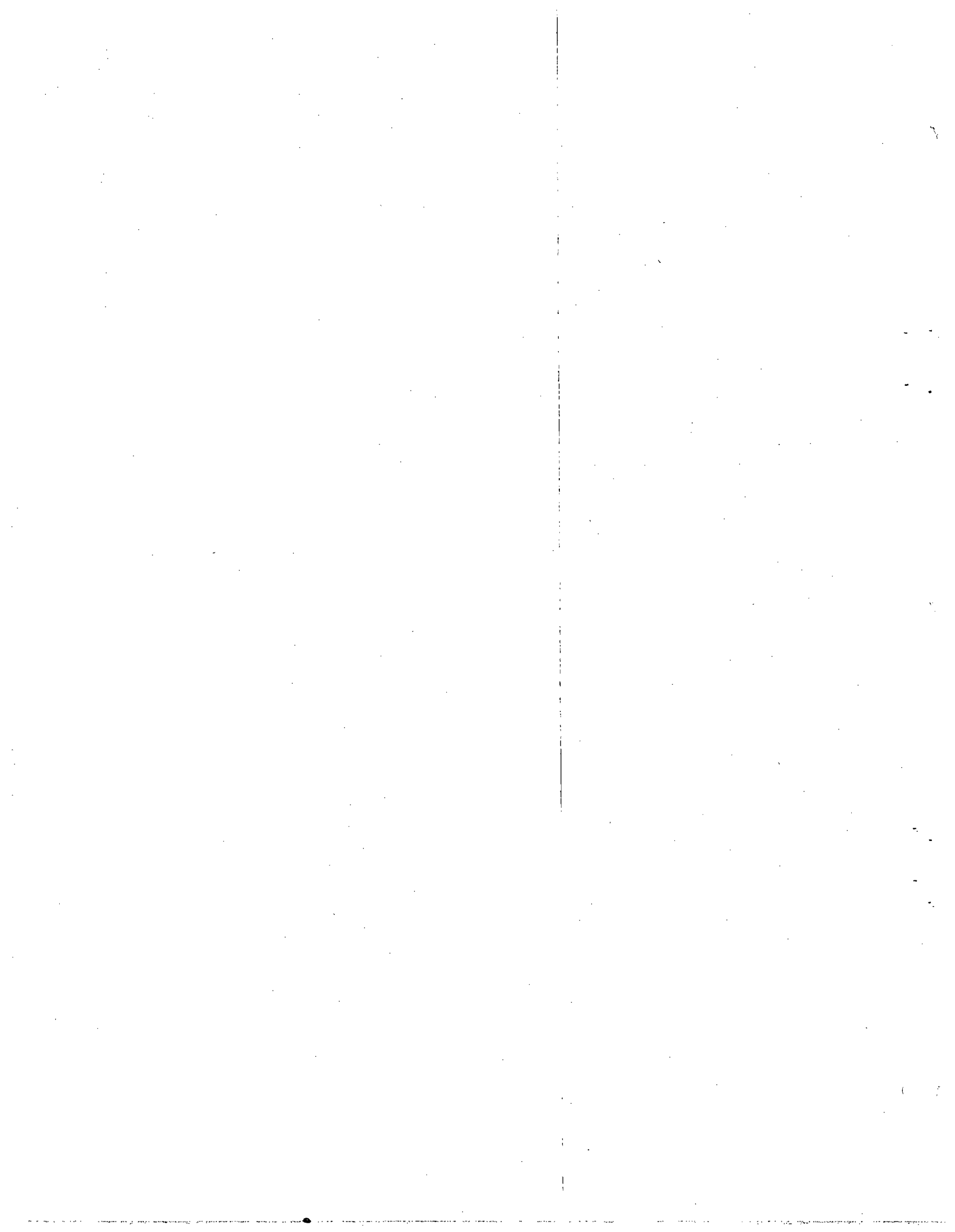
Verification: If an operational ambient monitoring program is required, PGandE shall provide the CEC, CDHS, NSCAPCD, and CARB, a written report describing the operational ambient monitoring program. This report shall be received by the above parties within 60 days from the last quarterly steam analysis results.

The NSCAPCD and the ARB shall determine if any quality assurance program associated with the operational ambient monitoring program is necessary. PGandE shall submit documentation to the CEC containing the NSCAPCD and the ARB decision in this regard within 60 days prior to the initiation of the monitoring program.

- 2-8. PGandE shall perform mass balance measurements for ammonia on Unit 18 to determine the percent of incoming pollutants being emitted. Air dispersion models will be used to calculate Unit 18's worst case incremental additions to ambient levels of ammonia in Anderson Springs and Whispering Pines.

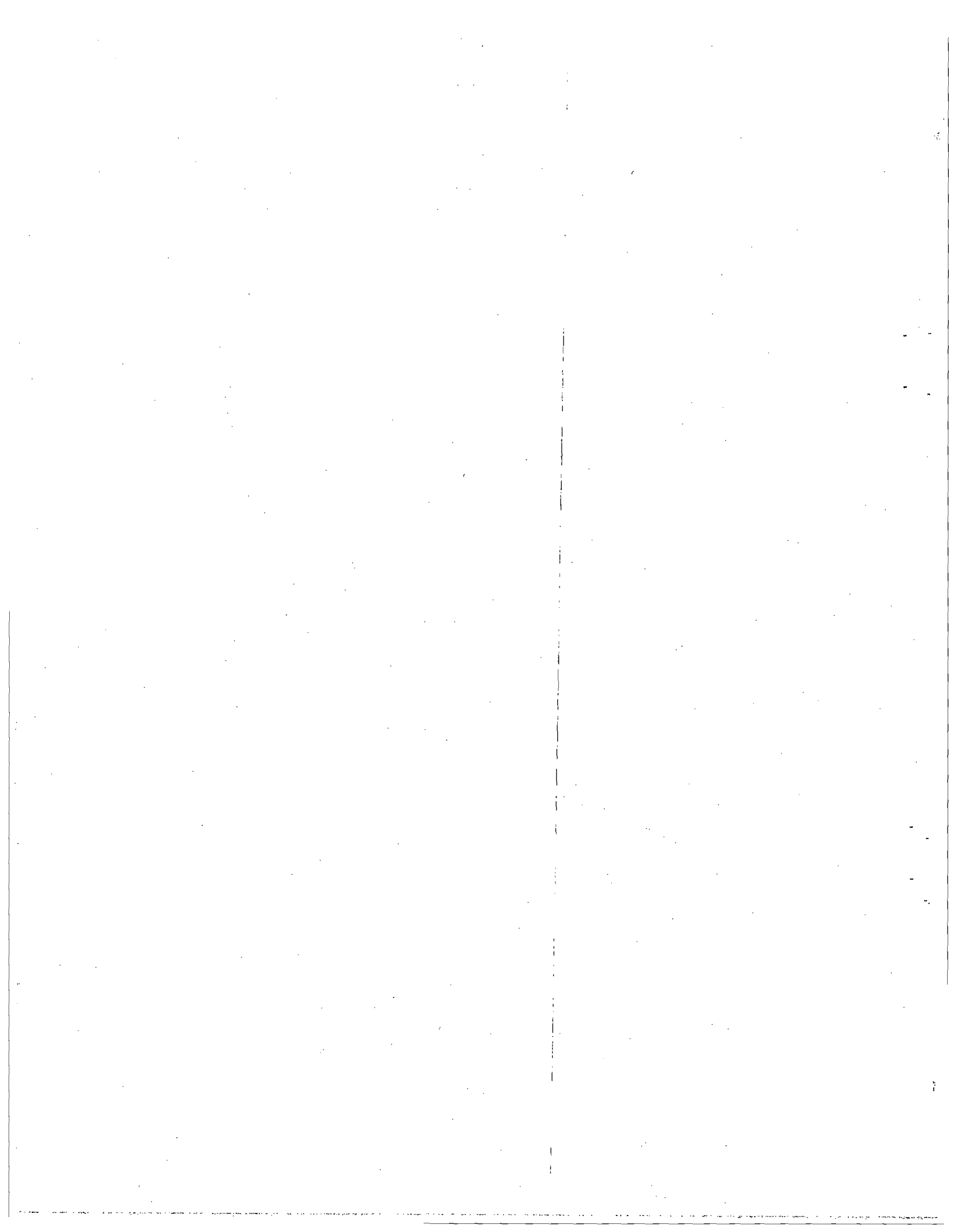
Verification: PGandE shall provide CDHS, ARB, NSCAPCD, and CEC a report consisting of the results of the mass balance measurements of ammonia from Unit 18 prior to the commencement of commercial operation. The report shall also include a discussion of the standard deviations associated with each parameter and the sources of error in measurement procedures, emission calculations, and ambient level increment calculations.





SECTION 3: SOCIOECONOMICS/LAND USE/TRANSPORTATION

(No compliance requirements for socioeconomic/land use/transportation were identified during the proceedings.)



Section 4: CULTURAL RESOURCES

A. Applicable Laws, Ordinances, Standards, and Practices

- o National Historic Preservation Act of 1966 and implementing federal regulations (16 USC 470 et seq.; 36 CFR 800).
- o Native American Historical, Cultural, and Sacred Sites, Public Resources Code Section 5097.0 et seq.

B. Requirements

- 4-1. PGandE shall conduct additional studies to determine the location of the Socrates Mine Chinese workers' camp and cemetery.

Verification: PGandE will submit the results of these studies to the CEC in January 1980.

- 4-2. If the study referenced in 4-1 is inconclusive, PGandE shall conduct a field inspection and limited subsurface testing, at points of road construction or alteration, in those portions of the Socrates Mine Road where construction will have a direct impact on an area which, for topographic reasons, could have been the site of either the cemetery or the Chinese mineworkers' camp. Selection of these areas will be left to the discretion of Dr. Fredrickson.

Verification: PGandE shall submit a summary of the results of any field inspections or subsurface testing to the CEC in a periodic compliance report.

- 4-3. PGandE shall have a qualified archaeologist available during the stripping of vegetation and topsoil from the plant site to advise PGandE's General Construction Department of the significance of any cultural resources which may be discovered. The archaeologist shall conform to on-site safety procedures, as directed by the resident engineer.

If cultural resources are discovered during land alteration activities, operations in the potentially impacted area shall cease until the archaeologist evaluates the significance of the resources.

