MAY 17 1996

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

MAY 14 1996

Dear Reader:

Enclosed is a copy of EPA Document 330/2-96-009, Puna Geothermal Venture Compliance Investigation, Pahoa, Hawaii, which is a report that was prepared by the U.S. Environmental Protection Agency National Enforcement Inspection Center (NEIC). NEIC also prepared technical Appendices to accompany the report (Volume II). The Appendices are being provided upon request.

This letter is being issued with the enclosed report to explain that certain information in the report has been redacted (selectively eliminated). The redacted information is being protected from disclosure because Puna Geothermal Venture has asserted a claim that the particular information constitutes "confidential business information," the release of which is likely to cause substantial competitive harm to the company's competitive position.

The Environmental Protection Agency will determine in the next few months if the company's claim of confidential business information is correct. Our determination could conclude that some, none or all of the information claimed to be confidential is entitled to be protected from disclosure to ensure against competitive harm. If our determination concludes that not all of the information is entitled to protection against disclosure, we will prepare another copy of this report. This second report will release any information that had been redacted from this first report, but which we have subsequently determined is not entitled to protection. We will make a copy of that second report (or relevant pages) available for your review. In the meantime, however, because the confidentiality determination will take additional time, we have released this report (with the claimed information redacted), rather than wait several more months until we complete the determination of confidentiality.

Based on the information in this report, the Environmental Protection Agency in cooperation with the Hawaii Department of Health will evaluate the appropriate course of action to ensure that the Puna Geothermal Venture facility comes into and remains in compliance with all applicable laws. If you have any questions regarding this matter, please contact Stacey Pogorzelski at (415) 744-1172.

Very truly yours,

Keith A. Takata

Keith A. Takata, Director
Superfund Division

To Hi Rm Town Water & Land

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EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • SAN FRANCISCO, CALIFORNIA MAY 1996

Compliance Inspection Report Released For Puna Geothermal Venture

The U.S. Environmental Protection Agency (EPA) has released a Compliance Inspection Report for the Puna Geothermal Venture (PGV) facility in Pahoa, Hawaii. The purpose of the investigation, conducted in February 1995, was to determine the facility's compliance with air, water and waste management regulations. In particular, the investigation reviewed the facility's air pollution control and underground injection control (UIC) permits, issued by the Hawaii Department of Health (DOH). The investigation also reviewed PGV's compliance with the Emergency Planning and Community Right-to-Know Act.

During the on-site inspection, investigators observed and evaluated facility operations, reviewed and copied facility records and had discussions with facility personnel. In addition, investigators reviewed state and federal files, sampled ground water monitoring wells and geothermal reinjection fluid, and monitored potential air emission points.

Summary of Findings

The facility was in compliance with most environmental requirements. EPA found some violations and made a number of recommendations to improve PGV's operations.

Review of the air permit showed compliance problems, including the absence of some sampling and monitoring data, failure to submit certain reports and records, and failure to have certain equipment in place. The report suggests that the permit be re-examined to determine needed controls, equipment and enforceable limits. It further suggests that the permit specify chemical analyses to be conducted, clarify recordkeeping requirements, and improve and clarify air monitoring and reporting requirements.

Two recommendations included in the air portion of the report are (1) to institute recommendations from previous investigations regarding drilling plans and the Emergency Steam Relief Facility (ESRF) and (2) to explore the possibility of combining Hawaii DOH and PGV monitoring data into one program.

In reviewing the underground injection control permit, the report identified several monitoring problems. It noted that not all of the parameters listed in the permit were monitored and, in some cases, standard monitoring procedures were not followed. Also noted was an exceedance of permit injection pressure limits. Suggestions for improving the UIC permit include modifying sampling and reporting procedures, and re-examining the permit to determine which chemical parameters should be sampled. In addition, the report recommended that PGV document the basis for assumptions of flows entering the ESRF pond and assess the sufficiency of the current bond for plugging and abandoning wells.

Recently, the state suggested that EPA issue its own underground injection control permit to assure that all federal requirements are met. EPA will address the violations in the issuance of a new federal permit, with public review and comment incorporated in the permit process.

In regard to compliance with the Emergency Planning and Community Right-to-Know Act, the report suggests that PGV include with incident reports the assumptions and calculations used to estimate the quantity of releases of hydrogen sulfide or other materials. It recommended locating the documentation in a central place within the plant to facilitate emergency prevention, preparedness and planning. The report also noted several deficiencies in the draft Emergency Response Plan and recommended improvements.

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MUCH OF THE INFORMATION IN THIS FACT SHEET IS TAKEN FROM THE PUNA GEOTHERMAL VENTURE COMPLIANCE INVESTIGATION REPORT, DATED MARCH 1996. THE DOCUMENT NUMBER IS EPA-330/2-96-009.

Site Background

The Puna Geothermal Venture facility produces electricity using geothermal fluids (steam). The PGV facility occupies approximately 25 acres within a 500-acre leased property and employs 40 people. PGV is located about 20 miles south of Hilo, Hawaii.

The geothermal fluids are produced as circulating ground water is heated to above 200 degrees Celsius by subsurface molten rock. Two production wells extract the fluids which are separated into steam and brine phases. The steam is routed to turbines to produce energy. Steam condensate is combined with the brine and noncondensible gasses, and disposed into three injection wells.

Community Concerns

In the process of developing geothermal energy on the island, various entities, both private and public, established a number of geothermal facilities. There were then a number of incidents and blow outs, which generated many community concerns. Among the concerns were respect for indigenous peoples and Native Hawaiian theology, community health and safety, and the public's right to know. Other concerns included industrialization and growth, noise, compliance with water and air pollution control regulations, and emergency response planning.

EPA Involvement

Members of the Puna community contacted EPA; EPA then worked with Hawaii DOH and the Department of Land and Natural Resources on a number of issues. In 1994, Felicia Marcus, EPA's regional administrator, visited the community and, following her visit, she directed the establishment of an EPA team to address issues that community members had raised.

The seven-member team visited Pahoa in February 1995, when they visited with community members, state and local government representatives and PGV personnel. After this visit, EPA developed a five-point strategy for addressing concerns. The compliance investigation was one component of that strategy. Other components of the strategy include community involvement, emergency response plan review and an evaluation of health concerns. Release of the report comes more than a year after the facility inspection was conducted. Part of the delay was caused by PGV claims that much of the information in the report was confidential.

To address citizens' concerns about the mechanical integrity of the injection wells, EPA arranged for an expert from the U.S. Bureau of Land Management (BLM) to review PGV's mechanical integrity testing (MIT) program. In April 1996, personnel from EPA and BLM then met with PGV, Hawaii DOH and the Hawaii Department of Land and Natural Resources to discuss the MIT program and review test results. The agencies concluded that the continuous monitoring that PGV does is actually better than once-a-year testing, which is normally required, because the continuous monitoring can detect a leak almost instantaneously. In addition, some modifications were made to the yearly tests. The BLM representative also assessed the plugging and abandonment of wells on PGV's site and found them satisfactory. After meeting with PGV and state representatives, EPA and BLM met with individuals in the surrounding community to explain and answer questions on the MIT program and test results.

Next Steps

- EPA and Hawaii DOH will work together to bring the facility back into compliance and make necessary permit revisions.
- EPA will fund an independent review of PGV's emergency response plan and how it operates in conjunction with the county's plan. The team will be comprised of three people who are experts in chemical emergency response planning at state and local levels. The team is scheduled to meet with PGV, state and local government, and the community in late summer 1996.
- Interviews have begun with community members, state representatives and PGV officials to explore the possibility of forming a community work group. EPA has scheduled a number of other interviews for a May visit to Pahoa. EPA will also meet with local government representatives. The basic goals of such a work group would be to foster an exchange of information and encourage various parties to work on the issues together.

If you would like more information on EPA's compliance investigation report or other activities related to PGV, contact:
Mike Ardito, project manager, at (415) 744-2328
or
Dianna Young, community involvement coordinator, at (415) 744-2178.
You may also call the Region 9 Superfund toll-free message line: 800-231-3075.

NEIC

EPA-330/2-96-009

PUNA GEOTHERMAL VENTURE COMPLIANCE INVESTIGATION

Pahoa, Hawaii

National Enforcement Investigations Center, Denver

U.S. Environmental Protection Agency

Office of Enforcement

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE

EPA-330/2-96-009

PUNA GEOTHERMAL VENTURE COMPLIANCE INVESTIGATION

Pahoa, Hawaii

March 1996

Ken Garing
Bob Gosik
Shannon FitzGerald

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER
Diana A. Love, Director
Denver, Colorado

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INTRODUCTION

At the request of EPA Region 9, the National Enforcement Investigations Center (NEIC) conducted a multimedia compliance investigation of Puna Geothermal Venture (PGV) - Pahoa, Hawaii. PGV produces approximately 25 megawatts (MW)* net of electricity using geothermal fluids (principally steam). The PGV facility occupies approximately 25 acres within a 500-acre leased property and employs 40 people. PGV is located approximately 20 miles south of Hilo, Hawaii.

Approximately 800,000 pounds per hour of geothermal fluid are used to produce the 25 MW net of electrical power sold by PGV. An additional 2.5 MW of power are produced and consumed in the electrical production process. The geothermal fluids, including any separated brine and noncondensible gases, are reinjected back into the ground. Two production wells and three injection wells are currently in use.

The produced geothermal fluid is separated into a steam phase and brine phase. A portion of the steam phase is routed directly to a steam turbine to produce electricity. The steam turbine discharge is combined with the remaining portion and routed to Ormat Energy Converters (OEC). In the OECs, geothermal steam is used to vaporize pentane which in turn is used to drive an organic turbine for additional electrical production. The pentane is condensed and routed to the OEC to repeat the process. The geothermal steam exiting the OEC is combined with the noncondensible gases and geothermal brine before reinjection.

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* *Power production has increased to 30 MW subsequent to the NEIC inspection.*

OBJECTIVE

The specific objectives of the investigation were to determine compliance with:

- Air pollution control regulations, including state permits No. P-833-1524 and No. P-834-1582
- Underground Injection Control (UIC) regulations, including state permit UH-1529
- Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. §11001 et seq., EPCRA § 301; and Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9603 CERCLA § 103.

In addition, NEIC personnel identified facility activities/conditions that, although not specifically regulated, could impact the environment.

INVESTIGATION METHODS

The investigation of PGV included:

- A review of federal and state files
- An on-site inspection of the facility conducted February 13 through 17, 1995, which included:
  - Discussions with facility personnel
  - Observations and evaluation of facility operations
  - Review/copy facility records
- Sampling of the two groundwater monitoring wells and geothermal reinjection fluid
- Monitoring of 50 potential fugitive emissions points (valves) in pentane service

Personnel from the regional UIC program and NEIC worked as a team to determine compliance with UIC requirements.

The technical report has been divided into four main sections: Process Description - which provides an overview of the geothermal process; and the Air, Underground Injection Control, and EPCRA sections which discuss compliance with applicable regulations and permits. These reports form the basis for the summary of findings presented in the following section.

SUMMARY OF FINDINGS

The areas of noncompliance and areas of concern* identified during the investigation are summarized below. These findings are detailed in the technical report sections.

CLEAN AIR ACT

Areas of Noncompliance

Permit P-833-1524 Attachment II, Condition 20	Semiannual sampling and reporting of the geothermal resource has not been performed for all required parameters. No annual or semiannual resource testing, while operating under normal conditions, was provided to HDOH, prior to 1995. After the NEIC inspection, PGV reported 1994 results compiled from various test locations. NEIC determined that 15 of the required 78 parameters were validly reported for well KS-9, and 37 of 78 for well KS-10. This did not include the three parameters that PGV reported were impossible to monitor, or were redundant with other parameters.
Permit P-834-1582 Attachment II, Condition 5	PGV does not have an installed spare condensate pump. A spare pump is kept in an adjacent warehouse which does not allow it to be utilized immediately upon identification of a malfunction of one of the three operating pumps.

WELL CHEMISTRY

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* *Areas of concern are inspection observations of potential problems/activities that could impact the environment, result in future noncompliance with permit or regulatory requirements, and/or are areas associated with pollution prevention issues.*

Permit P-834-1582 Attachment II, Condition 10	Air quality and meteorological data from the ambient monitoring stations are not summarized in the monthly reports provided to HDOH.
Permit P-834-1582 Attachment II, Condition 2	Some fugitive emission points are not monitored on a weekly basis. Potential fugitive emission points on the fan coolers and OECs have not been monitored since startup of the plant.
Permit P-834-1582 Attachment II, Condition 5	Pentane transfer records were not included with the third and fourth 1994 quarterly reports.

Areas of Concern

- Not all National Emission Standards for Hazardous Air Pollutants (NESHAP) pollutants required to be monitored by the permit are present in the geothermal fluids. Hawaii Department of Health (HDOH) should require sampling of only those NESHAP pollutants which are specifically of interest [PTO P-833-1524, Attachment II, Condition 20].

- HDOH requires that Best Available Control Technology (BACT) be used during periods of well equipment failure or malfunction (Permit P-833-1524 and Permit P-834-1592), but does not define BACT in the permits. HDOH should also clarify whether or not BACT requirements apply to well drilling operations. If HDOH intends for those practices described in the drill plans [which are to be approved by the Hawaii Department of Land and Natural Resources (HDLNR)] to constitute BACT then this fact should be made clear in the permit [PTO P-833-1524, Attachment II, Condition 13].

- Drilling plans prepared after the 1991 KS-8 well incident do not address all recommendations made in independent investigations, or investigations by PGV, subsequent to that incident. These include provisions for adequate kill fluid temperatures and quantities, maximum-sized mud pump liners, and weight criteria. Also there is no apparent written requirement in the drill plan for the addition of lime to the recirculating wellbore fluids. HDOH should review recommendations made in the 1991 investigation, and PGV's response to those recommendations, as well as drill mud lime requirements to ensure that all necessary precautions are being taken.

There are limited means to verify compliance with the plant-wide 200 pounds per day pentane emission limit. Pentane inventory levels are reconciled only on a quarterly basis and, therefore, daily exceedances can only be confirmed if the total emissions for the quarter exceed 18,000 pounds (90 days per quarter x 200 pounds per day), or if there is a report of a catastrophic release [PTO P-834-1524, Attachment II, Condition 3].

- The permit limitation of fugitive hydrogen sulfide emissions to less than 1 lb/hr is unmeasurable and, therefore, unenforceable. An option to addressing fugitive hydrogen sulfide emissions is to impose additional requirements on PGV's existing in-plant hydrogen sulfide monitoring system. These requirements could address minimum allowable monitor downtime, monitor calibration and identification of plant areas or equipment where repetitive leaks occur [PTO P-834-1524, Attachment II, Condition 20].

- The Emergency Steam Relief Facility (ESRF) design, modifications, and consultant recommendations, and PGV's response to these

recommendations and the related NEIC evaluation, should be reviewed to ensure that the 1992 ESRF problems have been adequately addressed. NEIC's evaluation indicates that there are still potential problems.

- Explanations for large pentane transfers should be included on the quarterly air reports. This information would provide operational history of the individual OECs and could be useful in scheduling preventative maintenance activities, such as increased frequency monitoring for OEC requiring frequent pentane transfers [PTO P-834-1524, Attachment II, Condition 5].

- The noncondensible gas vent from the Vapor Recovery Unit (VRU) should be included in the volatile organic compounds (VOC) monitoring program. Monitoring readings may demonstrate that this vent stack is a significant source for pentane losses.

- Fugitive pentane monitoring at a distance of 2 inches, as required by the permit, is not appropriate. The facility has not identified any leaking components since the program was initiated. NEIC identified four components leaking at greater than 1,000 ppm when measured at the interface; however, when the monitoring distance was increased to 2 inches, the readings dropped below the 1,000 ppm limit specified in the permit. The EPA approved fugitive monitoring method, Method 21 Appendix A of CFR 40 Part 60, requires that fugitive monitoring be conducted at the component interface [PTO P-834-1524, Attachment II, Condition 2].