Verification: If construction activities threaten to impact a significant cultural resource, PGandE shall notify the CEC within 24 hours. PGandE and the CEC staff shall meet within two working days to discuss PGandE's proposed mitigation measures. If agreement is reached, PGandE will take appropriate measures and resume construction. If agreement cannot be reached within one week following PGandE's notice to the CEC, the matter shall be considered under the provisions of the Dispute Resolution Procedures. Construction activity in the potentially impacted area shall remain stopped pending resolution of the matter.

- 4-4. PGandE shall maintain the existing fence around archaeological site CA-SON-793.

Verification: PGandE shall provide a statement in the annual compliance report that the fence is being maintained.

- 4-5. If deep excavation for plant construction is necessary in the small area about 500 feet southwest of the proposed plant site which may contain microfossil chert, PGandE shall arrange for a qualified geologist to determine if any fossil-bearing chert is present. If fossiliferous chert is found, a qualified geologist shall collect at least five samples from each significant body of chert for archiving at the California State University at Sonoma Geology Department.

Verification: A summary of the results of any geological investigation shall be provided to the CEC in a periodic compliance report. PGandE shall provide written notice to both the CEC and the California State University at Sonoma Geology Department if the geologist determines that samples need to be collected.

## Section 5: BIOLOGICAL RESOURCES

### A. Applicable Laws, Ordinances, Standards, and Practices

- o Warren-Alquist Act, Public Resources Code, Sections 25001, 25003, and 25523.
- o California Environmental Quality Act, Public Resources Code, Section 21000 et seq.
- o Federal Endangered Species Act of 1973 (Title 16-USC Section 1533) and implementing regulations.
- o Native Plant Protection Act, Fish and Game Code, Sections 1900 - 1904, and 1911.
- o California Species Preservation Act of 1970, Fish and Game Code, Sections 900 - 903.
- o Fully Protected Species Act, Fish and Game Code, Sections 3511 and 4700.

### B. Requirements

- 5-1. PGandE shall complete ecological studies of the Unit 18 leasehold to determine if any legally protected species will be significantly affected and to determine the status of areas of critical concern.

Verification: PGandE will submit a report (DER Report #411-78.194) on these studies to the CEC for review.

- 5-2. PGandE shall prepare a detailed field implementation and monitoring plan for mitigation measures identified in The Geysers 18 EIR, PGandE's Biology Mitigation Plan, PGandE's responses to Biological Data Requests, and the AFC Decision. These measures shall include but are not limited to the following:

- o Install a retaining wall on the west side of the power plant site (AFC, pp. 5 - 84).
- o Construct sedimentation ponds and hydraulic energy dissipators (AFC, pp. 5 - 83, 84).
- o Stabilize fill site at Socrates Mine (AFC, pp. 5 - 84).
- o Stockpile topsoil for reuse on cut and fill slopes at power plant site (AFC, pp. 5 - 84).
- o Key fill into slopes, terrace, and hydroseed at power plant site (AFC, pp. 5 - 84).
- o Construct a concrete lined drain system to sedimentation pond in Oatgrass Meadow (AFC, pp. 5 - 84).

- o Place toe of fill slope in stabilized area to increase stability (AFC, pp. 5 - 84).
- o Dredge sedimentation pond at power plant site as necessary (PGandE Report #411-78.194, p. 105).
- o Confine major earth work to dry season from May through October (PGandE Report #411-79.178, p. 7).
- o Water roads, laydown areas, and construction sites periodically for dust control (PGandE Report #411-78.194, pp. 103 and 115.).
- o Build berm around power plant site along with associated catch basins with shut-off valves in the drainage system (AFC, pp. 5 - 84).
- o Construct separate berm around Stretford hydrogen sulfide abatement unit (AFC, pp. 5 - 53).
- o Channel site storm drainage to an ephemeral stream which joins Little Geysers Creek in the geothermally heated section (AFC, pp. 5 - 84).
- o Divert water necessary for field operations from "Blow-out Pond," not Big Sulphur Creek (PGandE Report #411-79.178, p. 7).
- o Improve fish habitat on Little Geysers Creek, including installation of baffles in culvert to improve fish passage; install riprap on stream bank; manipulate downstream channel to encourage pool formation; and revegetate stream banks with white alder and willow (PGandE Report #411-79.178, p. 7).
- o Improve four springs and plant hydrophylic vegetation in overflow area (PGandE Report #411-79.178, p. 10).
- o Enhance local chaparral stands by conducting 4 10-hectares (25 acres) prescribed burns (to be done periodically if necessary) as agreed to by PGandE and CEC. (PGandE Report #411-79.178, p. 11).
- o Distribute artificial nest structures to increase carrying capacity for certain animals, including 200 cement/sawdust boxes for song birds, 100 gray squirrel boxes, and 30 dove cones (letter to H. Howe, PGandE from E. Ross Deter, CEC, May 25, 1982).
- o Revegetate Socrates Mine fill to provide improved forage and escape cover for wildlife (PGandE Report #411-79.178, p. 13).
- o Revegetate power plant site with indigenous species of high wildlife food or cover value and, if necessary, install an

irrigation system to aid in their survival (PGandE Report #411-78.194, pp. 106 and 108).

- o Reseed Cobb Mountain Lupine (Lupinus sericatus) in suitable areas (AFC, pp. 5 - 83).
- o The contractor will use temporary erosion control measures during periods of rain. The contractor will submit detailed plans to PGandE describing these measures. The plans will be available at the PGandE site project office for review.

Because Oatgrass Meadow, within the leasehold, is able to support higher wildlife use than Birdsong Meadow, project mitigation and compensation measures should be commensurate with potential impacts. PGandE will include the following specific measures as an element of the detailed project field implementation and monitoring plans:

- o Enhance Oatgrass, Birdsong, and Witch's Broom Meadows by developing springs for permanent water sources; convert the sedimentation pond into a water hole for wildlife; plant nutritional forage plants; fertilize soil, if necessary; thin encroaching woody plants along meadow edge; install artificial nesting structures (PGandE Report 411-80.185, pp. 12 - 13) along meadow perimeter; and fence to limit human disturbance (PGandE Report #411-79.178, p. 12).
- o Access route to sedimentation pond in Oatgrass Meadow will not be a prepared roadbed and will be rehabilitated to a reasonably natural state after each use (Geysers 18 Final EIR, p. 50).
- o Install an erosion control system for Oatgrass Meadow (Geysers 18 Final EIR, p. 50).
- o Revegetate disturbed meadow/forest ecotone with appropriate species (Geysers 18 Final EIR, p. 49).
- o Protect Little Geysers by blocking access road with boulders (PGandE Report #411-78.194, p. 115).

Verification: PGandE will submit five copies of the draft plan to the CEC no later than six weeks prior to the beginning of project construction. The CEC and CDFG will review the plan. Any conflicts or problems will be resolved in accordance with Dispute Resolution Procedures (the plan may be circulated to other concerned agencies or public for review).

- 5-3. PGandE will implement the measures identified in the field implementation and monitoring plan.

Verification: PGandE will submit a statement of compliance to the CEC. A PGandE biologist will be assigned to monitor construction activities as needed. The PGandE biologist will advise the supervising construction engineer as required of details concerning



required mitigation measures. The CEC and CDFG will review PGandE's statement of compliance and any monitoring program. If any specific mitigation measure or monitoring program is not implemented or is done incorrectly, PGandE will take corrective action. PGandE will allow the CEC and the CDFG to inspect mitigation related activities and will provide to CEC upon request copies of raw data and field notes collected during mitigation monitoring.

Annually, no later than April 1, PGandE will submit one copy of a monitoring progress report to the CEC and one copy to CDFG. This annual report will cover all aspects of ongoing or unfulfilled project measures. Results of visual assessments to determine effectiveness of mitigation measures will be documented by PGandE with a photographic record (preferably 35mm Kodachrome 64 slides) that is to be properly catalogued and maintained. The photographic record will be made available upon request to CDFG and/or CEC staff for inspection. PGandE, with the approval of CEC and CDFG, may alter the frequency of or discontinue reporting.

- 5-4. PGandE will provide the CEC with a copy of the Unit 17 Vegetation Stress Monitoring Study (VSMS) for review of the plan's suitability to the specific needs of The Geysers 18 project. If deemed appropriate by the CEC, PGandE will implement the study.

Verification: The CEC will review and determine the adequacy of the VSMS. If PGandE does not comply with the plan requirements, PGandE, and CEC will attempt to resolve the problem using established Dispute Resolution Procedures.

Section 6: WATER QUALITY, HYDROLOGY, AND WATER RESOURCES

A. Applicable Laws, Ordinances, Standards, and Practices

- o Title 23, California Administrative Code, Chapter 3.
- o Title 22, California Administrative Code, Division 4, Section 66028.
- o California Health and Safety Code, Division 20, Chapter 6.5.
- o North Coast Regional Water Quality Control Board (NCRWQCB) Order No. 78-150.
- o Water Quality Control Plan, North Coast Basin (1B), 1975.
- o The Code of Sonoma County, Chapter 24.

B. Requirements

- 6-1. PGandE shall comply with the requirements of NCRWQCB Order No. 78-150, to develop and file a contingency plan for cleanup, abatement, and monitoring of accidental spills.

Verification: Prior to commercial operation, PGandE shall file the contingency plan with the NCRWQCB and the Sonoma County Chief Building Officer (CBO). The plan will remain in file for the lifetime of the project and will be available for CEC review. NCRWQCB will verify acceptability of the plan.

- 6-2. PGandE will design, construct, and maintain an impermeable spill retention barrier/basin system to contain spilled condensate and other materials within the compound of Unit 18. The spill containment basin shall be lined with sufficient material creating a permeability of  $1 \times 10^{-6}$  cm/sec or less.

Verification: At the end of construction activities, PGandE will submit to the CEC and the Sonoma County CBO "as-built" drawings for the spill containment basin signed by a registered civil engineer. PGandE and Sonoma County will maintain "as-built" files for the life of the project and guarantee CEC access to these files.

- 6-3. In the event of an accidental spill, PGandE shall implement procedures outlined in the spill contingency plan.

PGandE will report a spill to the NCRWQCB by telephone within 24 hours and by written report within 2 weeks of the spill occurrence.

Verification: The NCRWQCB shall notify the CEC of any spill and/or of any required enforcement action.

- 6-4. If PGandE disposes of domestic waste via a septic tank--leach field system--it will comply with all applicable standards and laws.

If PGandE injects the domestic waste effluent from Unit 18 into the steam supplier's reinjection line, as presently proposed, these same standards will not apply. PGandE will provide the Sonoma County CBO with "as-built" drawings, signed by a registered civil engineer showing the domestic waste disposal system.

Any changes to the domestic waste disposal system will be submitted to NCRWQCB for approval.

Verification: NCRWQCB will verify compliance with applicable laws or standards. NCRWQCB will notify the CEC and the Sonoma County CBO of any changes to the domestic waste disposal system.

## Section 7. GEOTECHNICAL

### A. Applicable Laws, Ordinances, Standards, and Practices

- o Uniform Building Code, Chapter 70 (1976 edition).
- o Business and Professions Code, Section 7835.
- o Sonoma County Ordinance 2395.

### B. Requirements

- 7-1. PGandE shall assign a qualified geotechnical engineer to monitor compliance with design intent in geotechnical matters, to provide consultation during the design and construction of the project, to make professional geotechnical judgments related to actual site design conditions, and to recommend field changes to the responsible civil engineer and the Construction Department.

Verification: PGandE's responsible civil engineer in direct charge of design and who will be working in concert with the resident civil engineer in charge of project construction shall verify to the CEC in writing through PGandE's Chief Civil Engineer at least 10 days prior to the start of construction activity that a qualified geotechnical engineer has been assigned to the project and is performing the duties described in the requirement.

- 7-2. PGandE shall assign to the project a certified engineering geologist who will be present as needed during all phases of site excavation and grading to evaluate site geologic conditions and geologic safety. If a registered geologist is assigned to be present at the construction site, his or her supervising certified engineering geologist shall be responsible for all evaluations and decisions regarding site geologic conditions and geologic safety.

Verification: PGandE's responsible civil engineer in direct charge of design and who will be working in concert with the resident civil engineer in charge of project construction shall verify to the CEC in writing through PGandE's Chief Civil Engineer at least 10 days prior to the start of construction activity that a certified engineering geologist has been assigned to the project and is performing the duties described in the requirement.

- 7-3. PGandE shall submit the following documents to the Sonoma County CBO:

- o Two sets of Engineering Geology and Soils Engineering Reports prepared by Harding-Lawson Associates titled "Geotechnical Investigation for The Geysers Geothermal Power Plant Unit 18, Sites K and Q," dated December 12, 1977; "Geotechnical Investigation Phase III On-Site Fills, Geothermal Power Plant Unit 18," dated March 19, 1979; and "Supplemental Report Step III Geotechnical Investigation, Socrates Mine Fill Disposal Facility," dated July 3, 1979.

- o A Soils Grading Report prepared and signed by a qualified soil engineer.
- o A Geologic Grading Report prepared and signed by a certified engineering geologist.
- o Final Reports.

Verification: The final reports, including the Soils Grading Report and the Geologic Grading Report, will be submitted within 180 days after completion of the rough grading. These reports will be deemed approved by the CBO unless PGandE is notified otherwise within 60 days of receipt of such reports by the CBO. A supplementary report will be submitted after completion of excavation of all foundations and finish grading.

- 7-4. If geologic conditions do not differ substantially from those conditions represented by the Harding-Lawson reports, PGandE shall implement the report's recommended mitigation measures for adverse geologic conditions.

Verification: PGandE's certified engineering geologist shall verify compliance with the Harding-Lawson reports' recommended mitigation measures.

- 7-5. PGandE shall immediately report to the Sonoma County CBO and the CEC any geologic conditions which deviate from those predicted in the Harding-Lawson report sufficient to warrant substantial changes in design of site earthwork, power plant facilities, or site viability.

Verification: Discovery of adverse site geologic conditions which will warrant only minor changes in facility design will be reflected in the "as-built" grading plan and Geologic Grading Report. If, however, a geologic condition is discovered which is more adverse than that predicted in the Harding-Lawson report and which will require substantial change in design, PGandE's responsible civil engineer or geotechnical engineers will notify the Sonoma County CBO and the CEC of all such substantial design changes. PGandE may proceed at its own risk with earthwork and construction (except where an obvious safety hazard exists if construction continues) or any other implementation of an unapproved mitigation plan prior to notifying the CBO. If the CBO finds PGandE's new or revised plan to be unacceptable, PGandE may be required to alter any improvement or implementation or restore the site as necessary before proceeding with the approved mitigation plan.

- 7-6. PGandE shall ensure that geologic records of site inspections, especially detailed logs of excavated surfaces, will be prepared during site preparation and submitted to the CEC upon request.

Verification: PGandE shall notify the CEC of the availability of geologic records of site inspections.

## Section 8: SOILS

### A. Applicable Laws, Ordinances, Standards, and Practices

- o The North Coast Regional Water Quality Control Board Basin Plan, North Coastal Basin (1B), SWRCB, 1975.

### B. Requirements

- 8-1. PGandE shall comply with the objectives set forth in the North Coastal Basin Plan concerning sedimentation and turbidity. Erosion control measures described in sections 5.4.2.1 and 5.5.2.2 of the Unit 18 AFC shall be implemented.

Verification: Prior to the start of commercial operations, PGandE shall submit a statement to the North Coast Regional Water Quality Control Board (NCRWQCB) and the CEC verifying compliance. The NCRWQCB may conduct on-site inspections to verify compliance.

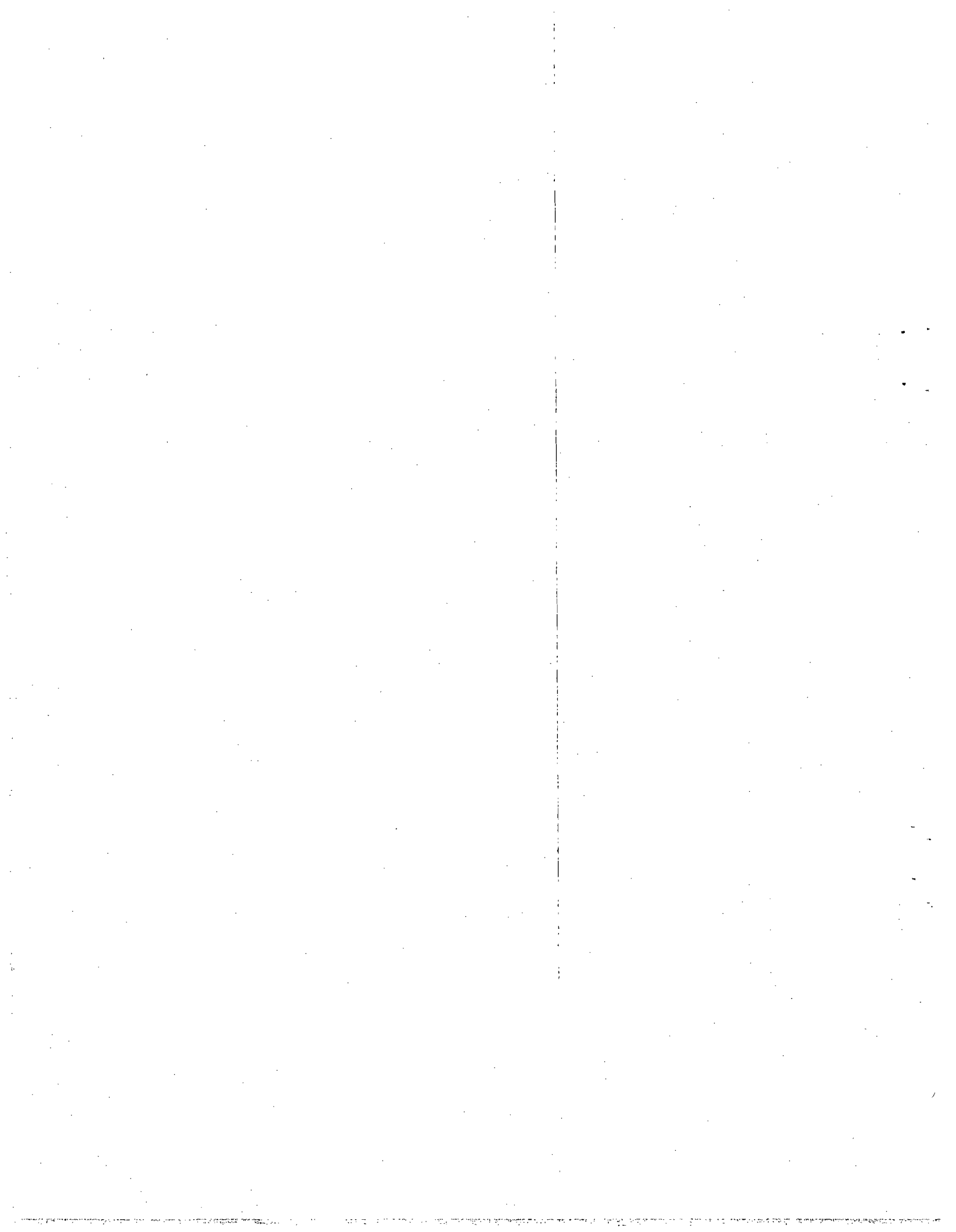
- 8-2. PGandE shall construct sedimentation basins as shown in Figures 4.4-2 and 4.4-3 of the Geysers 18 AFC at the beginning of major earth-moving activities.

Verification: Construction of sedimentation basins shall be noted in the monthly construction progress reports filled with the Sonoma County Chief Building Officer (CBO) and the CEC.

- 8-3. PGandE shall annually quantify the amount of sediment accumulated in the sedimentation basins. This information will be used to evaluate the success of the erosion control plan. The accumulated sediment will be estimated by adequate measuring techniques (e.g., staff gauge). Sediment quantities will be verified when sediment is removed. The sediment basins should not be filled to more than 60 percent of actual capacity prior to or during each winter season. The basin should be checked on or before October 1 each year and then periodically throughout the rainy season and will be cleaned as necessary to maintain this specified capacity.

If the sediment yield information or other data supplied to the Commission indicates that the proposed mitigation measures appear to be ineffective, the Applicant, the Commission staff, and the NCRWQCB will evaluate the need for alternative mitigation measures. If an agreement on mitigation measures cannot be reached, the matter will be submitted to the Commission for resolution.