- The number of components identified by NEIC to be leaking, at levels above background, is greater than that identified by PGV monitoring.

NEIC identified seven components leaking at greater than 100 ppm of which four were leaking at greater than 1,000 ppm when monitoring at the component interface. Previous monitoring at the component interface, in the same area, by PGV personnel identified only one leaking component at a concentration of 100 ppm. Due to the slower response time of the PGV monitoring equipment, PGV operators will need to be more deliberate while monitoring potential fugitive emission sources.

- The fugitive monitoring calibration gas used by PGV did not display a manufacture or expiration date. The approved fugitive monitoring method, Method 21 Appendix A of CFR 40 Part 60, requires that calibration gases display a manufacture date.

- Hydrogen sulfide and meteorological monitoring data should be reviewed, evaluated, and summarized on the required reports. Currently, all the monitoring data is supplied without summary or reporting of upset conditions. Combining HDOH and PGV monitoring data into a single program would allow for a comprehensive evaluation of all available data.

- The online time for the three PGV-operated ambient air monitors is only 86% for the last 6 months. The west air monitor was the least reliable and was only operational for 64% of the time. The PGV should purchase a spare H_2S analyzer to eliminate equipment downtime gaps which have occurred in the past monitoring periods.

- PGV should stagger the calibration period for the H_2S analyzers so that at least two analyzers are in operation at all times.

Why monitor for "all" when a baseline shows they are "not there."

Suggested Permit Changes*

- The permit should clearly specify the chemicals analyses to be conducted on the geothermal resource. The permit requires analyses for the NESHAP pollutants. However, it is unclear as to whether this reference refers to a specific NESHAP chemical, all NESHAP chemicals (40 CFR Part 61), or all Hazardous Air Pollutants (40 CFR Part 63) [PTO P-833-1524, Attachment II, Condition 20].

- The specific controls and/or equipment needed to comply with Best Available Control Technology (BACT) should be specified. The current permit does not define BACT; is unclear as to whether BACT applies only to well drilling malfunctions or during all well drilling activities; and does not specify who is responsible for approving BACT provisions [PTO P-833-1524, Attachment II, Condition 13].

- The permit limitation of 1 lb/hr of H_2S emissions is unmeasurable and therefore unenforceable. There is no requirement for PGV to monitor or otherwise calculate the actual release of H_2S during normal operating conditions. This permit condition should be removed, modified, or perhaps replaced by imposing additional monitoring requirements using PGV's existing in-plant H_2S monitoring system [PTO P-834-1524, Attachment II, Condition 20].

- Allowing the measurement of fugitive emissions points at a 2-inch distance is inconsistent with procedures required in the Method 21 Appendix A of CFR 40 Part 60. Monitoring should be conducted at the component interface as required in Method 21. If monitoring of all VOC

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* *These issues are also discussed under "Areas of Concern."*

components is conducted according to Method 21 Appendix A of CFR 40 Part 60, then less frequent monitoring could be considered. Monthly sampling rather weekly sampling should be considered if monitoring is conducted at the interface. Monthly or quarterly monitoring frequencies are required in the New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations [PTO P-834-1524, Attachment II, Condition 2].

- The 200 lb/day pentane emission limit cannot be verified with existing permit recordkeeping requirements. Either the daily inventory in the pentane storage tanks or the daily quantity of pentane transferred from the VRU to the pentane storage tanks must be recorded into order to calculate the daily emissions [PTO P-834-1524, Attachment II, Conditions 3 and 5].

- The noncondensible gas vent from the VRU should be included in the pentane monitoring system. Based on the low PGV reported leak rates and lack of any reported pentane upset/releases, the VRU vent is a likely source of pentane emissions [PTO P-834-1524, Attachment II, Condition 2] .

- An explanation for pentane transfers should be required in the quarterly reports. This information would provide operational history of the individual OECs and be useful in scheduling preventive maintenance activities [PTO P-834-1524, Attachment II, Condition 5].

- Several data reporting changes should be considered to improve the usefulness of the ambient air monitoring summary.

- Historical data summaries should be included for each hydrogen sulfide analyzer to show dates, durations, and likely causes of past hydrogen sulfide readings.

- Historical data should be included for each hydrogen sulfide analyzer to show availability and online time percentages. Additionally, information regarding daily exceedances should be included with the summary.

- PGV ambient air monitoring data should be submitted more frequently. Availability of the PGV data should be consistent with that of the HDOH data.

- Ambient air and meteorological data from the HDOH monitoring stations should be included.

UNDERGROUND INJECTION CONTROL

Areas of Noncompliance

Permit UH-1529 Part I.A.3(a)	Injection rate exceeded 675,000 pounds for 10 days during September 1994. Notification was provided within 1 week to HDOH for five of the daily exceedances.
Permit UH-1529 Part I B. 1. (f)	PGV does not monitor for all parameters identified in the permit. Instead of reporting m- and p-cresol as individual compounds as required under type II sampling in the permit, the company reported combined m- and p-cresol. Additionally, for Type III sampling, the following chemicals were not reported. • 2-Chloroethylvinyl ether • Dibromochloromethane • 1,1-Dichloroethane • 1,2-Dichloropropane • 1,1,2,2-Tetrachloroethane • 1,1,1-Trichloroethane • 1,1,2-Trichloroethane
Permit UH-1529 Part III A. 1 (a)	PGV did not follow the Standard Operating Procedures for Monitoring Well Sampling as referenced in the "Hydrologic Monitoring Program." There was no purging of MW-1. The procedures call for sampled wells to be purged of 3 to 10 times its borehole volume of standing water.
Permit UH-1529 Part III A. 1. (b)	PGV did not follow the procedures specified in the "Production and Reinjection Well Casing Monitoring Program." ***Redacted due to Confidential Business Information.***

Areas of Concern

- The calculation procedures used to report the hourly injectate rates may not accurately reflect the true hourly injectate rates. PGV calculates, and subsequently reports, the average hourly flow rate by dividing the daily total mass quantity by 24 hours. This calculation procedure results in the reporting of the average hourly flow rate as opposed to the actual hourly flow rate.

- PGV should consider including a narrative description for "large" annulus pressure changes in the Quarterly Injection Well Status Reports. Additionally, the company should develop estimates as to the acceptable pressure drops or pressure drop rates. Specifically the company should specify what pressure drop would indicate a loss of mechanical integrity during normal operations.

- The existing injectate cooling equipment does not provide sufficient cooling to maximize retention of volatile components in the sample. Injectate samples should be further cooled prior to collection. The collection sample temperature should also be recorded.

- PGV has not analyzed for all parameters specified in the permit and the state has apparently not requested this missing information. Several required chemical constituents (e.g., helium) could likely be dropped from the permit, or reduced in sampling frequency, without impacting the effectiveness of the permit. Additionally, the permit should be modified to reflect analyses for constituents in the aqueous form rather than the gaseous form (e.g., chloride rather than chlorine). PGV and the state should consider modifying the UIC permit to include appropriate chemicals for analyses.

would be modified to reflect actual chemistry in the geothermal fluids which is different from other areas

- PGV should document the basis for their assumptions of flows entering the ESRF collection pond. This information could then be used to determine if the ESRF collection pond is sized appropriately.

- The costs for plugging more than one relatively deep geothermal well could be high. There is the need to assess if the current bond for plugging and abandoning is insufficient. If additional wells are drilled, the bond for plugging and abandoning should be increased.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

Areas of Concern

- The assumptions and calculations used to estimate the quantity of H_2S released (or other reportable materials) should be included with the incident reports. Retention of this documentation at a central location within the plant will facilitate emergency prevention, preparedness, and planning as well as easier review for future incidents (if any).

- A preliminary review of the draft Emergency Response Plan (version 6.2) identified several deficiencies which should be addressed. Some of these deficiencies were also pointed out in the review of the previous version by Region 9. Generally, the plan does not provide specific information. Several terms or phrases should be defined or clarified to avoid confusion or misunderstandings if an incident occurred. The deficiencies in the draft version are identified in the ERP section of this report.

PROCESS DESCRIPTION

The PGV geothermal plant produces 25 megawatts* net of electricity using geothermal fluids. The geothermal fluid is separated into liquid (brine) and vapor (steam) phases. The brine is routed directly to the reinjection wells and a portion of the steam is routed to a steam turbine to produce electricity. The unused steam portion is combined with the spent steam exiting the turbine, and is routed to 1 of 10 Ormat Energy Conversion (OEC) units.

Paragraph redacted due to Confidential Business Information.

The following process discussion has been divided into three sections: Geothermal Production Wells, Power Plant, and Reinjection Wells. A plot plan of the facility is provided in Figure 1, and a simplified process flow diagram is provided in Figure 2.

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* *Power production has increased to 30 MW subsequent to the NEIC inspection.*

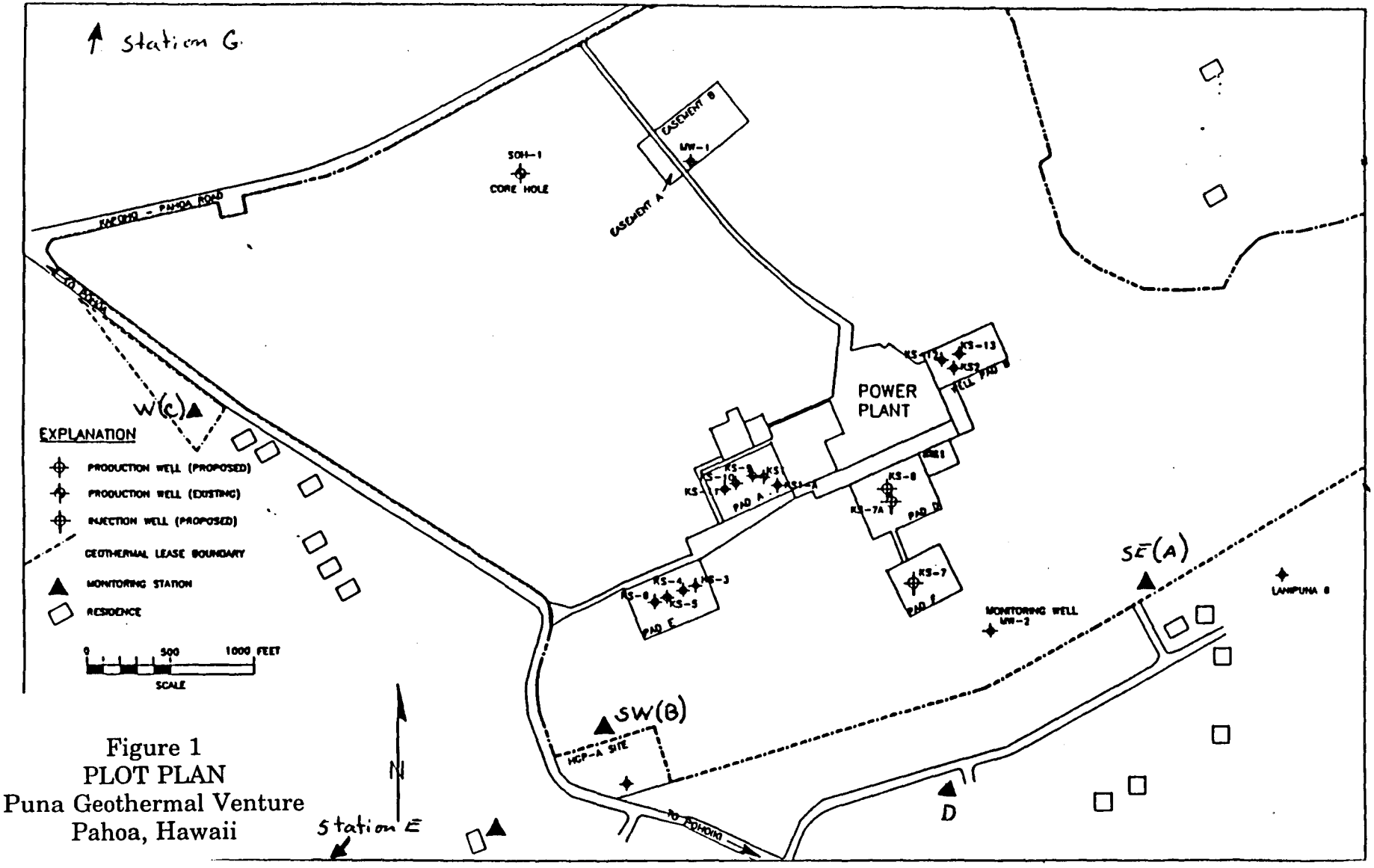

Figure 1
PLOT PLAN
Puna Geothermal Venture
Pahoa, Hawaii

Figure 2 - Process Flow Diagram - Redacted due to Confidential Business Information

GEOTHERMAL PRODUCTION WELLS

Two production wells, KS-9 and KS-10, provide all the geothermal fluid needed to operate the plant. Each well produces a two-phase flow consisting of steam and brine. Only the steam phase is used for electrical production. Operating characteristics of the production wells, as provided during the February 1995 inspection, are summarized below.

Paragraph redacted due to Confidential Business Information.

Paragraph redacted due to Confidential Business Information.

From the control loops, the geothermal fluid flows through a flash separator [photograph 1]* where the steam and brine are separated. During normal operation, the combined steam flow from KS-9 and KS-10 flash separators are routed through a common header to the power plant. Brine is

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* All photographs are found in Appendix A.

routed to the reinjection wells. ***Redacted due to Confidential Business Information.***

Paragraph redacted due to Confidential Business Information.

The caustic system consists of two caustic (sodium hydroxide) storage tanks and three caustic delivery pumps. The first tank stores strong caustic (50%) used to make the dilute caustic (15%) stored in the second tank. The concentrated caustic pump is used to transfer 50% caustic to the dilute caustic tank. The two dilute caustic pumps inject the dilute caustic solution into the pipeline leading to the rock mufflers.

Paragraph redacted due to Confidential Business Information.

Paragraph redacted due to Confidential Business Information.

A history for wells drilled at PGV is summarized in Appendix B. Wells are used either for steam production, as described above, or for reinjection discussed later in this section. The actual well usage might not be determined until well drilling and developing steps are completed. Some wells (e.g., KS-7 and KS-8) could not be used for their intended purpose due to geothermal controllability problems.

POWER PLANT

Power is produced through 10 equally-sized electrical power generators. Each generator is connected through reducing gears to two turbines, the steam turbine and the organic turbine. Geothermal steam is used directly to power the steam turbine and pressurized pentane vapor is used to power the organic turbine.

Steam flow from the common header is divided into separate lines leading to the 10 generators. A portion of the steam is directed through the steam turbine. The steam exiting the turbine is recombined with the bypassed portion and is routed to the OEC unit [Figure 2].

The OEC unit is a closed loop system using pressurized pentane vapors to power the organic turbine. ***6 lines redacted due to Confidential Business Information.***

Paragraph redacted due to Confidential Business Information.

Noncondensible gases (primarily H_2S and CO_2) removed from the 10 pentane vaporizers are collected and cooled before entering the first compressor. The ***CBI*** compressors are operated in parallel, with each having the capacity to compress the total noncondensible gas flow. Condensate removed prior to the first stage and between the first and second stages is combined with the geothermal steam condensate from the OECs.

Paragraph redacted due to Confidential Business Information.

A small quantity of inert gas accumulates in the OEC recirculating pentane system and must be periodically vented. The vapor, containing mostly pentane and nitrogen, is vented from the pentane accumulators to the Vapor Recovery Unit (VRU). The VRU uses refrigeration to condense the pentane and water form the vapor. The nitrogen and any other inert gas is released to the atmosphere. The hydrocarbon is returned to one of two pentane storage tanks. Pentane is periodically withdrawn from these tanks for makeup to the OECs.