Verification: PGandE shall submit an annual written report to the NCRWQCB and the CEC beginning one year after the start of site preparation and continuing for three years after the start of commercial operation.



## Section 9. CIVIL ENGINEERING

### A. Applicable Laws, Ordinances, Standards, and Practices

- o Uniform Building Code (1976 edition).
- o Sonoma County Ordinance 2395.
- o American Concrete Institute (ACI) Standard 318-77, "Building Code Requirements for Reinforced Concrete."

### B. Requirements

- 9-1. PGandE will submit two sets each of the final design grading plans, geotechnical investigation reports, specifications, and calculations to the Sonoma County Chief Building Official (CBO) for review at least 90 days prior to construction. PGandE's responsible civil engineer and PGandE's certified engineering geologist shall verify that the proposed grading plans, including accompanying reports, comply with the requirements set forth in the applicable laws, ordinances, and standards. PGandE will make in-lieu payments to Sonoma County equivalent to the fees listed in Chapter 70, Section 7007 of the UBC for review of the grading plans and calculations. The CBO shall check the plans, specifications, and calculations in accordance with the county's plan check procedures. If the plans do not comply with the UBC or pertinent laws, ordinances, or standards, the CBO shall notify PGandE's civil engineer within 30 days of submittal, identifying all discrepancies for correction. Within 60 days of the original submittal, PGandE shall submit revised plans rectifying all discrepancies. If the corrections are not acceptable and the requirements cannot be met, grading will not be allowed.

Verification: If the work described in the grading plans conforms to the requirements, the CBO shall return to PGandE one complete set of the submittals stamped and signed with his approval and shall issue an in-lieu grading permit. PGandE shall notify the CEC following receipt of the grading permit.

- 9-2. PGandE shall prepare and submit one copy each of the following to the Sonoma County CBO:
- o A summary of Soils Compaction Tests.
  - o A soils grading report signed by a civil engineer.
  - o A geologic grading report signed by a certified engineering geologist.
  - o "As-built" grading drawings. (PGandE's responsible civil engineer shall certify on the "as-built" drawings that all site earthwork was done in accordance with the approved final grading plan, including subsequent change orders and satisfies the design intent.)



- o "As-built" drawings for the construction of civil work.
- o A monthly summary of construction progress.
- o A final report and site approval signed by a civil engineer.

Verification: All submittals listed above, except construction progress, shall be submitted by PGandE within 180 days after completion of site preparation. These will be deemed approved by the CBO unless PGandE is notified otherwise within 60 days of receipt of such plans and documents by the CBO. Construction progress reports shall be submitted monthly until the unit has started commercial operation.

- 9-3. On-site inspections shall be performed in accordance with Chapter 3 of the UBC.

Verification: Inspection shall be done by the Sonoma County CBO or his agent. Special and continuous inspections may be delegated by the CBO to PGandE as provided in Section 305, Chapter 3 of the UBC. If the inspector finds that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately in writing to the CBO, the CEC, and PGandE's responsible civil engineer.

## Section 10. STRUCTURAL ENGINEERING

### A. Applicable Laws, Ordinances, Standards, and Practices

#### Law:

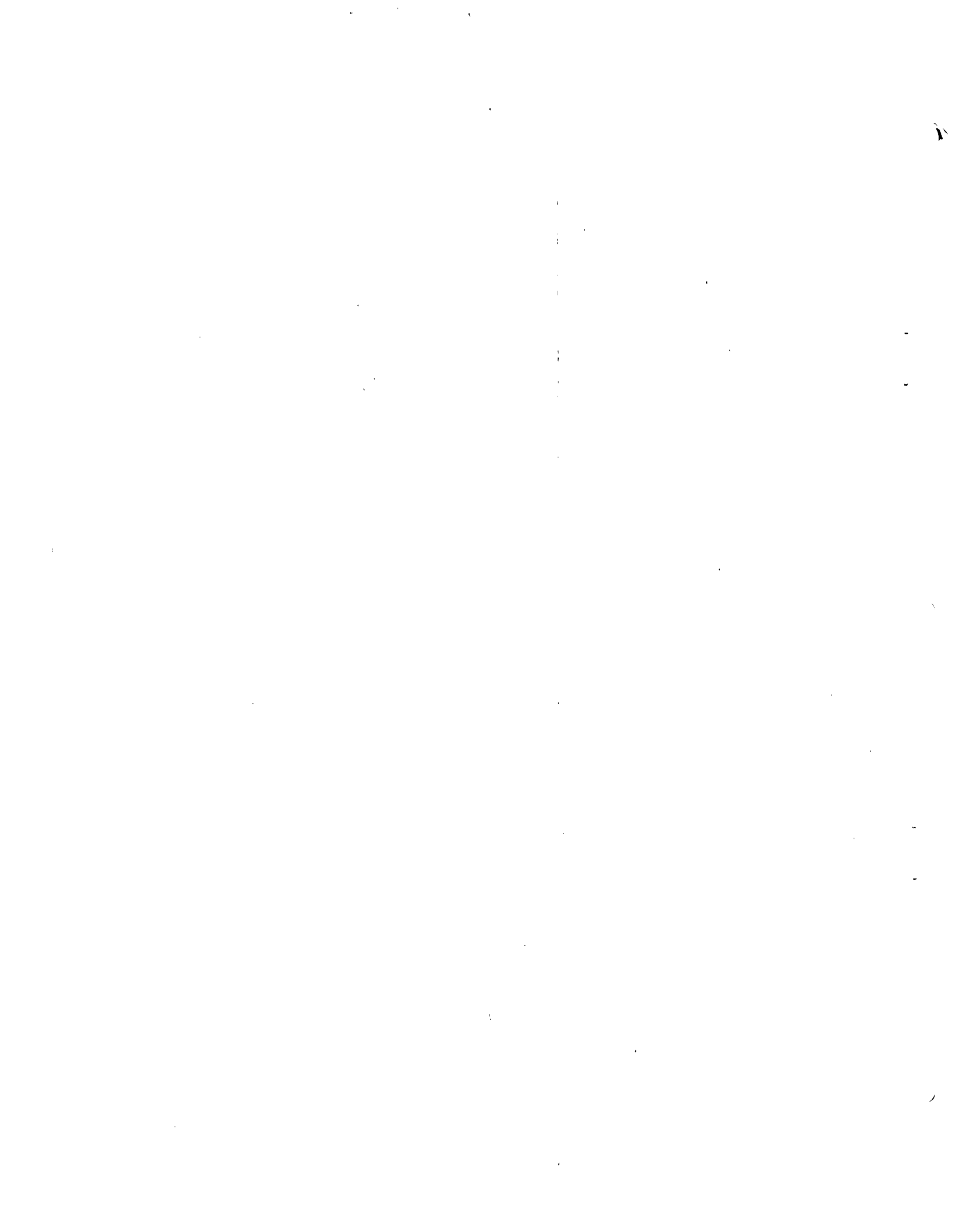
- o Title 8, California Administrative Code, adopting American Society of Mechanical Engineers' Boiler and Pressure Vessel Code (ASME BPV Code).
- o Title 24, California Administrative Code, adopting current edition of Uniform Building Code (UBC) as minimum legal building standards.
- o Chapter 7, Division 3, Business and Professions Code, requiring state registration to practice as a civil engineer or structural engineer in California.

#### Ordinances:

- o Sonoma County Ordinance No. 2395, excepting Section 2312 of the reference (UBC 76) adopted in Section 4-14(a).

#### Standards:

- o Uniform Building Code, 1976 Edition (UBC 76), excepting Section 2312.
- o American Society of Mechanical Engineers' Boiler and Pressure Vessel Code.
- o American National Standards Institute (ANSI), "B 31.1 Power Piping Code" (ANSI B 31.1).
- o American Concrete Institute (ACI), "Building Code Requirements for Reinforced Concrete" (ACI 318-77).
- o ACI, "Building Code Requirements for Structural Plain Concrete" (ACI 322-72).
- o ACI, "Commentary on Building Code Requirements for Reinforced Concrete" (ACI 318C-77).
- o American Institute of Steel Construction (AISC), "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings," November 1978 (AISC SDF ESS 78).
- o AISC, "Commentary on the Specifications of the Design, Fabrication, and Erection of Structural Steel for Buildings" (AISC CSDFESS 78).
- o AISC, "Specification for Structural Joints Using ASTM, A325, or A490 Bolts," April 1978 (AISC SST 78).
- o American Welding Society, "Structural Welding Code AWS D1.1-79" (AWS D1.1-79).



- o AWS, "Reinforcing Steel Welding Code" (AWS D12.1-75).
- o "National Design Specification for Stress-Grade Lumber and Fastenings, 1977" (NDS 77).
- o American Institute of Timber Construction, 1972, "Timber Construction Standards," AITC-100.
- o American Iron and Steel Institute (AISI), "Specification for the Design of Cold-Formed Steel Structural Members," 1968 (AISI SDCFSS).
- o Steel Joist Institute, "Standard Specifications and Load Tables" (SJI SSLT).
- o American Association of State Highway and Transportation Officials, "Standard Specifications for Highway Bridges," 1977 Edition (AASHTO Bridge 77).
- o Structural Engineers Association of California, "Recommended Lateral Force Requirements," 1975, Code and commentary as incorporated into UBC 1976, Section 2313(a).

In addition, the following standards shall be used as guides in the final design of the power plant and related facilities.

- o Applied Technology Council, "Tentative Provisions for the Development of Seismic Regulations for Buildings" (NBS-SP-510; ATC-3-06).
- o Seismic Safety Commission Policy on "Locating, Designing, and Operating Critical Facilities and Lifeline Facilities," 1978.
- o Joint Committee on Seismic Safety, "Final Report of the Legislature, State of California," 1974 (CDMG Sp No. 45).
- o Earthquake Design Criteria for Structures," G.W. Housner and P.C. Jennings, EERL 77-06, CIT.

## B. Requirements

10-1. PGandE shall design and construct Unit 18 and its related facilities consistent with applicable laws, ordinances, standards, and practices and with the information, criteria, and methods set forth in the following documents:

- o Geysers Unit 18 AFC, Section 4.3.2.6, "Civil And Structural Engineering Design" (as amended November 8, 1979, and Appendix B entitled "Civil Design Criteria and Guidelines for Geysers Geothermal Projects Beginning with Unit 16" (and its appendices);
- o "Applicant's June 28, 1979 Response to Staff Interrogatories," 79-AFC-3 and Applicant's July 30, 1979, Supplemental Response



to Staff interrogatories (Technical Area: Safety #3.a.), 79-AFC-3.

- o "Uniform Probability Response Spectra for The Geysers Units 16 and 18 Sites," Report No. 01-3170-1067, January 1980, Keith Feibusch Associates, Engineers (for 30-year life).
- o "Uniform Probability Response Spectra for the Geysers Unit 16 and 18 Sites," Report No. 5170-001-015, March 21, 1980, Keith Feibusch Associates, Engineers (for 40-year life).
- o PGandE will provide, through the General Construction Department, a staff of field engineers and inspectors to monitor conformance with all contract specifications. Field engineers and/or inspectors will be present on site at all times to monitor construction activities.

Verification: At least 120 days prior to the intended start of construction, PGandE will submit 2 sets each of final design plans, specifications, and calculations for each structure or structure foundation to the Sonoma County CBO and CEC. PGandE shall make in-lieu payments to Sonoma County equivalent to the fees set forth in Chapter 3, Section 303 of the UBC 1976 for review and to obtain an in-lieu building permit for each submittal. The CBO will review the plans in consultation with the CEC. If the CBO discovers non-conformance with the stated requirements, he will notify PGandE's responsible civil engineer within 45 days of the initial submittal date and will return that portion of the plans to PGandE for correction. PGandE's responsible civil engineer will resubmit the corrected plans within 75 days of initial submittal. The CBO will return one complete set of submittals stamped and signed with his approval to PGandE within 120 days of initial submittal. Provided the plans comply with the stated requirements, construction may begin.

10-2. PGandE shall prepare and submit one set of the following documents to the Sonoma County CBO within 180 days after completion of construction. These documents will be reviewed by the CBO, who shall notify PGandE of his approval or disapproval of the documents within 60 days of receipt.

- o A statement indicating compliance and site approval signed by PGandE's responsible civil engineer.
- o "As-built" drawings for the construction of civil and architectural work (changes approved by the CBO will be identified on the "as-built" drawings).
- o Summary of concrete strength tests.
- o Copies of concrete pour sign-off sheets.
- o Bolt torque inspection reports.

- o Field weld inspection sheets.

Verification: PGandE shall notify the CEC following the submittal of these documents to the Sonoma County CBO.

- 10-3. In the case of discrepancies between the design criteria contained in the applicable laws, ordinances, standards, practices, or conditions of certification, PGandE shall use the highest design criteria in the final design of the facility.

PGandE shall design and construct Unit 18 so that the critical facility structures and components will be able to withstand a seismic event having a 10 percent probability of being exceeded during the plant design life, using the combined sources response spectrum set forth in Keith Feisbusch Associates, Engineers' Report No. 5170-001-015 and 01-3170-1067, with minor damage and no structural collapse. (The design life is 40 years for structures and 30 years for equipment. Critical facility structures are those structures and components essential to continued power generation or whose replacement cost or replacement time is excessive.)

For anchorage of critical equipment, PGandE shall use ATC-3-06, equation 8.2 with a value of 1.0 for the coefficient "P." In any event, the anchorage criteria shall be consistent with other design and performance criteria.

Verification: PGandE shall prepare and submit final design plans, specifications, and calculations incorporating the above design criteria. PGandE's responsible civil engineer shall verify compliance with this requirement in a submittal to the Sonoma County CBO and the CEC.

- 10-4. PGandE shall keep the Sonoma County CBO and the CEC informed regarding the status of construction.

Verification: PGandE shall submit a monthly construction progress report to the Sonoma County CBO and the CEC.

- 10-5. PGandE shall notify the Sonoma County CBO and the CEC of substantial design changes to the final plans as required by UBC Section 302.

"Substantial changes" include all changes requiring an alteration in design concept and preparation of new design plans consistent with the AFC conditions of certification. Minor changes shall be reflected in the "as-built" drawings submitted after construction.

Verification: PGandE shall submit two sets of the revised drawings, specifications, and calculations to the Sonoma County CBO for review. The CBO will review these plans, in consultation with the CEC, on an expedited basis. The CBO will return one set of submittals stamped and signed with his approval to PGandE, provided the plans comply with the stated requirements.

- 10-6. Inspections shall be performed in accordance with Chapters 3 and 70 of the Uniform Building Code (1976 edition). The Sonoma County CBO may delegate responsibility for special and continuous inspections to PGandE as provided in Section 305, Chapter 3 of the UBC 1976.

Verification: PGandE shall notify the CEC if the Sonoma County CBO delegates responsibility for inspections to PGandE.

- 10-7. If PGandE proposes to use a design for the cooling tower other than that approved by the CEC for Geysers Unit 17, PGandE shall provide a cooling tower design using the following criteria:

- a. Working stress criteria,
- b. Equivalent lateral force static design, and
- c. Spectral forces obtained from the combined sources response spectrum set forth in Keith Feibusch Associates Engineer's Report No. 5170-001-015 for a 10 percent probability of exceedance event during the 40-year plant design life and a damping ratio of 7 percent.

PGandE shall also provide a design check for the cooling tower using the following criteria:

- a. Ultimate strength criteria,
- b. Dynamic analysis using conventionally acceptable methods, and
- c. The combined sources response spectrum set forth in the Keith Feibusch Associates Engineer's Report No. 01-3170-1067 for a 5 percent probability of exceedance event during 30 years and a damping ratio appropriate for the anticipated stress level.

Verification: At least 240 days prior to the start of construction of the cooling tower structure, PGandE shall submit for CEC staff review the dynamic analysis methods and models which will be used in the analysis. PGandE may proceed with the analysis unless notified otherwise by the Executive Director within 30 days of the receipt of the information. If the staff's concerns cannot be resolved, the matter shall be handled under the provisions of the Dispute Resolution Procedures.

At least 180 days prior to the start of construction of the cooling tower design superstructure, PGandE shall submit a design check to the CEC which will be based upon:

- a. Ultimate strength methods except with a 5 percent probability of being exceeded in 30 years,
- b. The response spectrum as set forth in Keith Feibusch Associated Engineer's Report No. 01-3170-1067,



- c. A damping ratio that is appropriate for the anticipated stress level, and
- d. A dynamic analysis using conventionally acceptable methods.

The CEC shall verify that the stresses in the cooling tower structure are within ultimate limits. In the event that the stresses are not within ultimate limits, PGandE shall either make appropriate design modifications to increase the strength of the structure or perform a cost-benefit risk analysis to select an optimum design based on a lower criterion.

- 10-8. In the event that the Uniform Building Code (1979 edition) is adopted prior to final plans approval by either the state under Title 24 CAC or by Sonoma County ordinance, PGandE shall demonstrate that the facility design conforms with the requirements of UBC 1979.

Verification: PGandE shall submit final plans, specifications, and calculations that conform with the requirements of UBC 1979. In the event that final plans have been submitted for review prior to the adoption of UBC 1979, PGandE may file a statement by a responsible civil engineer verifying conformity of the submitted plans with UBC 1979.

Section 11. SOLID WASTE MANAGEMENT

A. Applicable Laws, Ordinances, Standards, and Practices

- o California Water Code, Divisions 7, 7.5.
- o Title 22, California Administrative Code, Division 4, Chapter 30.
- o Title 23, California Administrative Code, Chapter 3.
- o California Health and Safety Code, Division 20, Chapters 6.5, 6.8.

B. Requirements

- 11-1. The Stretford process wastes include elemental sulfur and the Stretford purge stream. PGandE shall ensure that elemental sulfur is stored and removed periodically to be disposed of at a site approved for such wastes.

Any sludge which accumulates in the cooling tower will be vacuumed off and hauled by a registered hazardous waste hauler to an approved disposal site.

Verification: PGandE shall each month submit completed hazardous waste manifests to DOHS in compliance with Section 66475 of Title 22, CAC.

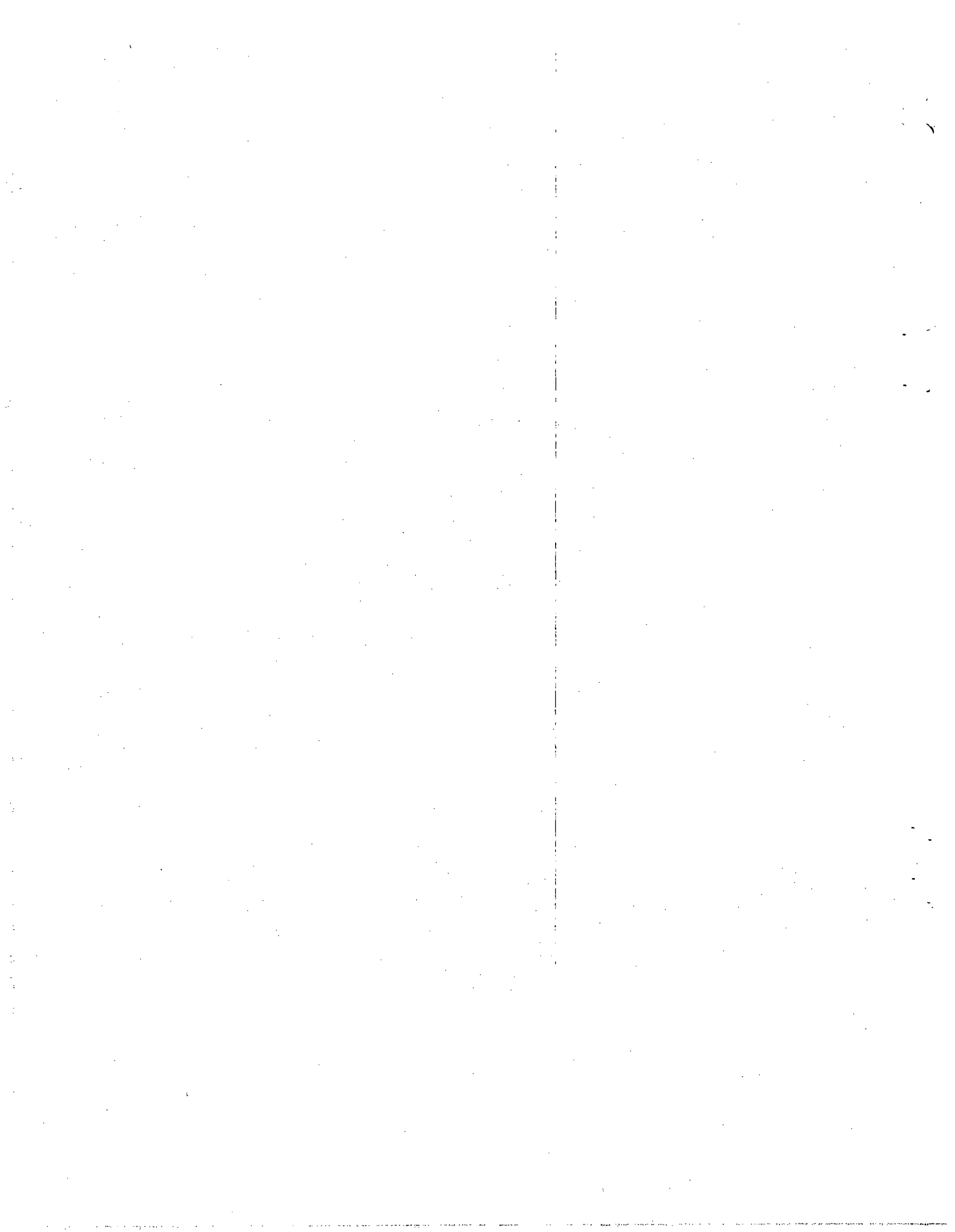
- 11-2. PGandE shall ensure that hazardous wastes are taken to a facility permitted by the Regional Water Quality Control Board to accept such wastes. (PGandE has indicated its intention to dispose of wastes generated by Geysers Unit 18 at either the Middletown or Kelseyville approved sites.)