GEOTHERMAL REINJECTION WELLS

The geothermal brine separated at the production wells, geothermal steam condensate collected from the 10 OECs and compressor knockout pots, and noncondensible gases are all recombined prior to reinjection. A corrosion inhibitor is added into this stream prior to underground injection in order to minimize corrosion in the injection wells.

The OEC steam condensate and the compressors condensate are combined, mixed with a corrosion inhibitor, and routed to one of three condensate reinjection pumps. Typically all three pumps are in operation. These pumps boost the pressure of the combined stream to avoid flashing when combined with the brine separated at the production wellheads.

The condensate reinjection pump flow passes through a pressure control valve and a mixing spool where the compressor discharge gases are added. A pipeline carries the recombined geothermal fluid to the reinjection area. At the reinjection area the flow is split with a portion routed to each reinjection well: KS-1A, KS-3, and KS-4. Each well is equipped with flow and pressure measurement for balancing well operations. The quality and quantity of fluids

injected through the reinjection wells is regulated by UIC permit UH-1529 and is discussed in the UIC portion of this report.

CLEAN AIR ACT

Discussions of air compliance issues have been divided into three sections: Wellfield, which includes productions wells, reinjection wells, and drilling activities; Power Plant, which includes those fugitive and point sources associated with power production; and Ambient Air Monitoring, which includes air quality and meteorological off-site monitoring.

WELLFIELD EMISSIONS

Wellfield emissions primarily occur during nonroutine conditions such as well drilling, flow testing, and abated well cleanout. Wellfield emissions can also occur from leaks in flanges, connections, valves, or fittings. When completed wells are not experiencing any equipment failure or malfunction, there are no wellfield emissions. At the time of the NEIC investigation, all five active wells were in normal operation.

Table 1 summarizes well blowout and geothermal release incidents which have occurred at PGV [Appendix C].* The table shows ambient H_2S concentrations resulting from those incidents (when such data were available from PGV incident reports). Three incidents have resulted in exceedances of permit limits for ambient hydrogen sulfide concentrations. These were a result of a well blowout at KS-8 and flange leaks at KS-3 and KS-8.

Permit No. P-833-1524 [Appendix D], issued by the HDOH on July 26, 1993, regulates the wellfield operations for the five geothermal wells currently

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* *Many of the readings in the PGV incident reports [Appendix C] were difficult to understand, and should be made more legible in future incident reports.*

Table 1

HYDROGEN SULFIDE RELEASE INCIDENTS
Puna Geothermal Venture
Pahoa, Hawaii

Date	Source	Incident	Mobile H_2S Concentration	Fixed Station H_2S Concen
02/21/91	KS-7	Blowout occurs during drilling due to unexpected high geothermal fluid pressures experienced at 1700 feet.		
06/11/91	KS-8	Blowout occurs during drilling due to unexpected high geothermal well pressures. Well shutin after 30-hour release.		
09/10/91	KS-3	During temperature logging, a leak occurred at the lubricator and flange. Master valve closed but leak continued until well cemented in subsequently allowing access by pump truck to kill well.		SW station - 60 ppb max, 8 ppb hr avg. HGP-A 29 ppb
08/13/92	KS-8	Initiated KS-8 flow test with 4-hr well cleanout, steam diverted to ESRF. H_2S emissions = 3.81 lb/hr		
08/13/92	KS-8	KS-8 flow test continued. Steam rate to ESRF lowered to test efficiency. Wide fluctuation in low steam flow caused large fluctuation in caustic flow. H_2S emission 5.16 lb/hr. Steam flow put in manual control.		SW station - 1 ppb hr avg. W station - 1 ppb hr avg.
08/14/92	KS-8	KS-8 flow test continued. Started OEC which reduced steam flow to ESRF from 120,000 lb/hr to 50,000 lb/hr. H_2S emission 5.75 lb/hr. Increased ESRF steam flow to maintain a minimum flow for better control.		SW station - 1-2 ppb hr avg W station - 1 ppb hr avg.
08/14/92	KS-8	Flow test continued. More OEC units brought online causing steam flow to the ESRF to go to 20,000 lb/hr. H_2S emission 7.18 lb/hr.		SE sta.- 0-2 ppb hr avg SW sta. - 0-1 ppb hr avg W sta. - 1 ppb hr avg
08/15/92	KS-8	Flow test continued. Cycling between OEC units causes low flow to ESRF. H_2S emissions 5.9 lb/hr. Caustic flow manually increased.		SE sta.- 1-3 ppb hr avg SW sta.- 1 ppb hr avg. W sta.- 0-1 ppb hr avg
08/17/92	KS-8	Flow test continued. ESRF steam shut off but leak occurred through valve without caustic sytem in operation.	48 ppb	HGPA sta-8-16 ppb hr avg
10/09/92	KS-8	Leak in general area in and around KS-8 cellar.	10 ppb to 1 ppm near cellar.	Not provided
10/13/92	KS-8	Leak on gauge line for valve near wellhead.	10 ppb at perimeter. 40 to 120 in cellar	Not provided
10/28/92	Power plant	OEC # 23 steam turbine seal maintenance resulted in leakage at seal.	20 ppb at perimeter	SW sta.- 5--6 ppb hr avg
10/28/92	Power plant	NCG compressor A leakage.	21 ppb at Gate 4.	DOH sta.- 25-39 ppb max. SW sta - 9 ppb hr avg
11/03/92	KS-8	During initial phase of KS-8 kill operation leak occurred on 3 in. flange at wellhead.	None provided	DOH Hinalo Rd sta- 672 ppb for 9 min, 150 ppb hr avg
02/08/93	KS-9	Thirty-min cleanout caused excessive emissions from the cyclonic muffler over 2- to 4-minute period. Inadequate mixing with NaOH in the flow line.	250 ppm spike	SE sta- 23 ppb hr avg
02/28/93	KS-9	Hole in lubricator caused by wire coming out of hole when a caliper tool broke off.	24 ppb spike	C sta - 7 ppb hr avg
03/01/93	KS-9	Leaking fittings above 3 in. valve on wellhead.	4-22 ppb on-site	A sta - 25 ppb alarm
05/11/93	Power plant	Power plant tripped offline causing flow to ESRF for 10- and 20-second periods.	None detected	None detected
05/14/93	KS-1	Release of H_2S from circulation wellbore fluid during plugging, abandonment operation.	None detected	SW sta- 3,4 ppb 1 hr avg, 62 ppb spike

in service. It is effective until July 1, 1995,* and specifies emission control, monitoring, and reporting requirements. Permit No. NSP 0008-01-N [Appendix E] provides similar limits for the construction of up to 14 exploratory/developmental wells which could be installed in the future. This permit was issued on June 22, 1994 and is effective until June 1, 1999. Mr. Lynn White, PGV General Manager, stated during the inspection that there is no current intent by PGV to drill additional wells, but circumstances, such as failure of an existing well, might necessitate installing additional wells.

During the NEIC investigation, the following wellfield air pollution issues were identified.

- BACT requirements for geothermal well emissions
- Required periodic geothermal resource sampling
- Special geothermal resource sample requirements

BACT for Geothermal Well Emissions

HDOH requires that Best Available Control Technology (BACT) be applied to H_2S emissions during geothermal well flow testing operations and periods of well equipment failure (special condition 13, Attachment II of permit PTO P-833-1524). However, the permit does not define BACT.

Hawaii regulation 11-60.1-1 defines BACT to be an emission limitation, which the director of HDOH determines is achievable based upon a number of factors including economics and environmental impact [Appendix F]. The regulation allows for use of technology requirements, or work practice

* PGV has applied for renewal of the permit. HDOH has not reissued the permit, however in accordance with Hawaii air regulations, the existing permit remains valid.

standards if an emissions standard is infeasible. The permit does not include an emission limitation, or any of the prescribed alternatives to an emission limitation, when it refers to BACT*.

It is also not clear if the BACT requirement applies to drilling activities (General requirement B.8 of Attachment II, NCF No. 0008-01-N states that during well blowouts, the permittee shall "immediately proceed with measures to kill or gain control of the well"). Bob Verity, PGV consultant, stated that BACT is defined prior to each well operation in the plan provided to HDLNR pursuant to HDLNR notification requirements. The HDOH permit does not state that HDLNR is responsible for approving BACT provisions. The HDOH permit should be revised to include specific BACT provisions based on Hawaii regulation 11-60.1-1.

Subsequent to the blowout of well KS-8 in June 1991, a third-party team consisting of four investigators experienced in geothermal drilling and resource issues, evaluated the adequacy of PGV's drilling and blowout prevention equipment (BOPE) and procedures. In their report [Appendix G], they determined that the blowout and subsequent release of hydrogen sulfide occurred because of shortcomings in the PGV program and not as the result of unusual or unmanageable subsurface geologic or hydrologic conditions. Their recommendations included a number of equipment and procedural changes which could be used to provide a basis for defining BACT for drilling activities at PGV (their recommendations, however, are not currently required by HDOH as BACT). On the other hand, the investigation report cautioned against agencies being too specific in specifying BOPE and casing requirements, and recommended that the operator be permitted to make judgement calls to modify the drilling operation.

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* *This is not the same definition of BACT as under the Federal regulations.*

PGV has drilled two wells, KS-9 and KS-10, subsequent to the KS-8 incident. Neither well activity resulted in emissions that exceeded the ambient permit limits of 10 ppb daily or 25 ppb hourly (see discussion below regarding ambient monitoring). There was a release of hydrogen sulfide resulting in a 23-ppb ambient hourly H_2S concentration during the abated cleanout of well KS-9 due to inadequate caustic scrubbing of noncondensible gas prior to its release from the cyclonic muffler. PGV has since modified caustic introduction to prevent future occurrences of this nature.

Paragraph redacted due to Confidential Business Information.

Table 2

KS-9 DRILLING PLAN REVIEW
Puna Geothermal Venture
Pahoa, Hawaii

1991 Investigation Recommendations	PGV 1992 Drilling Plan for KS-9
Control of Geothermal Kicks • Provide large supply of cold or cool water (<75 °F). • Provide a pump system with adequate capacity to kill a kick in a large well.	***Redacted due to Confidential Business Information.***
Blow Out Prevention Equipment • Allow for adequate mud cooler capability; larger than used on KS-8. • Ensure that pit level indicators and other monitoring readouts are located for ready observation by well driller. • Provide a low pressure burst plate on relief line. • Provide an adequate diameter choke line (4"). • Ensure that mud pumps have maximum sized pump liners. • Ensure that silencer/muffler is installed on end of choke manifold line.	***Redacted due to Confidential Business Information.***
Drilling Below 500' without BOPE • Take maximum bottom hole temperatures at every connection. • Collect and quickly conduct conductivity/ salinity analyses of water samples. • Collect cutting samples every 10' and analyze for geothermal minerals.	***Redacted due to Confidential Business Information.***
Driller Supervision/Training • Supervisory personnel should be present on rig floor during all drilling. • Tool pushers, drillers, and derrick men should be trained in use of monitoring equipment.	***Redacted due to Confidential Business Information.***

PGV responded to the recommendations made by the investigation team in a September 5, 1991 report [Appendix I]. In general, they did not agree that any of the suggestions provided by the team would have prevented the release that occurred at KS-8. They instead outlined subsequent PGV drilling program changes, which included only some of the recommendations of the investigation team. Their changes addressed actions for each of the following areas: drill casing, mud weight, supervision, training, monitoring equipment, water supply, mud system, BOPE system and wellhead design. It is not clear how drilling of wells KS-9 and KS-10 incorporated these changes. Some of the guidelines were vague and not clearly defined (e.g., the casing setting criteria, how mineralization of drill cuttings would be used in conjunction with other "criteria," and how mud weight requirements would change with depth). Other guidelines were less vague but were not specified or referenced in subsequent drilling plans (e.g., the 425 °F temperature readings for determining the top of the formation, the chain of responsibility for determining actions, and drilling monitoring alarm levels). In summary, although PGV stated that the actions they provided for in their September 5, 1991 report would more satisfactorily prevent incidents similar to KS-8 from occurring, there is a lack of documentation to show to what degree these actions were implemented in subsequent drilling at the site.

There is no reconciliation between the KS-8 1991 drill program changes, or subsequent drilling plans for KS-9. Consequently, NEIC was unable to evaluate PGV's modifications to drilling practices. The 1991 recommendation that the state of Hawaii work toward establishing drilling equipment and procedures standards has not been completed. These standards would have been helpful in this evaluation. Although the development of such standards would be likely hindered by state budget limitations, it is appropriate that HDOH and PGV develop a cost estimate and schedule for doing this work, and solicit assistance from appropriate industry groups to aid in this effort.

BECAUSE EPA DID NOT ASK NOR DID THEY DISCUSS CHANGES TO DRILLING PROGRAM!

Paragraph redacted due to Confidential Business Information.

Required Periodic Geothermal Resource Sampling

Geothermal resource sampling is required by special condition 20 in PTO P-833-1524. Geothermal condensate, steam, particulates, and gases from each production well must be tested annually for the chemical constituents specified in special condition 20. If there is more than a +/- 10% change in the hydrogen sulfide concentration of the fluid from a well, then the well must be tested semi-annually and results submitted to HDOH.

PGV stated that much of the analytical data required for the geothermal fluid is collected monthly, but has not been submitted to the HDOH in a semiannual or annual format. NEIC reviewed PGV monthly sampling [Appendix J] results. Table 3 shows reported brine and vapor hydrogen sulfide concentrations. There has been more than a +/- 10% change in the hydrogen sulfide concentration. For example, hydrogen sulfide vapor concentration at KS-10 has increased from approximately 300 ppm to greater than 500 ppm.

The analytical parameters required by condition 20 of PTO P-833-1524, and those parameters analyzed monthly by PGV in data made available at the

Table 3

HYDROGEN SULFIDE CONCENTRATION (PPM)
Puna Geothermal Venture
Pahoa, Hawaii

Month/Year	Well KS-9		Well KS-10	
	Brine	Vapor	Brine	Vapor
12/93	8.15		4.84	
01/94	11.7		6.89	
02/94		834	5.75	322
03/94	7.81	816	2.96	298
04/94	7.94	831	5.17	589
05/94	7.38	817	4.82	515
06/94	6.80	845	4.14	560
07/94	8.62			
08/94				539
09/94	7.84	821	3.24	
10/94	7.39	701	2.95	
11/94		742		

time of the NEIC inspection, are shown in Table 4. Concentration limits are not set for any of the identified parameters; however, a monitoring schedule is established. Based on the data made available during the inspection, PGV analyzed 11 of the 20 required brine parameters, and 5 of the 11 required gas phase parameters for each well. Of the parameters required for monitoring in special condition 20, there is a requir ment to monitor "NESHAP pollutants," some of which are also specified individually (e.g., mercury, benzene, etc.) in the permit. It is not clear whether the NESHAP list includes only original NESHAP predating the 1990 Clean Air Act amendments (40 CFR 61.01), or the hazardous air pollutant list promulgated pursuant as 42 USC 7412; Clean Air Act, Title I, Part A, Section 112 (as amended, 1990). It is recommended that HDOH re-examine the NESHAP requirement and specify individual NESHAP parameters likely to occur in geothermal resources, which should be monitored. At the time of the inspection, PGV had not reported results of any routine annual or semiannual resource sample analysis.

After the NEIC inspection, PGV summarized monitoring results and submitted them on June 29, 1995 to the HDOH [Appendix K]. The submittal included data which had not been reviewed or copied by NEIC during the inspection. These data were reported by PGV to be from "mixed" sources (i.e., some directly from the wells, and other from the "process" after the steam from each well was combined). Data from downstream "process" monitoring points do not meet the requirement of special condition 20. Although there were some apparent discrepancies in the summary sheets, NEIC was not able to review the supporting data in order to evaluate those discrepancies. Based on PGV's summary information for 1994, PGV analyzed 15 of the required 78 parameters at KS-9, and 37 of the required 78 parameters at KS-10. (This assumes, as stated by PGV, that total sulfur, HCl, and sulfur dioxide are either impossible to measure, or are redundant and, therefore, unnecessary.) No resource data for operations during 1993, or before, were provided.

Table 4

ANALYSES OF GEOTHERMAL FLUID PARAMETERS
REVEIWED DURING NEIC INSPECTION
Puna Geothermal Venture
Pahoa, Hawaii

Analyses Required by Permit PTO P-833-1524 Semiannual/Annual and Abated Well Cleanout	Monthly Analyses by PGV for 1993/94	Abated Well Cleanout* Analyses by PGV in 1993
Steam Condensate/Total Steam/Total Brine	Brine	Brine
Benzene		Benzene
Ammonia (total)		
Arsenic		
Lead		
Cadmium		
Bicarbonate and carbonate	Total alkalinity	Total alkalinity
Sulfates	Sulfates	Sulfates
Chlorides	Chlorides	Chlorides
Nitrates		
Boron (total)	Boron	Boron
Hydrogen Sulfide (total)	Hydrogen sulfide	Hydrogen sulfide
Fluorides (total)	Fluorides	Fluoride
Total sulfur		
Mercury (total)		
pH	pH	pH
Total dissolved solids	Total dissolved solids	Total dissolved solids
Total suspended solids	Total suspended solids	Total suspended solids
Percent noncondensibiles	Percent noncondensibiles	Percent noncondensibiles
Hydrogen Chloride		
Other NESHAPs pollutants		
Gas Phase	Vapor	Vapor
Benzene	Benzene	Benzene
Hydrogen sulfide	Hydrogen sulfide	Hydrogen sulfide
Ammonia	Ammonia	Ammonia
Radon 222 and daughters		
Mercury vapor		
Methane	Methane	Methane
Nonmethane hydrocarbons		Nonmethane hydrocarbons
Carbon dioxide		
Sulfur dioxide		
Hydrogen chloride		
Other NESHAPs		GC/MS scan provided

* *Flow testing and abated well cleanout were conducted for wells KS-9 and KS-10 in 1993.*

Special Geothermal Resource Sample Requirements

During well drilling, abated well cleanout, and flow testing, PGV is required by special condition 20 of the permit to test for the same chemical constituents discussed in the section above.

NEIC reviewed test results provided for the abated well cleanout of wells KS-9 and KS-10 performed in 1993. Table 4 shows analyses required in special condition 20 of the permit and the analyses conducted by PGV. PGV analyzed 11 of the 20 required condensate parameters and 5 of the 11 vapor parameters. Mr. Paul Hirtz, PGV consultant, stated that although other specified constituents are not individually indicated in the reports, the HDOH was provided a copy of the GC/MS strip charts along with the report. Also, in accordance with special condition 29 of Attachment II, PTO P-833-1524 effective in 1993, the HDOH required, and was provided with, a test plan for all tests that were conducted in conjunction with those activities. Consequently, HDOH had the opportunity to disapprove the proposed analysis if the Agency did not feel the plan met the permit requirements. In their June 1995 submittal to HDOH after the NEIC inspection, PGV reported values for 37 of the 39 required parameters for KS-9, and 37 of 39 parameters for KS-10. (Again, this assumes HCl, SO_2, and total sulfur are either impossible to measure, or can be calculated from other data.)

POWER PLANT EMISSIONS

The primary emissions from the power plant are hydrogen sulfide and pentane, both of which can result from various emission sources. Fugitive geothermal gas emissions containing hydrogen sulfide can occur from leaks in power plant components such as compressors, pumps, pipe fittings, valves, etc. Treated geothermal gas emissions containing hydrogen sulfide are released

from the ESRF when there is overpressurization in the main geothermal steam supply line to the power plant. Treated geothermal gas emissions containing hydrogen sulfide are released from the Sulfa-Treat system which receives vent gas from the turbine seals. Fugitive pentane emissions can occur from leaks in the Ormat units due to leaks in flanges, fittings, valves, and pumps. Treated pentane emissions occur from the vapor recovery unit which treats gases vented from the pentane condenser.

Power plant emissions are regulated under HDOH permit PTO No. P-834-1582. The permit, dated September 23, 1993, is effective until July 1, 1995* and specifies emission control, monitoring, and reporting requirements.

Air pollution issues identified by NEIC for power plant operations are associated with:

- Fugitive emissions containing hydrogen sulfide
- ESRF system design
- Spare geothermal condensate return pump
- Pentane emissions
- Fugitive pentane emission monitoring

Fugitive Emissions Containing Hydrogen Sulfide

Hydrogen sulfide emissions are limited by special condition 20 of Attachment II, PTO No. P-834-1582. Condition 20 limits the hydrogen sulfide emissions to less than 1 lb/day. PGV is not required by the permit to monitor or otherwise calculate the actual release rate of hydrogen sulfide. PGV stated

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* *PGV has applied for renewal of the permit. HDOH has not reissued the permit; however, in accordance with Hawaii air regulations, the existing permit remains valid.*

that although they do not calculate a daily release rate they have an extensive in-plant and plant peripheral hydrogen sulfide sensing system. They reported that when any of these monitors sense a concentration of hydrogen sulfide greater than 10 ppm at internal monitor locations, or 5 ppm at peripheral process locations, an alarm is sounded which is immediately responded to by plant operators. Using hand-held hydrogen sulfide detectors, operating personnel reportedly then locate the source of the leak which is repaired immediately.

NEIC conducted an inspection of plant areas that are expected to be more prone to leakage, such as equipment with moving parts with vibrations that could result in line or fitting separations. Where hydrogen sulfide odors were detected, a hand-held Omni 4000 hydrogen sulfide analyzer was used to "sniff" the area to determine the magnitude of the leak. Only very slight, nonpersistent odors were detected in areas near the noncondensible compressors, production wellheads, and Sulfa-Treat discharge. No measurable hydrogen sulfide was detected (lower detection level 1 ppm).

NEIC reviewed the PGV system for recording in-plant hydrogen sulfide analyzer information. Figure 3 shows the location of the monitors. Concentrations are sensed at the monitor location and transmitted to the alarm system, strip charts, and plant computer located in the control room. The computer does not maintain alarm or hydrogen sulfide concentration history for any of the monitor locations beyond 90 days, maximum. There are also no data available for tracking online operating times of each individual monitor. PGV operating personnel stated that in-plant hydrogen sulfide alarms occur approximately six times per year and are of variable duration. They are not reported to HDOH. Dave Berube, former plant manager, stated that there are no particular plant areas that have been found to be more prone to hydrogen sulfide leakage than other areas.

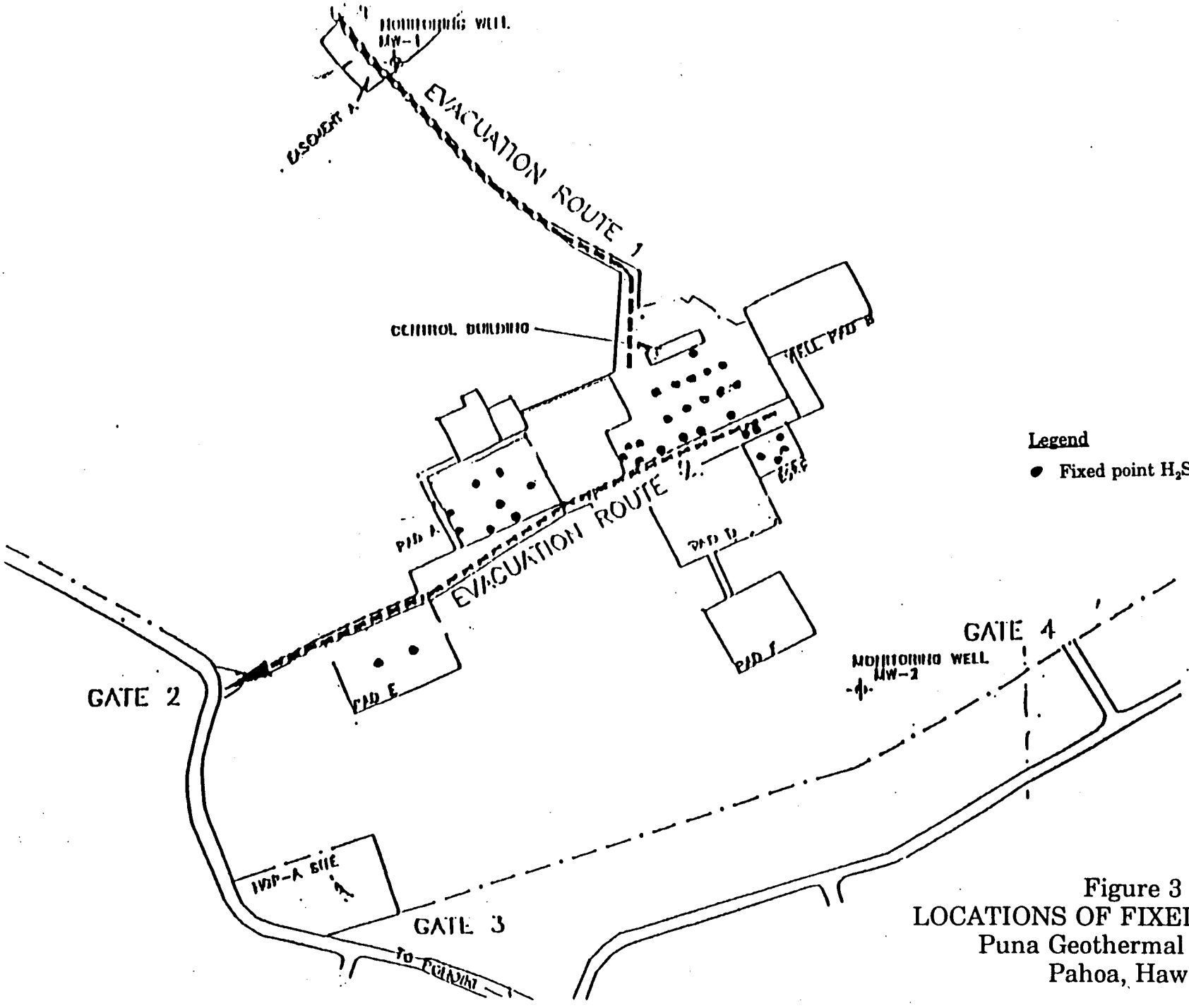

Figure 3
LOCATIONS OF FIXED MONITORS
Puna Geothermal Venture
Pahoa, Hawaii

ESRF System Design

NEIC examined the incident reports for the ESRF since 1992. Emission data from those reports are summarized in Table 1. The incident reports stated that excess emissions occurred in 1992 at low steam flow conditions (less than about 120,000 lbs/hr) due to poor controllability. ***6 line redacted due to Confidential Business Information.***

Paragraph redacted due to Confidential Business Information.

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Table 5 - Two Phase Engineering and Research ESRF Recommendations

Redacted due to Confidential Business Information

Spare Geothermal Condensate Return Pump

An installed spare geothermal fluid pump is required by special condition 6 of Attachment II, PTO No. P-834-1582. Mr. Bruce Davis, PGV (Constellation Energy) attorney, stated that PGV interpreted this condition in the permit to apply to only the brine return pumps, which are no longer necessary because PGV relies on the pressure in the geothermal fluid for reinjection of the brine. PGV does not believe that the condensate pumps that transfer geothermal condensate from the power plant are regulated by this condition of the permit. Mr. Peter Arthur, PGV, stated that a spare condensate pump is kept, however, in the maintenance shop located adjacent to the pump installation.

NEIC inspected the condensate reinjection pumps 40-P-47A, B, and C, which were all operating at the time of the inspection. Geothermal condensate represents a significant part of the liquid fluid which must be reinjected. It contains hydrogen sulfide concentrations comparable to those found in the brine removed at the wellhead. The installed spare geothermal fluid return capacity requirements should apply to any pumps used for reinjection of geothermal fluids, and whose malfunction may necessitate that geothermal steam be released directly to the atmosphere.

Total Pentane Emissions

Pentane emissions are limited by special conditions 2 and 3 of Attachment II of PTO No. P-834-1582. Total pentane emissions from all 10 Ormat Energy Converters (OECs), including fugitive leaks, are limited to less than 200 pounds per day. PGV is required to report the amount of pentane released each quarter. PGV calculates quarterly pentane losses by taking the difference between the beginning and ending inventories of the two pentane

storage tanks (tanks 40-V-42-A and B) plus any purchases. This calculation method is the most appropriate procedure in determining the actual pentane losses.

NEIC reviewed PGV's total reported pentane emissions for 1994. PGV inventory records of 1994 quarterly pentane losses, as reported to the Department of Health, are summarized below:

Quarter	Pentane Emission in Pounds
1st	9,472
2nd	11,680
3rd	11,449
4th	9,125

Because inventory records are reconciled only on a quarterly basis, it is not possible to determine if the 200-pound-per-day limit has been exceeded, unless greater than 18,000 pounds (200 pounds/day x 90 days) are reported for a quarterly loss.

Based on the lack of any reported pentane spills and the extremely low fugitive leak rate (discussed below), reported quarterly pentane losses cannot be accounted for through fugitive losses.* A combination of factors likely contribute to the reported quarterly losses, as identified below:

- PGV has reported incorrect or incomplete monitoring results based on sampling procedures outlined in the permit. These issues are discussed later in this section.

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* *Fugitive losses are the combined pentane emissions which occur from any seal, flange valve, or other fugitive emission point.*

- Not all fugitive emission points are included in the PGV monitoring program. This issue is discussed later.

- Other sources, such as the noncondensible gas vent for the vapor recovery unit, have not been included in the monitoring program.

The vapor recovery unit (VRU) treats gases vented from the pentane accumulator. Using a refrigeration system, the VRU condenses pentane, which is returned to the pentane storage tanks, and discharges noncondensible gases. Records are not maintained or required to be maintained as to the quantity of pentane condensed and returned to storage. Additionally, there are no requirements to quantify the amount of pentane released through the noncondensible gas vent stack. Records are, however, maintained for the quantity of pentane transferred from the pentane tanks to the OECs. These pentane transfer records are required by condition 5 Attachment II of Permit P-834-1582. Pentane transfer records were provided for the first and second quarters of 1994, but not included in the third and fourth quarterly reports submitted to HDOH.

Review of the quarterly pentane transfer records show large variations in the amount of pentane transferred to the various OECs. The amount of pentane transferred to the individual OECs for the first and second quarters is summarized in Table 6. The quarterly transfers range from about 250 to 2,800 gallons. Typically, transfer quantities are several hundred gallons; however, a single daily transfer of 2,774 pounds was reported on May 18, 1994 to OEC 23. Large single transfers, or large cumulative quarterly transfers, may be indicative of problems within particular OECs, or may correspond to maintenance activities. Information is not recorded as to why the transfers were necessary.

Table 6

FIRST AND SECOND QUARTER 1994 PENTANE TRANSFERS TO OECS
Puna Geothermal Venture
Pahoa, Hawaii

OEC Number	1st Quarter Transfers (gallons)	2nd Quarter Transfers (gallons)
11	3,902	617
12	266	252
13	530	505
14	1,176	930
15	786	199
21	1,505	1,348
22	2,648	478
23	767	2,774
24	2,820	1,670
25	2,146	267

Explanations for large pentane transfers should be included on the quarterly reports. This information would provide operational history of the individual OECs and may be useful in scheduling preventative maintenance activities, such as increased frequency monitoring for an OEC requiring frequent pentane transfers.