Verification: PGandE shall notify the CEC, DOHS, and State Solid Waste Management Board of the selected disposal site. Any notice of change in disposal sites will be submitted to these agencies as changes occur.

*Verification changed 05/05/00  
not see chm file*

- 11-3. If hazardous wastes, including Stretford sulfur effluent, are stored on site for more than 90 days, PGandE shall obtain either a Hazardous Waste Facility Permit from DOHS or a waiver of such permit.

Verification: PGandE shall notify the CEC if it files an application with DOHS for the operation of a Hazardous Waste Facility.



Section 12: SAFETY

A. Applicable Laws, Ordinances, Standards, and Practices

- o California Administrative Code, Title 8, Chapter 4.7, Groups 20 and 27.
- o Uniform Building Code (1976 Edition), Chapter 5, 20, 32, 33.
- o National Fire Protection Association Standards Chapters 10, 13, 14, (class II service), 19B, 194, 196, 20, 30, 70, 214, 198, 26, 27, 231A.
- o Public Resources Code, Section 4291.
- o Title 8, California Administrative Code, 3203 et seq.
- o Title 8, California Administrative Code (CAC), Chapter 4.

B. Requirements

- 12-1. PGandE shall certify that design and construction are in reasonable conformance with applicable fire safety codes and standards listed.

Verification: PGandE shall submit such certification to the CEC from a registered fire protection engineer or PGandE's fire insurance company in a compliance report prior to commercial operation.

- 12-2. PGandE shall implement an accident prevention program in accordance with the provisions of Sections 3203 et seq. of Title 8, CAC. (These sections include chemical handling and storage and provisions for hazardous materials and airborne contaminant exposure based on Section 5155, Title 8, CEC.) PGandE shall request Cal/OSHA consultation service to review this accident prevention program.

Verification: PGandE shall obtain a letter from the Cal/OSHA consultation service verifying compliance with the requirements of Section 3203, Title 8, CAC. Notification of this verification shall be filed with the CEC not later than 150 days prior to commencement of operation of Unit 18.

- 12-3. On-site worker safety inspections shall be conducted by the California Division of Occupational Safety and Health (Cal/DOSH) during construction and operation of the facility or when an employee complaint has been received. Cal/DOSH shall notify the CEC in writing in the event of a violation that could involve DOSH action affecting the construction or operation schedule.

Verification: PGandE shall note any Cal/DOSH inspections in its periodic compliance reports.

- 12-4. To prevent exposure of workers to H<sub>2</sub>S gas above the levels set in Cal/OSHA regulations, PGandE shall:

- a. Post warnings in areas where levels of H<sub>2</sub>S gas could possibly exceed the limits set in the Cal/OSHA regulations;
- b. Require employees to secure entry permits and the approval of the operating foreman before entering a restricted area;
- c. Set alarms to ring when H<sub>2</sub>S gas levels exceed 10 ppm;
- d. Discontinue work unless approved breathing apparatus is worn; and
- e. Instruct employees about the hazards of H<sub>2</sub>S.

Verification: PGandE shall note the compliance with the above H<sub>2</sub>S gas precautionary measures in its periodic compliance reports.

- 12-5. PGandE shall ensure that the Stretford system pressure vessels have been designed and fabricated and constructed in accordance with Title 8, CAC, Chapter 4.1 and TID 7024 Chapter 6, and anchored in accordance with Section 8.3 of ATC-3-06, or if necessary, to a more stringent criteria.

Verification: PGandE shall submit to the CEC a document stamped or signed by a registered mechanical engineer and verifying compliance, to Cal/DOSH no later than 30 days before commercial operation. Accompanying this letter shall be copies of certified code papers for the pressure vessel. In addition, the Division of Occupational Safety and Health shall verify compliance through an on-site inspection.

- 12-6. PGandE shall ensure that the Stretford system tanks have been designed and fabricated and constructed in accordance with API Standard 650; Title 8, CAC, Chapter 4; and TID 7024, Chapter 6; and anchored in accordance with ATC-3-06, Section 8.3, or if necessary, to a more stringent criteria.

Verification: PGandE shall submit to the CEC a document stamped or signed by a registered mechanical engineer and verifying compliance, to the Sonoma County Building Inspector no later than 30 days before commercial operation. In addition, the Division of Occupational Safety and Health shall verify compliance through on-site inspection.

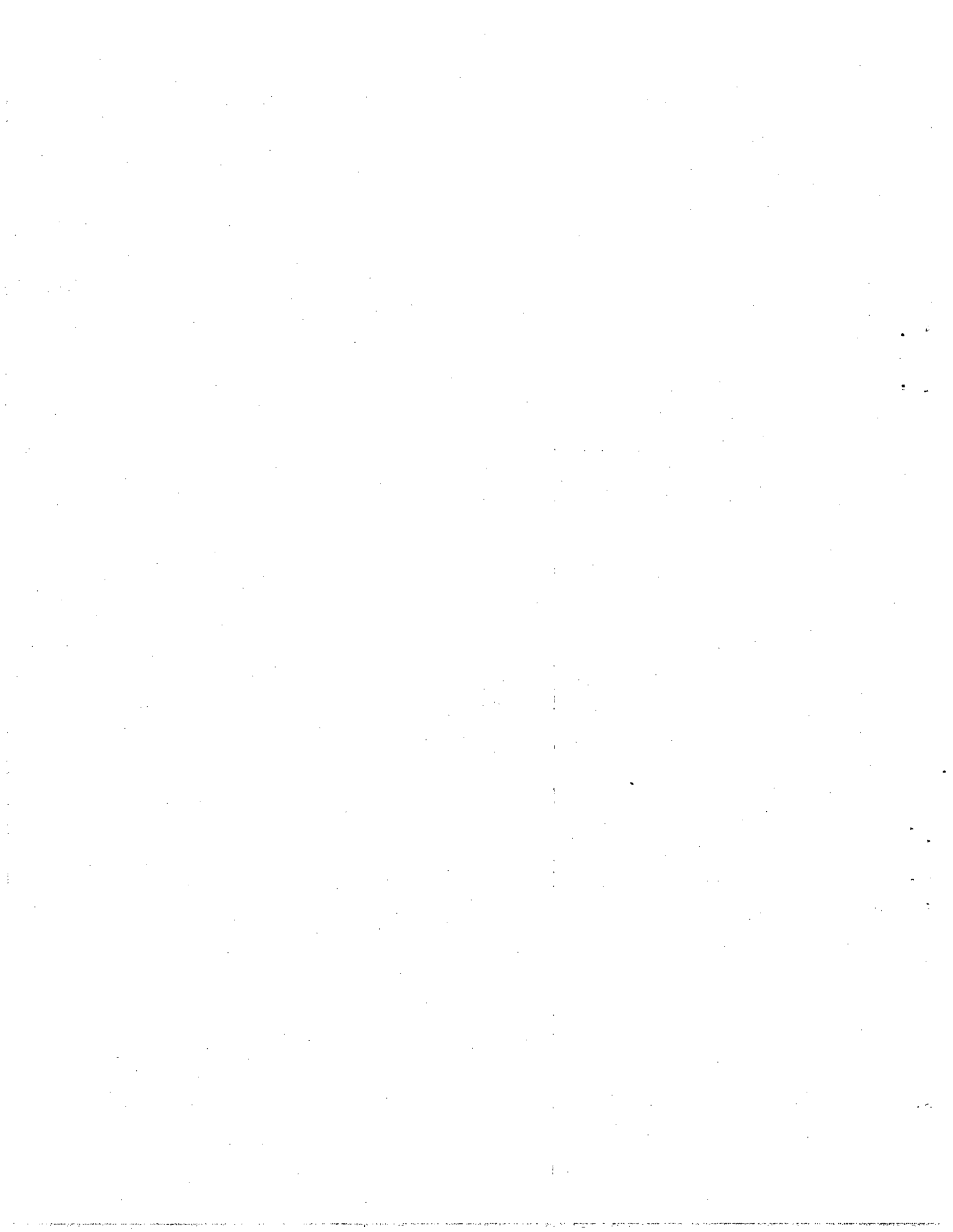
- 12-7. PGandE shall ensure that the hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) systems have been designed and fabricated and constructed in accordance with MCA Chemical Safety Data Sheet SD-53 and anchored in accordance with ATC-3-06, Section 8.3, or, if necessary, to a more stringent criteria.

Verification: PGandE shall submit to the CEC a document stamped or signed by a registered mechanical engineer and verifying compliance, to the Sonoma County Building Inspector no later than 30 days before commercial operation. In addition, the Division of Occupational

Safety and Health shall verify compliance through an on-site inspection.