Pentane Fugitive Emission Monitoring

Fugitive pentane emissions are limited by special condition 2 of Attachment II of PTO No. P-834-1582. Fugitive emissions shall not exceed 0.4 lbs/hr or 1,000 ppm from any seal, flange, valve, or other fugitive point when measured from a distance of 2 inches. All fugitive emission points are to be measured on a weekly basis. Quarterly reports submitted to the Department of Health are required to:

- Identify the number of fugitive emission points exceeding the 1,000 ppm limit

- Quantify the amount of pentane released for the quarter

- Provide information on the date and amount of pentane transferred to and from each OEC module

As part of the PGV fugitive pentane monitoring, NEIC reviewed the 1994 quarterly reports submitted to the Department of Health [Appendix M], evaluated the PGV fugitive emission monitoring plan, and monitored approximately 50 fugitive emission points.

PGV has established a fugitive emission monitoring program requiring the operators to monitor on a weekly basis each of the components listed on

the fugitive emissions monitoring records. Separate monitoring records [Appendix N] have been prepared for the OECs and pentane storage tanks. Fifty-one components are listed on the OEC monitoring record. (Because each of the OECs are identical in construction, a single list can be duplicated for each of the 10 OECs.) Twenty-seven components are listed on the "storage tank and header" monitoring record.

The PGV monitoring and reporting procedures require that components be monitored in accordance with the permit requirements: specifically, that monitoring be conducted at 2 inches from the component. The PGV procedures state, "Sniff at the listed source point (sample as close as possible). If a reading of 1,000 ppm is indicated, move the probe back to 2 inches from the source point and do a second reading." The reading taken at the 2-inch distance is recorded on the log. PGV uses a Bacharach TLV instrument to conduct all fugitive monitoring, and facility personnel are responsible for monitoring process units assigned to their shift.

The 1994 monitoring records indicate that no leaking components (1,000 ppm at 2 inches) were detected. However, numerous leaks have been recorded when the initial monitoring is conducted "as close as possible" (at the component interface). Component monitoring at a point other than the component interface dramatically reduces the effectiveness and purpose of fugitive emission monitoring. The EPA-accepted fugitive monitoring procedures* require monitoring at the component interface.

NEIC conducted fugitive monitoring at OEC 24 and at the pentane storage tanks. NEIC monitoring was performed using a Foxboro OVA-108. The instrument was calibrated prior to use with zero air, 1,000 ppm, and

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* Method 21, as referenced in Appendix A 40 CFR part 60.

10,000 ppm gas standards. OEC 24 and the pentane storage tanks were selected for monitoring because these areas had been monitored earlier in the day by PGV personnel. (The time difference between the NEIC and PGV monitoring should have little impact on monitoring results.) NEIC monitoring was conducted at both the component interface and at a distance of approximately 2 inches.

Different fugitive monitoring results were obtained from the PGV and NEIC sampling. PGV fugitive sampling [Appendix N] reported no monitoring reading above background levels for any components when monitoring at the interface. NEIC monitoring at the interface identified seven components [Table 7] with emissions greater than background levels, of which four were leaking at greater than 1,000 ppm. Monitoring readings for these four valves were reduced to less than 1,000 ppm when the monitoring distance was increased to 2 inches. NEIC sampling confirmed that no reading above background levels were detected at the pentane storage tanks.

The difference in monitoring results may be explained by either of, or a combination of, the two factors identified below:

- The response time of monitoring equipment varied. The OVA instrument responds very quickly to changes in pentane concentrations. The Bacharach instrument required a minute or longer before leveling out at constant readings.

- The NEIC monitoring procedures were perhaps more diligently performed than those used by PGV personnel.

Table 7

NEIC FUGITIVE MONITORING RESULTS OEC NO. 24
Puna Geothermal Venture
Pahoa, Hawaii

PGV Location Number	Description	NEIC Interface Reading (ppm)	NEIC 2-Inch Reading* (ppm)	PGV 2-Inch Reading* (ppm)
2	Feed pump isolation valve	10,000	0	0
4**	Plug in pump filter cover	2,000	300	0
7**	Pump discharge pump valve	300	30	0
26	Bypass valve flange	200	0	0
30	Preheated discharge flange	100	0	0
35	Control panel vaporizer isolation valve	7,000	75	0
50	Turbine drain valve	4,000	10	0

* *2-inch distance specified in permit*
** *Component not identified on listing. Number corresponds to nearest available component.*

After NEIC personnel pointed out the specific location of the emission source, PGV personnel were able to verify magnitude and location of the leak. The NEIC OVA instrument reading would stabilize at the maximum reading within 5 seconds. At leak concentrations greater than 1,000 ppm, the PGV Bacharach instrument would require up to 1 minute before stabilizing at the maximum concentration.

NEIC fugitive monitoring of OEC 24 required approximately 1 hour. NEIC did not monitor 12 components in OEC 24, which required special safety or hoisting equipment to reach inaccessible components. PGV personnel were reportedly able to complete monitoring within 20 minutes including the inaccessible components.

After observing NEIC monitoring procedures, PGV operators had the opportunity to use the NEIC monitoring equipment. PGV personnel indicated that after seeing the difference in the two instruments, that future monitoring would be conducted more deliberately to allow for the slower response of their instrument.

All potential fugitive emission components are not currently monitored by PGV. At least two components in OEC 24 (plug-in pump filter cover and the check valve on the pump discharge), and none of the components on the air coolers (neither the valves nor the fin fan plugs) are monitored on a regular basis. In a letter dated March 10, 1995 [Appendix O], PGV stated that these components had been monitored during the initial startup in 1993, and no leaks had been found and, therefore, PGV determined that these points were not "fugitive pentane points." The PGV interpretation is inconsistent with other fugitive monitoring programs inspected by NEIC.

The PGV calibration gas standards do not meet the requirements specified in Method 21 of 40 CFR Part 60 Appendix A. The PGV calibration gas standards do not have a specified shelf life, as required in Appendix A Method 21 of 40 CFR Part 60. The current PGV calibration gas standards were purchased with the Bacharach instrument in 1993. Typical gas standards have a shelf life of 1 year.

AMBIENT AIR MONITORING SYSTEM

The ambient air monitoring system for the PGV facility consists of three stations operated by PGV and four* stations operated by HDOH. The three

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* *Subsequent to the NEIC inspection, one monitoring station (station F) has been shutdown pending relocation.*

PGV stations [photographs 4 and 5]* have been an ongoing requirement of the wellfield and power plant air permits. The HDOH stations [photographs 6 and 7] were installed by the state in order to supplement and provide an independent check of the PGV monitoring system. Figure 1 shows the location of the six stations.

The three PGV stations are referred to in the PGV monthly reports as Southeast, Southwest, and West stations (designations for these stations are more currently referred to in other documents as stations A, B, and C, respectively). The location of the W (C) station is proximate to residential areas, although it is not in a prevailing downwind direction from PGV facilities. The SW (B) and SE (A) stations are located in the prevailing downwind and topographically downgradient directions from the PGV property boundary, respectively. All three monitoring sites are instrumented with similar systems for monitoring ambient levels of H_2S and local meteorology (wind speed, wind direction, sigma theta, ambient temperature, ambient relative humidity, and precipitation). Two high-volume PM_{10} samplers are also located at the SW (B) station.

The three HDOH stations (D, E, and G) also have continuous H_2S analyzers and meteorological monitors. They are operated and maintained by the HDOH's Clean Air Branch. Station D is approximately 500 feet south of the PGV facility, in the prevailing downwind direction. Station E is almost 6,000 feet southwest. Station G is located about 6,000 feet northwest of PGV facilities.

Ambient air monitoring data for the PGV and HDOH stations are recorded in a number of computer and direct readout systems. The primary

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* *Photographs have been included for only two of the monitoring stations.*

method of data acquisition for the PGV data is by telephone to a computer located in the PGV control room. Enviro/Loggers are also located at each station along with a complementary system of strip chart recorders. Similar provisions for readout at the HDOH stations are made. Contemporaneous HDOH data also can be accessed from the PGV control room, but it is not summarized in a computer data base.

Ambient air monitoring requirements have been specified in previous and current air permits for the power plant and wellfield. Requirements for the three PGV monitoring stations are currently stated in special condition 10 of Attachment II, PTO No. P-834-1582, and special condition 5 of Attachment II, PTO No. P-833-1524. Air quality and meteorological data must be summarized and submitted monthly in writing to the HDOH. The combined emissions of hydrogen sulfide from the power plant and the associated wellfield, including periods of equipment failure or malfunctions are not allowed to cause or contribute to an exceedance of the H_2S ambient level of 10 ppb on a 24-hour rolling average or 25 ppb on a 1-hour average at or beyond the project boundary (special condition 23, Attachment II, PTO No. P-833-1524). During the 31-hour KS-8 blowdown, there were exceedances of both the 1-hour and the rolling 24-hour limitations. In addition, there have been two other incidents of exceedances of the 1-hour standard, both associated with leaks from wellhead flanges, as shown in Table 1.

NEIC reviewed monthly hydrogen sulfide reports maintained by PGV. The monthly reports provide hour-by-hour readings for required ambient air parameters [Appendix P]. They do not summarize analyzer online times/ reliability or provide analyses of H_2S and meteorological monitoring results. Data on trends and overall project impacts are difficult to extract. A summary of data for the last 6 months of 1994, prepared by NEIC, is provided in Table 8. The average daily hydrogen sulfide concentration at each station was

Table 8

PGV H_2S AMBIENT MONITOR SUMMARY DATA
Puna Geothermal Venture
Pahoa, Hawaii

	07/94	08/94	09/94	10/94	11/94	12/94	Total 6-month Period
W (C) Station							
Average daily H_2S concentration (ppb)	0.6	0.9	1.6	1.4	NA*	1.2	1.1
Maximum daily H_2S concentration (ppb)	5.0	3.1	3.8	3.1	NA	3.6	5.0
Percent H_2S analyzer online time	98.2	99.2	89.4	87.6	0	7.4	63.6
Number days with negative average concentrations	3	0	0	0	NA	NA	3
SE (A) Station							
Average daily H_2S concentration (ppb)	0.7	1.2	1.0	1.0	1.7	1.2	1.1
Maximum daily H_2S concentration (ppb)	2.0	3.4	4.3	5.1	4.4	3.8	5.1
Percent H_2S analyzer online time	99.0	99.4	93.5	98.3	97.8	99.3	97.9
Number days with negative average H_2S concentrations	4	0	4	4	0	2	16
SW (B) Station							
Average daily H_2S concentration (ppb)	1.2	1.0	0.8	1.2	1.3	0.9	1.1
Maximum daily H_2S concentration (ppb)	2.9	3.8	3.1	3.0	12.2**	6.4	12.2
Percent H_2S analyzer online time	98.9	98.6	95.1	98.7	92.8	99.6	97.5
Number days with negative average H_2S readings	0	0	0	0	0	1	1

* *Not analyzed - analyzer down for repair*
** *Three hourly readings following calibration exceeded 10 ppb on November 30, 1994.*

1.1 ppb. The highest maximum concentration was 12.2 ppb recorded at the SW (B) station in November. The overall reliability (online time) of the hydrogen sulfide analyzers was 86%, due primarily to the W (C) station analyzer being out of service for 2 months. The analyzer at the SE (A) station had an abnormally large amount of days with negative hydrogen sulfide concentrations (16), almost 10% of the 6-month period. Negative values were not explained by PGV. There were no exceedances of the ambient concentration limits, and PGV reported no H_2S release incidents for the period.

Air monitoring issues identified by NEIC during the site investigation involved:

- Unresolved items from the 1991 KS-8 incident investigation
- Calibration time periods for hydrogen sulfide monitors
- Spare hydrogen sulfide analyzer
- Hydrogen sulfide/meteorological data summaries

Unresolved Items from the 1991 KS-8 Incident Investigation

An investigation of air monitoring issues was conducted after the unplanned venting incident involving KS-8. The investigation was conducted as part of element III of the Geothermal Action Plan by the state of Hawaii. It was conducted by an independent investigative team consisting of Robert L. Reynolds, Lake County Air Quality Management District, California; and Dr. Wilson B. Goddard, Goddard and Goddard Engineering, also of California. The team reviewed a number of air issues and made several recommendations regarding the ambient air program [Appendix Q]. Although a number of the recommendations made were adopted, there are some unresolved issues from that work which merit further consideration.

The investigators recommended that the air monitoring systems should be unified into a single, comprehensive program, managed and audited by the state with input from PGV and the community. This recommendation still has merit and would ensure uniformity in meeting quality assurance requirements between the existing PGV and HDOH monitoring systems. It would also promote the integration of data from all monitoring systems into a common data management and summary report system. HDOH and PGV should evaluate costs and time frames for accomplishing this objective.

Calibration Time Periods for Hydrogen Sulfide Monitors

PGV calibrates all three hydrogen sulfide monitors during the 12 midnight to 1 a.m. time period. No PGV monitoring of ambient air hydrogen sulfide concentrations occurs during that 1-hour time period. It would be advisable to stagger the calibration period for these monitors so that at least two monitors will be in operation at all times.

Spare Hydrogen Sulfide Analyzer

PGV maintains some spare parts on-site for hydrogen sulfide analyzers; however, there is no spare analyzer. During the NEIC investigation, PGV air monitoring consultant, Kim Borne, was questioned about the H_2S analyzer reading fluctuations that were occurring at the SE (A) station analyzer. He replied that the analyzer was probably in need of some repair but, due to lead times, was not to be taken out of service in the near future. In addition, the W (C) station analyzer underwent a 2-month outage for repairs, substantially exceeding the 4- to 5-day repair period that was initially anticipated. The purchase of a spare hydrogen analyzer would significantly improve instrument availability.

Hydrogen Sulfide Data Summaries

Monthly ambient air monitoring data summaries are required by the air permits for the wellfield and power plant. The requirement for the data summaries are not further defined in the permit. PGV includes hour-by-hour data summaries in their monthly reports. No summary information on past instrument readings is provided. No information is included on analyzer online time in the monthly report.

Data collected from the HDOH monitor locations are not summarized by PGV. The permit does not require HDOH data to be included in the PGV monthly reports. HDOH is reportedly working on recording analyzer data in a data logger to better integrate all ambient monitoring data, but it is not clear when this task will be completed.

Several reporting changes can be made to improve ambient air summary data and data usefulness for the PGV facility.

- Ambient air and meteorological data from the HDOH monitoring stations should be included in the PGV monthly reports to make the reports more comprehensive.

- Data summaries should be included for each hydrogen sulfide analyzer location to show dates, durations, and likely causes of past hydrogen sulfide readings from the start of the project. Trends and correlations with meteorological conditions can then be conducted. Wind roses can also be prepared.

- Data should be included for each hydrogen sulfide analyzer to show availability and online time percentages of the start of the

project. Additionally, information regarding daily average, daily maximum, and list of permit limit exceedances should be included with the summary.

SUMMARY OF FINDINGS

Areas of Noncompliance

Permit P-833-1524 Attachment II, Condition 20	Semiannual sampling and reporting of the geothermal resource has not been performed for all required parameters. No annual or semiannual resource testing, while operating under normal conditions, was provided to HDOH, prior to 1995. After the NEIC inspection, PGV reported 1994 results compiled from various test locations. NEIC determined that 15 of the required 78 parameters were validly reported for well KS-9, and 37 of 78 for well KS-10. This did not include the three parameters that PGV reported were impossible to monitor, or were redundant with other parameters.
Permit P-834-1582 Attachment II, Condition 5	PGV does not have an installed spare condensate pump. A spare pump is kept in an adjacent warehouse which does not allow it to be utilized immediately upon identification of a malfunction of one of the three operating pumps.
Permit P-834-1582 Attachment II, Condition 10	Air quality and meteorological data from the ambient monitoring stations are not summarized in the monthly reports provided to HDOH.
Permit P-834-1582 Attachment II, Condition 2	Some fugitive emission points are not monitored on a weekly basis. Potential fugitive emission points on the fan coolers and OECs have not been monitored since startup of the plant.

Permit P-834-1582 Attachment II, Condition 5	Pentane transfer records were not included with the third and fourth 1994 quarterly reports.