- 12-8. PGandE shall provide all persons handling H<sub>2</sub>S abatement materials with eye protection, rubber gloves, and rubber aprons and shall install emergency eye wash and shower stations adjacent to chemical work stations. PGandE shall also post labels and warnings on pipe systems and tanks to store chemicals.

Verification: PGandE shall report compliance of the above measures in its periodic compliance reports.



Section 13. TRANSMISSION LINE ENGINEERING--SAFETY AND NUISANCE

A. Applicable Laws, Ordinances, Standards, and Practices

- o California Public Utility Commission (CPUC) General Order 95 and 131-B.
- o California Occupational Safety and Health Administration (CAL/OSHA), Title 8, California Administrative Code (CAC), Article 85, Section 2940 et seq., Article 87, Section 2950, et. seq., Sections 5095 - 5099.
- o Title 8, CAC, Chapter 4, Subchapters 4 and 7.
- o Title 24, Public Resources Code (PRC), Sections 4292 - 4296 and 1250 - 1258.
- o Federal Aviation Administration (FAA), 49 USCA 1348, 14 CFR, Part 77.
- o Federal Communications Commission (FCC), 47 CFR, Part 15.25.
- o Grounding criteria (PGandE Drawing 020607).

B. Requirements

- 13-1. PGandE shall ensure that the design, construction, operation, and decommissioning of the transmission line satisfies or exceeds both the requirements of PRC Sections 4292 - 4296 and PRC Title 14, Sections 1250 - 1258 of the CAC, PUC General Order 95 (GO 95) the terms and conditions of CEC certification, and all applicable laws, ordinances, standards, and practices. PGandE shall receive CEC approval for the following significant changes in transmission line design.
- a. Number, type, and configuration of towers.
  - b. Voltage (phase to phase).
  - c. Number of circuits.
  - d. Size, number, and type of conductor (including static wires).
  - e. Normal and emergency rating of conductors (MVA and MW).
  - f. Route, route length, and right-of-way width.
  - g. CEC grounding criteria.

Verification: Within 60 days following completion of transmission line, PGandE shall submit to the CEC a statement signed by a registered electrical engineer which verifies compliance with the



requirements of PUC General Order 95 and with the terms and conditions of CEC certification.

- 13-2. The CPUC and PGandE shall take all reasonable steps to ensure that the PUC's decision on the application for a Certificate of Public Convenience and Necessity accurately reflects the conditions adopted by the CEC.

Verification: Within 30 days of PGandE's receipt of the CPUC's decision the application for a Certificate of Public Convenience and Necessity (CPCN), PGandE shall provide copies of the following to the CEC: (a) all revisions to the CPCN; and (b) a copy of the CPUC decision with all attachments.

- 13-3. PGandE shall inspect and maintain the transmission line in accordance with GO 95, the terms and conditions of the CEC approval, and all applicable laws, ordinances, standards, and practices.

Verification: After completion of the transmission line, PGandE shall provide the CEC a summary of noncompliance.

- 13-4. On-site worker safety inspections shall be conducted by the California Division of Occupational Safety and Health (Cal/DOSH) during construction and operation of the transmission line or when an employee complaint has been received. Cal/DOSH shall notify the CEC in writing in the event of a violation that could involve DOSH actions affecting the transmission line construction or operation schedule.

Verification: PGandE shall note any Cal/DOSH inspections in its periodic compliance reports.

- 13-5. PGandE shall prepare a "No Hazard to Air Navigation" form to be submitted to the Federal Aviation Administration (FAA) if it is anticipated that the transmission line towers or any appurtenances would be more than 200 feet in height above the ground per FAA part 77.

Verification: PGandE shall file the above form, if required, no less than 30 days prior to construction with a copy sent to the CEC concurrently.

- 13-6. PGandE shall make every reasonable effort to locate and correct, on a case-by-case basis, all causes of radio and television interference attributed to the transmission line facilities, including, if necessary, the modification of receivers and/or the furnishing and installation of antennas. In addition, PGandE shall take reasonable care to prevent the conductors from being scratched or abraded.

Verification: PGandE shall identify the number and type of RI/TVI complaints and corrective actions taken in the first annual compliance report to the CEC. Subsequent reports are not required unless requested by the CEC.

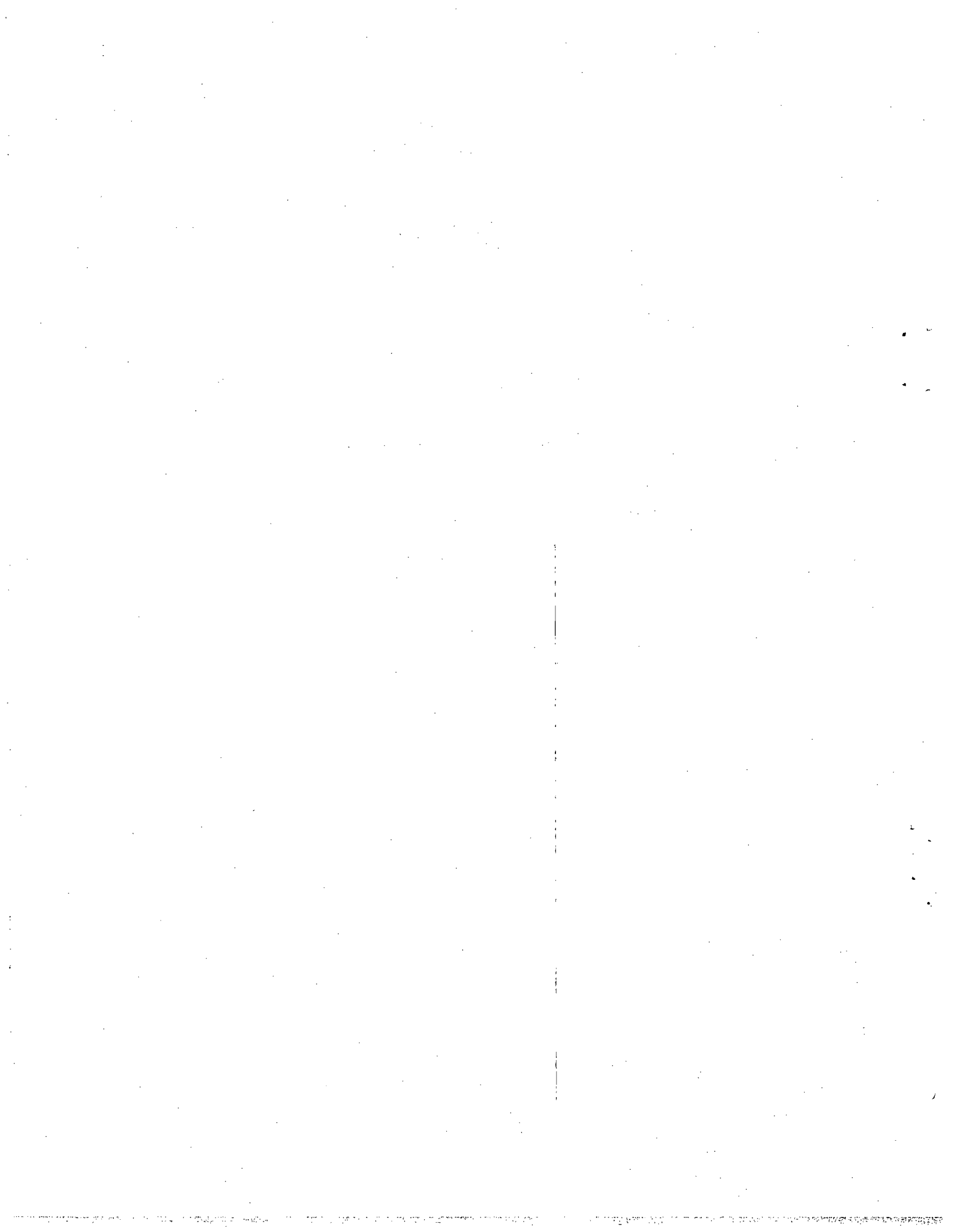
- 13-7. PGandE shall ensure that, regardless of location or ownership, all ungrounded metallic fences longer than 150 feet within the right-of-way shall be grounded following the procedures outlined in the PGandE grounding standard, drawing 020607, sheets 1 through 5.

Verification: Within 30 days after completion of transmission line construction, PGandE shall file a statement verifying compliance.

- 13-8. In the event of complaints regarding induced currents from vehicles, portable objects, large metallic roofs, fences, gutters, or other objects, PGandE shall investigate and take all reasonable measures at its own expense to correct the problem for valid complaints, provided that: (a) the object is located outside the right-of-way, or (b) the object is within the right-of-way and existed prior to right-of-way acquisition.