Areas of Concern

- Not all National Emission Standards for Hazardous Air Pollutants (NESHAP) pollutants required to be monitored by the permit are present in the geothermal fluids. Hawaii Department of Health (HDOH) should require sampling of only those NESHAP pollutants which are specifically of interest [PTO P-833-1524, Attachment II, Condition 20].

- HDOH requires that Best Available Control Technology (BACT) be used during periods of well equipment failure or malfunction (Permit P-833-1524 and Permit P-834-1592), but does not define BACT in the permits. HDOH should also clarify whether or not BACT requirements apply to well drilling operations. If HDOH intends for those practices described in the drill plans [which are to be approved by the Hawaii Department of Land and Natural Resources (HDLNR)] to constitute BACT then this fact should be made clear in the permit [PTO P-833-1524, Attachment II, Condition 13].

- Drilling plans prepared after the 1991 KS-8 well incident do not address all recommendations made in independent investigations, or investigations by PGV, subsequent to that incident. These include provisions for adequate kill fluid temperatures and quantities, maximum-sized mud pump liners, and weight criteria. Also there is no apparent written requirement in the drill plan for the addition of lime to the recirculating wellbore fluids. HDOH should review

Where in the report by Independent Investigation team do they mention lime? ?

recommendations made in the 1991 investigation, and PGV's response to those recommendations, as well as drill mud lime requirements to ensure that all necessary precautions are being taken.

- There are limited means to verify compliance with the plant-wide 200 pounds per day pentane emission limit. Pentane inventory levels are reconciled only on a quarterly basis and, therefore, daily exceedances can only be confirmed if the total emissions for the quarter exceed 18,000 pounds (90 days per quarter x 200 pounds per day), or if there is a report of a catastrophic release [PTO P-834-1524, Attachment II, Condition 3].

- The permit limitation of fugitive hydrogen sulfide emissions to less than 1 lb/hr is unmeasurable and, therefore, unenforceable. An option to addressing fugitive hydrogen sulfide emissions is to impose additional requirements on PGV's existing in-plant hydrogen sulfide monitoring system. These requirements could address minimum allowable monitor downtime, monitor calibration and identification of plant areas or equipment where repetitive leaks occur [PTO P-834-1524, Attachment II, Condition 20].

- The Emergency Steam Relief Facility (ESRF) design, modifications, and consultant recommendations, and PGV's response to these recommendations and the related NEIC evaluation, should be reviewed to ensure that the 1992 ESRF problems have been adequately addressed. NEIC's evaluation indicates that there are still potential problems.

- Explanations for large pentane transfers should be included on the quarterly air reports. This information would provide operational

history of the individual OECs and could be useful in scheduling preventative maintenance activities, such as increased frequency monitoring for OEC requiring frequent pentane transfers [PTO P-834-1524, Attachment II, Condition 5].

- The noncondensible gas vent from the Vapor Recovery Unit (VRU) should be included in the volatile organic compounds (VOC) monitoring program. Monitoring readings may demonstrate that this vent stack is a significant source for pentane losses.

- Fugitive pentane monitoring at a distance of 2 inches, as required by the permit, is not appropriate. The facility has not identified any leaking components since the program was initiated. NEIC identified four components leaking at greater than 1,000 ppm when measured at the interface; however, when the monitoring distance was increased to 2 inches, the readings dropped below the 1,000 ppm limit specified in the permit. The EPA approved fugitive monitoring method, Method 21 Appendix A of CFR 40 Part 60, requires that fugitive monitoring be conducted at the component interface [PTO P-834-1524, Attachment II, Condition 2].

- The number of components identified by NEIC to be leaking, at levels above background, is greater than that identified by PGV monitoring. NEIC identified seven components leaking at greater than 100 ppm of which four were leaking at greater than 1,000 ppm when monitoring at the component interface. Previous monitoring at the component interface, in the same area, by PGV personnel identified only one leaking component at a concentration of 100 ppm. Due to the slower response time of the PGV monitoring equipment, PGV operators will

need to be more deliberate while monitoring potential fugitive emission sources.

- The fugitive monitoring calibration gas used by PGV did not display a manufacture or expiration date. The approved fugitive monitoring method, Method 21 Appendix A of CFR 40 Part 60, requires that calibration gases display a manufacture date.

- Hydrogen sulfide and meteorological monitoring data should be reviewed, evaluated, and summarized on the required reports. Currently, all the monitoring data is supplied without summary or reporting of upset conditions. Combining HDOH and PGV monitoring data into a single program would allow for a comprehensive evaluation of all available data.

- The online time for the three PGV-operated ambient air monitors is only 86% for the last 6 months. The west air monitor was the least reliable and was only operational for 64% of the time. The PGV should purchase a spare H_2S analyzer to eliminate equipment downtime gaps which have occurred in the past monitoring periods.

- PGV should stagger the calibration period for the H_2S analyzers so that at least two analyzers are in operation at all times.

UNDERGROUND INJECTION CONTROL

The underground reinjection of the used geothermal fluid is regulated by the conditions specified in the UIC permit Number UH-1529 [Appendix R]. The permit limits the reinjection quantity and also establishes operating conditions and identifies monitoring/reporting requirements. The permit regulates reinjection activities for three wells, KS-1A, KS-3, and KS-4.

As part of the inspection, Regional and NEIC inspectors examined the injection and production wells, three groundwater monitoring wells, the emergency steam release system, and the mud pits. Samples were collected from the recombined geothermal injectate flow and groundwater monitoring wells, MW-1 and MW-2. Sampling analytical results are presented in Appendix S.

This portion of the report is divided into four sections: the injection wells, monitoring wells, emergency steam relief system, and the mud pits.

INJECTION WELLS

Quantity

The permit limits the quantity of geothermal injectate to approximately 675,000 lbs/hour. The injectate is made of four primary streams: steam condensate, brine, supplemental water, and total noncondensible gases. Stormwater collected in the ESRF pit is also reinjected and included on the monthly UIC reports. The permit estimates the injectate composition as follows:

Source	Approximate Flow (lbs/hr)
Steam condensate	505,816
Brine	128,250
Supplemental water	39,751
Total noncondensible gases	1,183

PGV submitted a letter [Appendix T] on September 15, 1994 to the HDOH indicating that the facility had exceeded the 675,000 lbs/hr limitation. The reported dates and rates for the exceedances are listed below.

Date	Reported Flow (lbs/hr)
090/8/94	707,000
09/09/94	752,000
09/10/94	753,000
09/11/94	731,000
09/12/94	752,000

A review of the records indicate that on at least five other dates,* after September 12, 1994, the 675,000-lbs/hr limit was exceeded. These exceedances were not reported to HDOH until December 22, 1994 with the submittal of the Quarterly Injection Well Status Report. PGV personnel reported that the HDOH had granted permission for injectate rates greater than 675,000 lbs/hr during the telephone notification of the first five exceedances. Documentation of this could not be provided by PGV. [May be additional violations, have not been provided with the fourth quarter 1994 report or reports.]

PGV submitted a UIC permit revision request to the HDOH on May 9, 1994 requesting a higher injection rate allowance. The HDOH is currently reviewing the permit revision. On November 7, 1994 HDOH issued a letter

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* *Subsequent to the NEIC inspection, the HDOH UIC program provided information that the 675,000 lbs/hr limit had been exceeded on 13 other dates after September 12, 1994.*

which granted an "interim increase" in the injection quantity and rate from 675,000 lbs/hr to 1,111,800 lbs/hr. This "interim increase" authorized increased reinjection until February 28, 1995. This "interim increase" has subsequently been extended to May 31, 1995, then to August 31, 1995, then to December 31, 1995, and is currently authorized until April 20, 1996.

The calculation procedures used to report the hourly injectate rates may not accurately reflect the true hourly injectate rates. The monthly and quarterly UIC data reports list daily injection rate totals, as required by the permit. However, the permit limits the injection rate based on an hourly limit, specifically 675,000 lbs/hr. PGV calculates, and subsequently reports, the average hourly flow rate by dividing the daily total mass quantity by 24 hours. This calculation procedure results in the reporting of the average hourly flow rate, as opposed to the actual hourly flow rate. Based on the fluctuations in the daily average flow rates, it is likely that the hourly flow rates are also variable which may have resulted in unreported hourly periods when the injection rate exceeded the permitted limits.

Sampling

The UIC permit requires that sampling for certain parameters be conducted on the injectate. Sampling parameters and frequencies are specified in the permit as either Type I, Type II, or Type III. Type I samples are generally metals or conventional parameters (different parameters for liquid or gas phases), Type II samples are hazardous waste constituents (TCLP), and Type III are generally volatile compounds. Concentration limits have not been set for these constituents; however, a sampling schedule and reporting requirements have been incorporated into the permit.

One sample of the injectate was collected during the NEIC inspection in order to assess its characteristics using selected parameters. The sample was collected from well pad A at a point where the brine, steam condensate, and noncondensible gases had combined [photograph 10]. Calculations based on the flow and pressure readings, during sampling, indicated that the injectate was in single phase (liquid). Type I NEIC sampling results are compared to the most recent PGV results (December 1994/January 1995) in Table 9. There is little difference between the NEIC and PGV analytical results for Type I parameters.

The permit includes fluorine, chlorine, bromine, and iodine in the Type I parameters, but instead of reporting these, PGV reported results for fluorides, chlorides, and bromides. NEIC included chloride results for comparison.

PGV reported analytical results for all required noncondensible gas parameters except for helium. Helium is an inert gas and has no impact on the surrounding environment.

For the Type II parameters, the NEIC and PGV analytical results were similar. NEIC and PGV analyses both show all parameters below the level of detection, except for benzene, arsenic, and barium. PGV analyses showed the benzene concentration to be 12 parts per billion (ppb) and NEIC results were below the level of detection (LOD) or 25 ppm. The higher LOD for the NEIC samples resulted from sample dilutions necessary to avoid damage to analytical equipment from high sulfide concentrations in the sample. The concentrations for arsenic and barium were also comparable as shown below.

Table 9

TYPE I INJECTATE SAMPLING RESULTS
Puna Geothermal Venture
Pahoa, Hawaii

Constituent	NEIC Sample Results (mg/kg)	July 1994 Puna Sample (mg/kg)
Lithium	0.997	1.10
Sodium		2,410
Potassium		566
Magnesium		0.103
Calcium	55	59.1
Barium	2.82	3.95
Vanadium	0.007	<0.02
Chromium	<0.008	0.017
Manganese	0.236	0.302
Iron	0.70	0.488
Nickel	0.01	<0.005
Copper	<0.005	<0.02
Silver	0.004	<0.02
Zinc	0.010	<0.01
Cadmium	0.005	<0.0013
Mercury	<0.0002	<0.003
Boron	2.8	2.81
Lead	0.002	<0.001
Arsenic	0.052	0.145
Selenium	0.004	<0.25
Fluorine (Fluoride ?)*		0.091
Chlorine (Chloride?)*	3,000	4,270
Bromine (Bromide ?)*		13.7
Iodine		Not reported
Ammonia		<0.2
Sulfate		4.09
Thiosulfate		<0.13
Nitrate	7.3	<1.4
Alkalinity, as HCO_3		<2.0
Silica		339
TDS		8,100
TSS		12.0
Conductivity		11,500
pH	5.7	4.92

* *Assumes fluoride, chloride, and bromide compounds were reported rather than fluorine, chlorine, and bromine gases. NEIC value represents chloride concentration.*

	NEIC results	PGV results
Arsenic	2.82 ppm	3.95 ppm
Barium	0.052 ppm	0.145 ppm

PGV reported analytical results for m- and p-cresol as a combined value rather than individual parameters, as required in the permit. It should be noted however, that the concentration for the combined isomers is below the LOD.

Type III analytical results from both NEIC and PGV were below the LOD for all reported parameters, except for toluene. PGV reported 0.004 ppm, whereas NEIC results were below the LOD, 0.025 mg/L. PGV failed to report values for seven of the required parameters [Appendix U].

- 2-Chloroethylvinyl ether
- Dibromochloromethane
- 1,1-Dichloroethane
- 1,2-Dichloropropane
- 1,1,2,2-Tetrachloroethane
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane

PGV injectate sampling procedures may have resulted in underreporting of volatile constituents because of the elevated sampling temperatures. According to PGV personnel, previous samples were reportedly partially cooled in a double pipe heat exchanger using plant water; however, temperatures were not recorded. During the NEIC sampling, the double pipe heat exchanger was used and an additional cooling coil immersed in ice was required to cool the sample to an appropriate temperature. Using the ice cooled coil, the samples were collected at about 23 °C (73 °F). PGV personnel reportedly had not previously used the iced coil to collect samples.

PGV and the state should consider modifying the UIC permit to include appropriate chemicals for analyses. PGV has not analyzed for all parameters specified in the permit (e.g., helium) and the state has apparently not requested this missing information. Several required chemical constituents could likely be dropped from the permit, or reduce sampling frequency without impacting the effectiveness of the permit. Additionally, the permit should be modified to reflect analyses for constituents in the aqueous form rather than the gaseous form (e.g. chloride rather than chlorine).

Mechanical Integrity Tests

As a requirement of the UIC permit, PGV was required to develop and implement a "Production and Reinjection Well Casing Monitoring Program." The program calls for annual mechanical integrity tests for each of the wells consisting of a shut-in temperature survey and a casing pressure test. Procedures to be used for these tests are included in the well casing program.

Paragraph redacted due to Confidential Business Information.

Well Annulus Pressure

The UIC permit requires that the annulus nitrogen pressure be continuously monitored and recorded. This information is recorded in the PGV data system and is displayed at the well building. During the NEIC visit the KS-3 annulus nitrogen pressure was approximately 975 psi and KS-4 showed a pressure of about 1,200 psi. The observed pressures are similar to those documented during normal operation.

Annulus nitrogen pressure typically remains fairly constant over the reporting period. There are occasions, however, when the pressure drops by 100 to 200 psi. (These were the largest pressure drops and were reported in September 1994.) When asked what pressure drop constituents a problem, PGV personnel could not provide an answer. PGV should consider including a narrative description for "large" annulus pressure changes in the quarterly reports. Additionally, the company should develop estimates as to the acceptable pressure drops or pressure drop rates. Specifically the company should specify what pressure drop would indicate a loss of mechanical integrity during normal operations.

MONITORING WELLS

Provision in the Geothermal Resource Permit, Condition 10, require PGV to monitor for potential impacts on the surrounding groundwater. As part of the inspection, NEIC collected samples and observed the PGV sampling procedures of monitoring wells MW-1 and MW-2.

Observed sampling procedures for MW-2 did not follow the procedures in the "SAIC Standard Operating Procedures No. 365 - Monitoring Well Purging." The procedures call for sampled wells to be purged of 3 to 10 times their borehole volume of standing water. There was no purging of the well, which may have resulted in nonrepresentative samples being collected. Water level in the well was at a surface depth of about 574 feet. A bottom-filling bailer attached to a hand-operated winch was used to obtain the sample [photographs 11 and 12]. Based on the depth of this well it is not practical to hand bail this well 3 to 10 well volumes. The called for procedure should be altered or a pump should be installed in the well.

PGV sampling of MW-2, in May and July 1994, identified low concentrations of chlorinated compounds. The presence of 1,1-Dichloroethane was detected in the NEIC sample [Table 10]. The company has attributed the presence of these compounds to contamination introduced during the installation of downhole monitoring equipment. Phenol and 4-methylphenol, at low concentrations, were also detected in the NEIC sample.

Table 10

SAMPLING RESULTS OF MW-2
Puna Geothermal Venture
Pahoa, Hawaii

Parameter	May 1994 Sampling* (ppm)	July 1994 Sampling* (ppm)	February 1995 NEIC (ppm)
Tetrachloroethylene	0.005	0.0025	<0.005
1,1-Dichloroethane	0.010	0.023	0.011
1,2-Dichlorethylene	0.007	0.010	<0.005
Trichloroethylene	0.005	NR**	<0.005
Phenol	NR	NR	0.0031
4-methylphenol	NR	NR	0.0011

* *PGV reported sampling results.*
** *Not reported*

An installed submersible pump was used to purge MW-1 prior to sampling. No semivolatile compounds (SW846-8260) were detected in MW-1 samples. Additionally, no volatile compounds (SW846-8270) were detected in MW-1 samples.

EMERGENCY STEAM RELIEF SYSTEM

The purpose of the emergency steam relief system is to remove H_2S and minimize noise associated with emergency release of steam or during well testing. (Operation of the Emergency Steam Relief System is discussed in the air portion of this report.) Water which accumulates in the ESRF collection

pond [photograph 9] is intermittently pumped to the reinjection well. The quantity of water removed and pumped to the reinjection wells is reported on the monthly UIC reports.

The lower 6 feet of the ESRF pond is lined and has a capacity of about 135,000 gallons. The upper portion of the pond has not been lined [photographs 8 and 9]. According to PGV personnel, approximately 1 to 2 feet of water are maintained within the pond which reduces the effective storage volume to about 94,000 gallons.

PGV estimated the holding time for the collection pond to be 7.8 hours. This estimate was based on the 94,000-gallon capacity and an entering flow rate of 200 gpm. The 7.8 hour estimate also assumed no withdrawals via pumping. Holding times would be increased to 10.4 or 31.4 hours with pump out rates of 50 or 150 gpm, respectively. PGV could not provide a basis for the 200 gpm entering flow rate. Additionally, the pumpout rates could not be provided during the NEIC inspection.

PGV should document the basis for their assumptions and calculate retention times for the ESRF collection pond.

MUD PITS

The mud pits associated with the drilling activities have been closed. The removed mud pit material was sampled and according to Lynn White, General Manager, was suitable for disposal in the local landfill.* PGV elected

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* The HDOH UIC program directed the chemical analyses of the mud pit material. The TCLP analyses demonstrated that the mud pit material qualified as a solid waste which did not require hazardous material management.

to landfill the material at a central location within the operating portion of the facility. The landfilled material has been covered with a liner.

Lynn White reported that duplicate samples for landfilled material had been collected by a state agency. Reportedly, these duplicate samples also showed the material was suitable for disposal in the local landfill. The RCRA division of HDOD was unaware of any duplicate sampling or analytical results from the mud pits. (Other state agencies have not been contacted for copies of these results.)

SUMMARY OF FINDINGS

Areas of Noncompliance

Permit UH-1529 Part I.A.3(a)	Injection rate exceeded 675,000 pounds for 10 days during September 1994. Notification was provided within 1 week to HDOH for five of the daily exceedances.
Permit UH-1529 Part I B. 1(f)	PGV does not monitor for all parameters identified in the permit. Analytical results for m- and p-cresol isomers were combined rather than reported separately, as specified for the Type II sampling. Additionally, for Type III sampling, the following chemicals were not reported. • 2-Chloroethylvinyl ether • Dibromochloromethane • 1,1-Dichloroethane • 1,2-Dichloropropane • 1,1,2,2-Tetrachloroethane • 1,1,1-Trichloroethane • 1,1,2-Trichloroethane

Permit UH-1529 Part III A. 1(a)	PGV did not follow the Standard Operating Procedures for Monitoring Well Sampling as referenced in the "Hydrologic Monitoring Program." There was no purging of the MW-2. The procedures call for sampled wells to be purged of 3 to 10 times their borehole volume of standing water.
Permit UH-1529 Part III A. 1(b)	PGV did not follow the procedures specified in the "Production and Reinjection Well Casing Monitoring Program." ***Redacted due to Confidential Business Information.***

Areas of Concern

- The calculation procedures used to report the hourly injectate rates may not accurately reflect the true hourly injectate rates. PGV calculates, and subsequently reports, the average hourly flow rate by dividing the daily total mass quantity by 24 hours. This calculation procedure results in the reporting of the average hourly flow rate, as opposed to the actual hourly flow rate.

- PGV should consider including a narrative description for "large" annulus pressure changes in the Quarterly Injection Well Status Reports. Additionally, the company should develop estimates as to the acceptable pressure drops or pressure drop rates. Specifically the company should specify what pressure drop would indicate a loss of mechanical integrity during normal operations.

- Injectate samples should be further cooled prior to collection. The existing cooling equipment does not provide sufficient cooling to ensure that volatile components remain in the sample. The temperature of the collected samples should be recorded.

- PGV has not analyzed for all parameters specified in the permit and the state has apparently not requested this missing information. Several required chemical constituents (e.g. helium) could likely be dropped from the permit, or reduced in sampling frequency, without impacting the effectiveness of the permit. Additionally, the permit should be modified to reflect analyses for constituents in the aqueous form rather than the gaseous form (e.g., chloride rather than chlorine). PGV and the state should consider modifying the UIC permit to include appropriate chemicals for analyses.

- PGV should document the basis for their assumptions of flows entering the ESRF collection pond. This information could then be used to determine if the ESRF collection pond is sized appropriately.

- The costs for plugging more than one relatively deep geothermal well could be high. PGV needs to assess if a $250,000 bond is sufficient to cover the plugging and abandonment costs of three injection and two production wells. If additional wells are drilled, the bond for plugging and abandoning should be increased.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO KNOW ACT

PGV is subject to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Provisions in CERCLA require facilities to report releases of hazardous substances in excess of reportable quantities to the National Response Center (NRC). PGV is subject to the Designation, Reportable Quantities, and Notification requirements of 40 CFR Part 302 (CERCLA § 103, 42 U.S.C. § 9603).

The Emergency Planning and Community Right to Know Act (EPCRA) was enacted as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986. EPCRA (also known as SARA Title III) requires regulated facilities to provide information to EPA, state, and community groups concerning chemicals handled by the facility and chemical releases. PGV is subject to the Emergency Planning and Notification requirements of 40 CFR Part 355 [EPCRA § 304 (42 U.S.C. § 11004)], the Hazardous Chemical Reporting: Community Right-to-Know requirements of 40 CFR Part 370 [EPCRA § 311 (42 U.S.C. § 11021) and 312 (42 U.S.C. § 11022)].

The facility released H_2S, in excess of the EPCRA/CERCLA reportable quantity, into the air in June 1991 and February 1993. Approximately 2,247 pounds of H_2S were released during the first incident which occurred June 12 through 14, 1991. The second incident occurred on February 8, 1993 and resulted in the release of approximately 162 pounds of H_2S. EPA issued an administrative complaint to PGV on May 4, 1994 for failure to immediately notify the National Response Center and failure to provide timely written follow-up reports to state and local authorities for these releases. Additionally, PGV failed to provide state and local authorities with complete inventories of chemicals stored on-site in 1991 and 1992.

This section of the report is divided into three main sections: Release Notifications, Chemical Inventory, and the PGV Emergency Response Plan.

RELEASE NOTIFICATIONS

Based on information provided in the PGV incident reports, there have been no unreported spill releases exceeding the reportable quantity since February 1993. An incident report is prepared when the ambient air monitors detect H_2S at greater than 25 ppb for a 6-minute average. There have been four incident reports since February 8, 1993 [Table 1]. Neither the 25-ppb hourly average or 10-ppb daily average permit limits were exceeded for these four incidents. The quantity of H_2S released from these incidents was calculated, by PGV, to be less than the reportable quantity. There have been no reported incidents since May 14, 1993.

The assumptions and calculations used to estimate the quantity of H_2S (or other reportable materials) released should be included with the incident reports. Information used to calculate the release estimates for the four 1993 incident reports was not readily available. Calculation estimates were recreated while on-site.

CHEMICAL INVENTORY

The 1993 Chemical Inventory Form (Tier II) was reviewed. Copies of the inventory were provided to the State Emergency Response Commission, the Local Emergency Planning Committee, and the Hawaii County Fire Department. All chemicals present at the facility, at greater than the threshold levels, appear to be included on the Tier II submittal. The inventory and purchase records for chemicals used on-site were compared to those

provided on the Tier II submittals. The inventory quantities substantiate the values submitted on the Tier II reports.

PGV maintains copies of all MSDS sheets and provides a list of these materials to the State Emergency Response Commission, the Local Emergency Planning Committee, and the Hawaii County Fire Department.

PGV EMERGENCY RESPONSE PLAN

PGV is required to prepare an Emergency Response Plan (ERP) as required by condition 26 of the Geothermal Resource Permit GRP 87-2. The specific material to be included in the ERP is also outlined in condition 26.

The PGV Facility Emergency Response Plan (version 6.0) dated December 1991, was reviewed by Region 9 personnel. Deficiencies potentially impacting local residents were identified within the plan and comments were provided to HDOH. The identified deficiencies have not been forwarded to PGV. A revised draft copy of the PGV Facility ERP (version 6.2) was forwarded to NEIC in early July 1995. A preliminary review of the current draft version identified the following deficiencies:

- Acronyms are used extensively throughout the ERP. A list of acronyms would be helpful for readers not familiar with certain terms.

- Conflicting information regarding well flows and H_2S concentrations is provided in Table 8.1 and Table 3 presented in Appendix 3. Table 8.1 (Site Releases Under Routine and Upset Conditions) assumptions include well flows of 400,000 pounds per hour and a 650-ppm H_2S concentration. In Appendix H, Table 2

(Emitted Geothermal Resource Characteristics) assumptions include well flows of 500,000 lbs/hr and 896 ppm H_2S concentrations. Based on the variance granted in the UIC permit, the well flows may be higher than either of the above listed values.

- The use of off-site ambient air monitoring data should be more fully discussed in the ERP. Although PGV has included vague language which implies that this data is part of the emergency response program, it is not clear how the information will be specifically used. For example, in the Chapter 3 discussion of staff responsibilities the only person who may have responsibility for maintaining an up-to-date understanding of wind speed, direction, and ground level H_2S concentrations is the incident commander. The ERP states that the incident commander: "will assess danger....," and "will assure all non-essential personnel are out of the danger zone."

  The ERP does not state how wind speed direction and ambient H_2S analyzer information is incorporated in the assessment. In the training section (Chapter 6), there are no specific training requirements, for the incident commander, stating how the ambient air data will be used. Additionally, there are no discussions as to how wind speed direction and general atmospheric stability conditions are considered prior to beginning venting or drilling operations.

- Many of the figures are outdated or illegible. The location of Off Site Emergency Facilities on Figure 4-1 cannot be discerned.

- Reference is made to Table 8-8 on page 44. There is no Table 8-8. This reference may be a typographical error.

- On page 56, a reference is made to ***CBI*** which is supposed to be a list of well control specialists from the mainland. The information presented in ***CBI*** is a list of crane and truck operators, caustic removal specialists, propane removal specialists, gasoline/diesel fuel removal specialists, and welders/ cutters. All listed contractors are from Hawaii and it is not clear if 24-hour access phone numbers are provided. Additionally, there is no list of well control specialists. At minimum the well drilling consultant should be referenced.

- The ERP references all permits except the UIC permit. Impacts of the UIC permit should be included.

- The plan does not define "incidents." The ERP outlines what actions will occur when an incident happens. Because there is no definition of "incident," expectations of nearby residents, regulatory, and what constitutes an "incident" should be defined prior to its occurrence to avoid differences in expectations between PGV personnel, regulatory personal, and nearby residences.

  Additionally, the term "timely" communications, as referenced on page 13, should be clarified.

- The PGV Emergency Drill discussed briefly in Chapter 7 indicates that operations and maintenance personnel will participate. No

mention is made as to whether local agencies or emergency response crews will be involved.

- The phrase "Assess the conditions" referenced on page 43 is vague. This phrase should be clarified or perhaps deleted.

- Step 7 of the PGV General Response on page 49 states "Take whatever follow-up appropriate actions are necessary to deal with the facility emergency situation." This step seems somewhat general and broad.

SUMMARY OF FINDINGS

The following areas of concern were identified.

- The assumptions and calculations used to estimate the quantity of H_2S released (or other reportable materials) should be included with the incident reports. Retention of this documentation at a central location will facilitate easier review for future incidents (if any).

- A preliminary review of the draft Emergency Response Plan (version 6.2) identified several deficiencies which should be addressed. Some of these deficiencies were also pointed out in the review of the previous version by Region 9. Generally, the plan does not provide specific information. Several terms or phrases should be defined or clarified to avoid confusion or misunderstandings if an incident were to occur.

No power for mall

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Wurdeman said he isn't sure whether it would be illegal for Helco to provide permanent power to the shopping center, and said his office has no intention of suing the developer or Helco over the issue.

But violations of the code carry criminal penalties, and County Prosecutor Jay Kimura conceivably could file a misdemeanor charge against someone for a violation.

The developer and Helco asked Wurdeman to talk to Kimura about the problem, but Kimura's answer was small comfort.

Kimura replied that "he has no intention of prosecuting at this time, but that doesn't mean he won't do so in the future," Wurdeman said.

Kimura was unavailable for comment yesterday.

Stormont said he's not sure if the power company would hook up to the shopping center even if Kimura promised not to prosecute.

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"It hurts because that's another load that we could use," he added. "Our sales are rather flat."

Wurdeman said Hawaiian Homes officials have asked him to forward a bill to the County Council that would exempt projects on Hawaiian Home Lands from the electrical code. Wurdeman said he agreed.

But the bill apparently will trigger another fight at the council over the project.

Council Vice Chairman Brian De Lima pointed out the Waiakea developer complained when the council changed the county code relating to sewers, griping that the council was changing the development rules in the middle of the game.

De Lima said it's ironic that same developer now wants a

See POWER,
Page 12

evision

Report: PGV in violation

❑ But officials say the EPA's findings just 'nitpicking'

By Hunter Bishop
Tribune-Herald

Puna Geothermal Venture complies with most federal environmental regulations, but the federal Environmental Protection Agency is still "concerned" about the violations it did find recently.

PGV failed to conduct some sampling and monitoring of air emissions, and failed to submit certain reports and records, according to a report released yesterday by EPA.

The report identified several violations of the plant's underground injection control permit, including failure to monitor for certain compounds and follow certain ground water monitoring procedures

The report also said improvements are needed in the facility's emergency response plan.

Reaction from the state Depart-

T-H Photo by William Ing

ital Satellite Television
orkings of the AlphaS-
uncilman Elroy Osorio
)STV headquarters in downtown Hilo. The AlphaStar network is based on direct satellite television technology, and offers some 100 channels that can be beamed directly to subscribers' homes.

emergency response plan.

Reaction from the state Department of Health was cool to the report, however.

The state health department issued the geothermal permit to PGV and is responsible for enforc-

See REPORT, Page 12

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tape

ni government election

ss out, there are no rules

Still no suspects in case

Police ask for

an extremely 15-month investigation, the report only minor environmen- ance at the PGV facili- ding to a statement from erday.

who assumed his post month ago, said he was ar with the specifics of however, and could not directly.

on said an EPA list of permit changes would effected. "We'll be glad ese changes," he said.

derson was clearly frus- the federal agency's f the geothermal facility, H officials have wrestled ears.

on said early develop- e plant was a "disaster," he plant's smooth opera- the past two years. He PA is inexperienced with Hawaii's environmental regulations are effective and among the most stringent in the nation.

"It's an ideal, steady, reliable source of power for the Big Island, with no serious odor problems," Anderson said.

The plant has been producing electricity by using steam from geothermally heated ground water for the past three years and has recently been producing up to 25 percent of the Big island's energy needs.

The inspection was initiated by U.S. EPA Regional Administrator Felicia Marcus in the fall of 1994 after hearing concerns raised by community members during a visit she made to the Big Island.

"We're never going to keep the people happy who want it closed," Anderson said.

Nevertheless he welcomed EPA's input. "We have limited in and do the work, we welcome them."

Suggested permit changes include:

- Specifying which pollutants should be tested
- Defining "best available control technology"
- Imposing additional monitoring requirements for hydrogen sulfide emissions
- More effective monitoring of emissions that leak outside the plant's boundaries

"These are certainly not the worst violations, but we are concerned," said Lois Grunwald, a spokesman for the EPA in San Francisco. "We will be working closely with the state to correct them."