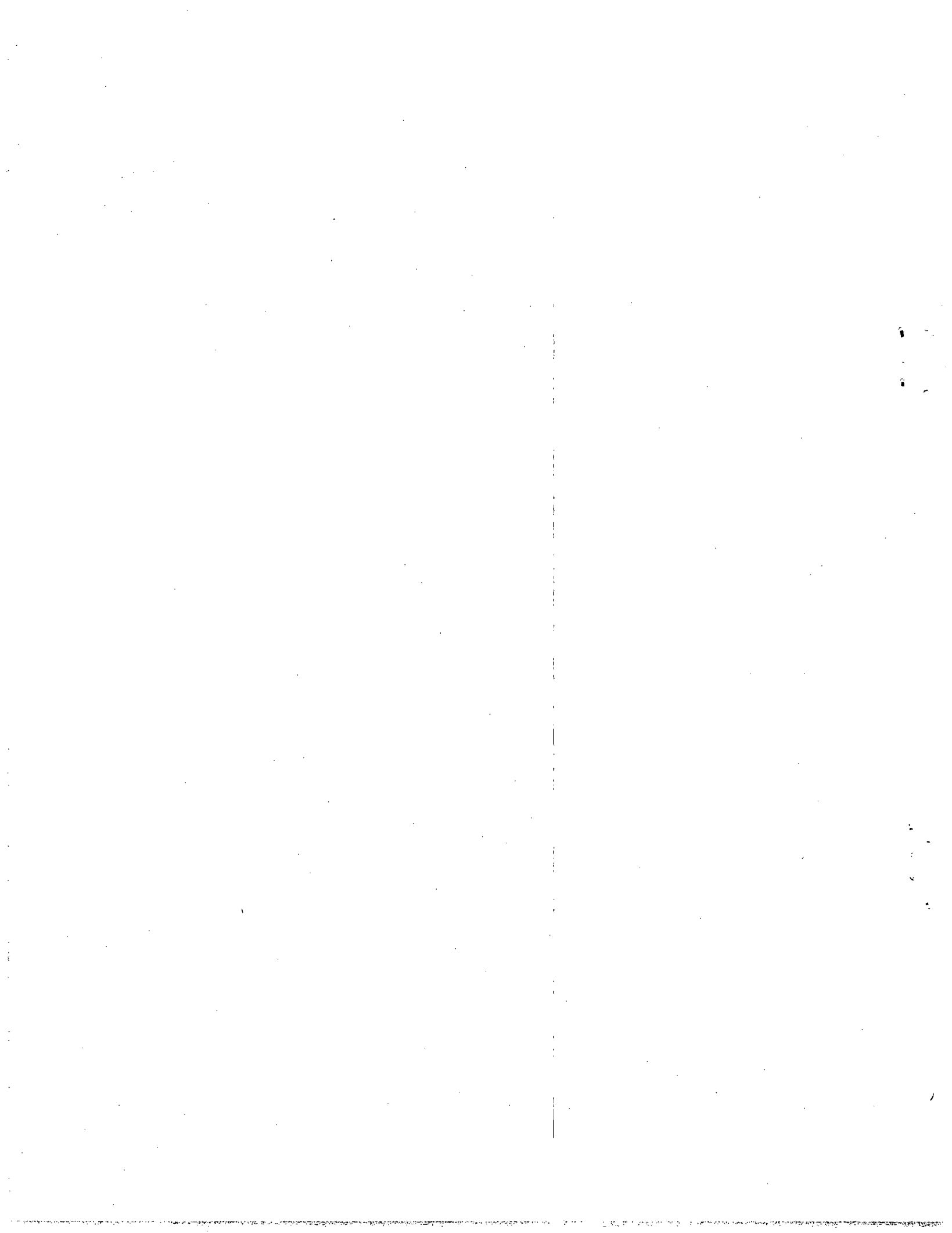
For objects constructed, installed, or otherwise placed within the right-of-way after right-of-way acquisition, PGandE shall notify the owner of the object that it should be grounded. In this case, grounding is the responsibility of the property owner. PGandE shall advise the property owner of this responsibility in writing prior to signing the right-of-way agreement.

Verification: PGandE shall provide a statement in the first annual compliance report verifying compliance.



Section 14. TRANSMISSION LINE ENGINEERING

(Compliance requirements are included in Section 13.)



Section 15. TRANSMISSION LINE BIOLOGICAL RESOURCES

A. Applicable Laws, Ordinances, Standards, and Practices

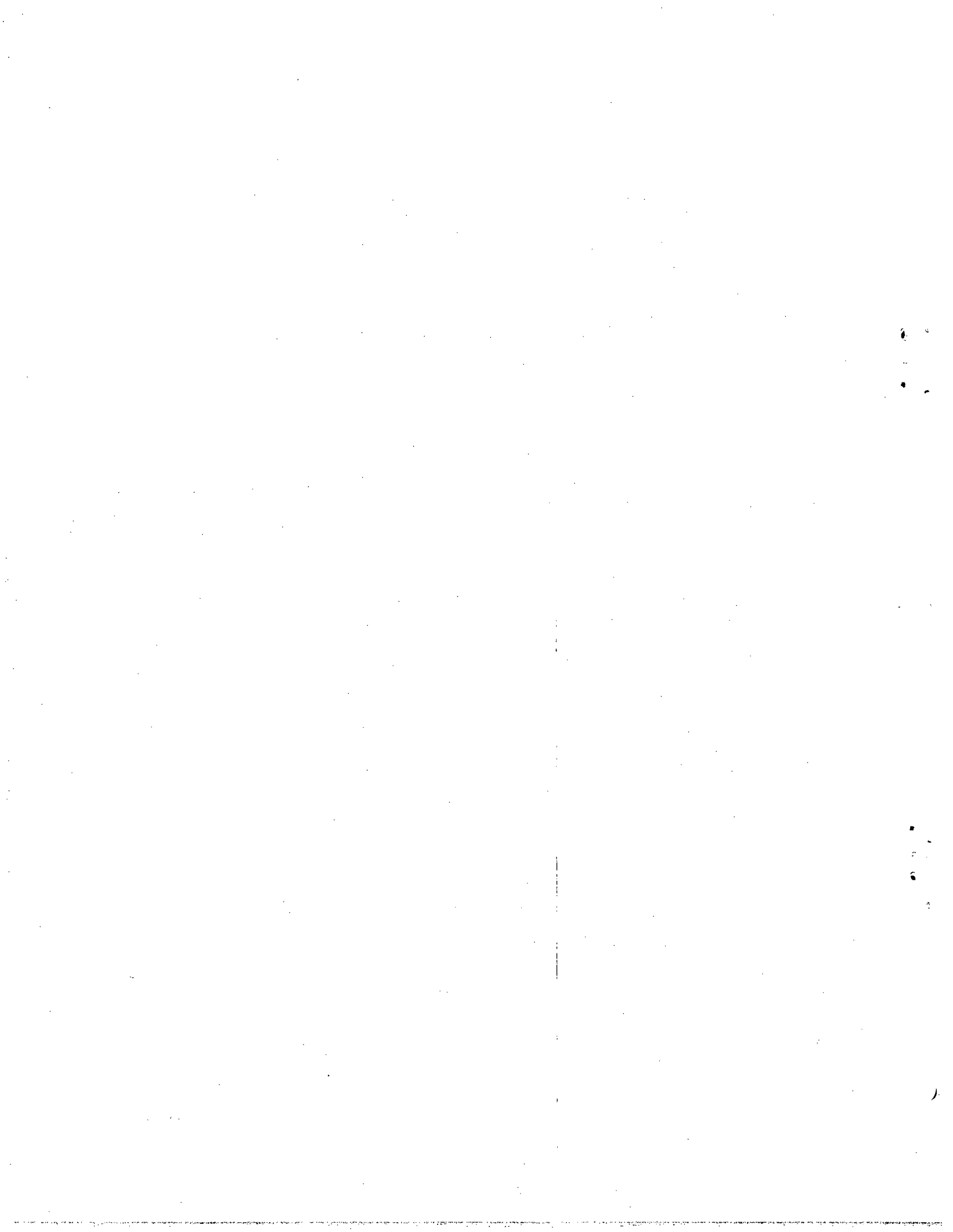
- o Warren-Alquist Act, Public Resources Code, Sections 25001, 25003, and 25523.
- o California Environmental Quality Act, Public Resources Code, Section 21000 et seq.
- o Federal Endangered Species Act of 1973 (Title 16-USC Section 1533) and implementing regulations.
- o Native Plant Protection Act, Fish and Game Code, Sections 2900 - 1904, and 1911.
- o California Species Preservation Act of 1970, Fish and Game Code, Sections 900 - 903.
- o Fully Protected Species Act, Fish and Game Code, Sections 3511 and 4700.

B. Requirement

15-1. PGandE shall implement these mitigation measures:

- o If slash from clearing transmission lines can not be burned, brush may be left as refuge for small animals and birds or chipped and scattered as necessary (AFC page 8-1).
- o Regrade and reseed areas of soil and vegetation disturbance occurring during transmission line construction (AFC, page 8-4).

Verification: PGandE will submit a Statement of Compliance upon completion of the transmission line.



Section 16. NOISE

A. Applicable Laws, Ordinances, Standards, and Practices

- o Occupational Health and Safety Act of 1970 (29 CFR 1910 et seq.).
- o Title 8, California Administrative Code, Article 105.
- o Noise Element of the General Plan for Sonoma County, California.

B. Requirements

- 16-1. In the event PGandE receives public complaints of the noise due to construction, PGandE shall immediately conduct an investigation to determine the extent of the problem. PGandE shall take reasonable measures to resolve the complaints and to report those measures to the complainant.

Verification: PGandE shall develop and submit to the Sonoma County Planning Department a procedure for handling public complaints. The Sonoma County Planning Department will notify PGandE and the CEC when the plan is acceptable.

- 16-2. If requested by the Sonoma County Planning Department, PGandE shall conduct noise surveys at the sensitive receptors registering complaints and at the facility property line nearest the complaining receptors. Surveys shall be taken for the period of the construction working day and under circumstances similar to those when the complaints were perceived. The survey should be reported in terms of the  $L_x$  and  $L_{eq}$  levels ( $x = 10, 50, \text{ and } 90$ ). Based on this survey, PGandE shall identify and implement feasible mitigation measures necessary to assure compliance with the county standards.

Verification: PGandE shall notify the Sonoma County Planning Department of the survey results, the mitigation measures applied to resolve the problem, and the results of these efforts. Sonoma County shall advise the CEC of any continuing noncompliance conditions.

- 16-3. Within 90 days after the plant reaches its rated power generation capacity and construction is complete, PGandE shall conduct a noise survey at the nearest sensitive receptor and at 500 feet from the generating station. The survey will cover a 24-hour period with results reported in terms of  $L_x$  ( $x = 10, 50, \text{ and } 90$ ),  $L_{eq}$ , and  $L_{dn}$  levels.

PGandE shall prepare a report of the survey that will be used to determine the plant's conformance with county standards. In the event that county standards are being exceeded, the report shall also contain a mitigation plan and a schedule to correct the noncompliance.



No future noise surveys of off-site operational noise are required unless the public registers complaints or the noise from the project is suspected of increasing due to a change in the operation of the facility.

Verification: Within 30 days of the noise survey, PGandE shall submit its report to the Sonoma County Planning Department. Sonoma County will advise the CEC of the receipt and acceptability of the report.

- 16-4. Within 180 days after the start of commercial operation, PGandE shall prepare a noise survey report for the noise-hazardous areas in the facility. The survey shall be conducted by an acoustician in accordance with the provisions of 8 CAC, Article 105. The survey results will be used to determine the magnitude of employee noise exposure. If employee complaints of excessive noise arise during the life of the project, Cal/DOSH, Department of Industrial Relations, shall make a compliance determination.

Verification: PGandE shall notify Cal/DOSH and the CEC of the availability of the report.