"There's no more closely inspected facility in the state," Anderson said, but, "we'll make the changes."

o says it can't supply center

– have complained De opposing the Waiakea oject for political reasons. e Shin, who is a partner iakea Center project, ran blican against De Lima in lost by only 43 votes.

Lima says he favors the project, and has publicly o vote to rezone the land roject. He is not seeking this year.

Kahawaiolaa, director i O Hawaii, also said he se any attempt to carve cial exemption from the ectrical code for commer- cts on Hawaiian Home Lands.

Such an exemption would mean individual lessees would still need permits, and commercial projects would not, Kahawaiolaa said. That is especially unfair because the mom-and-pop lessees are supposed to be the main beneficiaries of Hawaiian Home Lands.

"It's wonderful that they can do that for fat cat corporations, but not for the general public or for the Native Hawaiians on the land," Kahawaiolaa said. "I think from the Native Hawaiians' standpoint, are we going to be included in here? Will the residential (lessees) also be included? Will we also get an exemption? That's a position we'd like to discuss with the county."

Hawaiian Homes officials originally decided to bypass the county zoning and permitting processes at the request of the developer, who wanted to save time.

The rezoning application for the Prince Kuhio Plaza across Makaala Street triggered a years-long fight between opponents and supporters of the mall.

Mayor Stephen Yamashiro has said the county will not issue permits or conduct inspections of the Waiakea Center construction unless the land is properly zoned.

marijuana, promotion of a detrimental drug and two drug paraphernalia.

- Wendy Perez, 25, of no permanent address with trespass.
- Gregorio Agliam, 41, of Hilo with contempt of court.
- Javer Kekaualua, 38, of Hilo with contempt of court.
- Warren Pagan, 24, of Keaau with violation of an order and custodial interference.
- Gilbert Desa Jr., 38, of Ainaloa with contempt of court.
- Raymond L. Machado, 60, of Waimea with contempt of court.
- Flores Nakea-Sizar, 40, of Kealakehe with abuse of a family/household member.

Firms strike deal on algae sales

A Helsinki firm has agreed to sell a fish feed additive produced by a Big Island company, according to a news release.

Aquasearch Inc. of Keahole Point will produce the microalgae-based astaxanthin pigment which will be marketed by Finland's Cultor, a producer of animal feeds and food products. Cultor also owns a fish feed manufacturer which is one of the largest consumers of astaxanthin.

"We are extremely pleased that Cultor has decided to develop the natural astaxanthin market with us. This represents the first major commercial application for our technology and will open many doors for future products," Aquasearch Chief Executive Officer Mark Huntley.

The primary users of astaxanthin are salmon farms. Astaxanthin added to fish feed enhances the pink color in salmon. Besides salmon, astaxanthin is also fed to trout, crustaceans and poultry.

Aquasearch, located within the Natural Energy Lab of Hawaii Authority at Keahole Point, is a marine biotechnology company which produces microalgae commercially.

5,000 customers lose power

Nearly 5,000 East Hawaii Helco customers were without power for about a half hour yesterday when a combustion turbine at Keahole shut down unexpectedly at 11:40 a.m.

Helco spokesman Army Curtis said 4,726 customers in Panaewa, Kaumana, Kanoeluha Industrial Area and from Puueo to Pepeekeo were affected. The outage lasted until 12:15 p.m.

The cause of the outage is unknown, Curtis said, and the turbine was still out of service last night, putting a crimp in the Big Island's reserve energy supply.

"We're really squeezing right now," Curtis said, and there was no estimate as to when the downed turbine could be placed back in service.

—AP, T-H

been peering over the state's shoulder at the behest of residents in the vicinity of the Pohoiki plant.

"We are delegated to issue the permit," said DOH spokesman Ellen Blomquist. "If (EPA officials) don't trust us, maybe *they* should issue the permit."

And Bruce Anderson, state deputy director of environmental health, yesterday likened the feds' findings to "nitpicking."

"PGV is the most closely inspected and regulated facility in the state," he said. "If anyone wants to go in anywhere and find something, they can."

The DOH, EPA and PGV general manager Jack Dean all pledged cooperation in fixing the deficiencies.

"The report's results demonstrate that PGV's operations are generally conducted in a manner that is protective of both human

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PGV yesterday.

Dean, who
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POWER: Helco

From Page 1

change in the electrical code to help the project along.

Mark Richards, the president of Waiakea Center Inc., was traveling on the Mainland and unavailable for comment yesterday.

De Lima says he wants the state Department of Hawaiian Home Lands to apply for a county rezoning and seek proper county permits for the entire project.

He says he's confident the council will approve a rezoning for the project, and says it can be finished in time for Wal-Mart's scheduled October opening.

De Lima is the ranking Democrat on the council. His critics — including Republicans on the

council — ha
Lima is oppo
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What's inside

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By Kevin Da
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HILO, HAWAII, WEDNESDAY, MAY 15, 1996 2 SECTIONS – 24 PAGES 50 CENTS

lelco: No power for mall

ectric co. says it legally supply gy to Waiakea

In Dayton
Herald

developer of the shopping at will eventually be home Mart has hit into a major ch: Hawaii Electric Light s it can't legally provide o the shopping mecca.

county electrical code says er company can't provide ent power to any new pro- l it has been inspected by building officials, said Bill t, manager-administration for Helco.

Trouble is, work on the shopping center is being done without any county permits or county inspections.

The shopping center is being built on Hawaiian Home Lands, and the state Department of Hawaiian Home Lands contends it doesn't need county permits.

Stormont said the language in the county code is a "deep concern to us," partly because anyone who violates the code faces up to a year in jail and a fine of up to $1,000.

"We're not about to jeopardize the company and be in violation of any ordinance," Stormont said.

Earlier this year county lawyer Richard Wurdeman warned Helco and developer Waiakea Center Inc. that the language in the electrical code might cause problems.

Wurdeman said he isn't sure whether it would be illegal for Helco to provide permanent power to the shopping center, and said his office has no intention of suing the developer or Helco over the issue.

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But the bill apparently will trigger another fight at the council over the project.

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De Lima said it's ironic that same developer now wants a

See POWER, Page 12

igh-tech television

Report: PGV in

7051

Post Office Box 30
14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
Telephone (808) 965-6233
Facsimile (808) 965-7254

PUNA GEOTHERMAL VENTURE
HAWAII

MW — 9A — WL — PID

FOR IMMEDIATE RELEASE

Date: May 14, 1996

Contact Jack A. Dean, Vice President and General Manager
(808) 965-6233 Fax: (808) 965-7254

RECEIVED
96 MAY 15 P4:16
DEPT. OF LAND & NATURAL RESOURCES STATE OF HAWAII

Title: EPA RELEASES INSPECTION REPORT OF PUNA GEOTHERMAL VENTURE

Pahoa, Hawaii. After nearly 15 months of a cooperative compliance inspection of Puna Geothermal Venture's operations, the Environmental Protection Agency issued a report of findings today. The Report's results demonstrate that PGV's operations are generally conducted in a manner that is protective of both human health and the environment, and that after an extremely intensive investigation the Report identified only minor environmental compliance issues at the PGV facility.

PGV is especially pleased that the Report's findings are the product of a thorough multi-media investigation conducted by personnel from EPA Region IX, EPA's National Enforcement Investigations Center, and Hawaii State agencies. The investigation was intended to determine compliance with federal and state environmental statutes and regulations. During the lengthy investigation, agency investigators reviewed all aspects of facility operation, examined PGV's facility records, and took thousands of samples from all environmental media.

While PGV was of course disappointed that the investigation identified some minor non-compliance items, it has taken immediate steps to address these issues, and intends to implement additional measures in the future to resolve any outstanding compliance problems. According to

Jack Dean, PGV's Vice President and General Manager, "PGV intends to cooperate fully with EPA and the State to ensure that these and the other issues identified in the Report are addressed and resolved, and that the PGV facility continues to operate in compliance with PGV's permit conditions and applicable environmental regulations."

The EPA review commenced in February of 1995 and through that period to present, PGV has continued to supply the Big Island with about a quarter of all its electricity needs while displacing more than one thousand barrels of oil a day.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:WL-EK

APR 24 1996

Ms. Alexis Strauss
Acting Division Director
Water Management Division, Region IX
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Ms. Strauss:

Puna Geothermal Venture

This is in response to your April 17, 1996 letter regarding the Department of Land and Natural Resources' responsibility in reviewing the integrity and proper abandonment of the geothermal injection wells.

Due to budget constraints, the geothermal staff has been cutback. The department, however, will continue to maintain a minimal oversight over Puna Geothermal Venture's(PGV) operations or any other geothermal operator as required by our administrative rules. As such, we will issue the permits to construct, modify, or abandon geothermal injection wells and oversee their biennial mechanical integrity surveys. Staff will be assigned as necessary to carry out these tasks. Please note this administrative responsibility will continue in our Department irrespective to Department of Health's UIC program. For your information, Mr. Hiram Young has been reassigned new job responsibilities and is available for geothermal work. Mr. Eric Tanaka will continue with his role in monitoring compliance with all applicable conditions in permits issued to existing operations. Mr. Tanaka also will assume other duties and responsibilities for our Engineering Branch in Hilo.

Should you have any further questions, please contact Mr. Dean Uchida, our Land Division Administrator at 808-587-0446.

Very truly yours,

Gilbert Coloma-Agaran
Deputy Director

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Send to Mel & Dean & Hiram Young to prepare a response. 4/18

APR 22 AM 8:12

DEPT OF LAND & NATURAL RESOURCES STATE OF HAWAII

APR 17 1996

Gilbert Koloma-Agaran
Deputy Director
Division of Water and Land Development
State Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Koloma-Agaran:

I am writing to request a copy of the organizational structure of the Department of Land and Natural Resources (DLNR) and the identification of staff who work on geothermal regulation. The reason for my request is as follows: the State Department of Health (DOH) has an Underground Injection Control (UIC) program and is in the process of applying for primacy, or primary enforcement responsibility, of that program. Until the State obtains primacy, my agency is responsible for the direct implementation of the UIC program in Hawaii. So ultimately EPA is responsible for the mechanical integrity and financial assurance of proper plugging and abandonment of the injection wells at Puna Geothermal Venture (PGV). I understand from the DOH that your agency oversees all mechanical integrity tests at PGV and holds the financial assurity mechanism for the plugging and abandonment of the wells. I know that Hiram Young's group used to oversee geothermal regulation, but I have heard that the group was disbanded. If this is so, who has taken over the responsibility of the injection well mechanical integrity tests and plugging and abandonment financial assurity? Also, please verify if Eric Tanaka is still the field staff who oversees the mechanical integrity test.

If you have any questions regarding this request, please call me at (415) 744-1860 or Clyde Morris of the Source Water Protection Section at (415) 744-1835.

Sincerely,

Alexis Strauss

Alexis Strauss
Acting Division Director
Water Management Division

cc: William Wong, DOH

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Send to Mel & Dean & Hiram Young to prepare a response.
18

APR 17 1996

Gilbert Koloma-Agaran
Deputy Director
Division of Water and Land Development
State Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Koloma-Agaran:

I am writing to request a copy of the organizational structure of the Department of Land and Natural Resources (DLNR) and the identification of staff who work on geothermal regulation. The reason for my request is as follows: the State Department of Health (DOH) has an Underground Injection Control (UIC) program and is in the process of applying for primacy, or primary enforcement responsibility, of that program. Until the State obtains primacy, my agency is responsible for the direct implementation of the UIC program in Hawaii. So ultimately EPA is responsible for the mechanical integrity and financial assurance of proper plugging and abandonment of the injection wells at Puna Geothermal Venture (PGV). I understand from the DOH that your agency oversees all mechanical integrity tests at PGV and holds the financial assurity mechanism for the plugging and abandonment of the wells. I know that Hiram Young's group used to oversee geothermal regulation, but I have heard that the group was disbanded. If this is so, who has taken over the responsibility of the injection well mechanical integrity tests and plugging and abandonment financial assurity? Also, please verify if Eric Tanaka is still the field staff who oversees the mechanical integrity test.

If you have any questions regarding this request, please call me at (415) 744-1860 or Clyde Morris of the Source Water Protection Section at (415) 744-1835.

Sincerely,

Alexis Strauss

Alexis Strauss
Acting Division Director
Water Management Division

cc: William Wong, DOH

From the desk of

Gilbert S. Coloma-Agaran
Deputy To The Chairperson

May 14, 1996

TO: HIRAM YOUNG / WATER AND LAND

Please send a copy to Eric Tanaka. Thank you.

HAWAII: EARTH'S BEST

FROM: Hiram

DATE: 5/14/96

SUSPENSE DATE: _____

LAND DIVISION--ROUTE SLIP

✓ DEAN UCHIDA

Land Transaction:

__Abe, Glenn
__Vaccaro, Nick
__Jodar, Al
__Leong, Eric
__Martin, Gary
__Miyashiro, Patti
__Wong, Tom
__Taguchi, Glenn

Oahu District:

__Santos, Cecil
__Dooling, John
__Lau, Stephen

Technical:

__Unoki, Charlene
__Collins, Mahoe
__Nugent, Mike
__

Planning:

__Henry, Ed
__Horiuchi, Don
__Tilton, Cathy
__Schaefer, Roy
__Lemmo, Sam
__Tanaka, Lauren

Water and Land:

__
__Monden, Andrew
__Yim, Alyson
__Manthos, Peri
__Young, Hiram
__Yong, Sterling
__Lee, Dickie
__Yuasa, Eric
__Menor, Joseph
__Masuoka, Roger
__
__

__Kokubun, Sharon
__Agraan, Zosima
__Chang, Chi Pin
__Choo, Lisa
__
__Imada, Dennis
__Keb, Elaine
__Knapp, Linda
__Lee, Sherry
__Uehara, Audrey
__Xu, Ying Fan
__Yonamine, Elsie

Clerical:

__De Castro, Helen
__Fujiwara, Jean
__Gasilos, Ofelia
__Robello, Pam
__Takaoka, Lorraine
__Winkler, Lianne
__Kuba, Sharlene
__Ricamona, Rico

****

__Action/Follow-up __Post __Comments __See Me __File __Pink Slip __Route
[HDLO, MDLO, KDLO, CHAIR, DEPUTY]

COMMENTS: __Signature __Approval __Initial

FOR YOUR INFO - COPY SENT TO ERIC TANAKA

Hiram, PLS HAVE ERIC PREPARE RESPONSE TO GM ON WHAT IMPLICATIONS, IF ANY, THIS HAS ON DLNR. dc

United States
Environmental Protection
Agency

Regional Administrator
75 Hawthorne Street
San Francisco, CA 94105-3901

Region 9
Arizona, California
Hawaii, Nevada
Pacific Islands

EPA Environmental News

FOR IMMEDIATE RELEASE: May 14, 1996

Contact: Lois A. Grunwald, U.S. EPA
(415) 744-1588

U.S. EPA ISSUES INSPECTION REPORT ON PUNA GEOTHERMAL VENTURE

(San Francisco)-- The U.S. Environmental Protection Agency (U.S. EPA) today announced the results of an inspection of Puna Geothermal Venture in Pahoa, Hawaii. The inspection assessed the facility's compliance with federal environmental regulations.

While the facility is in compliance with most environmental requirements, U.S. EPA found some violations and made a number of recommendations to improve the facility's operations.

"We appreciate the cooperation of the state Department of Health in working with us on these complicated geothermal issues," said Keith Takata, U.S. EPA's Superfund director. "During the next year, we will continue to work with the state to ensure that the compliance issues we found are resolved and to implement improvements to the facility's operations."

With regard to air emissions, the facility failed to conduct some sampling and monitoring and failed to submit certain reports and records. U.S. EPA is recommending that the permit covering air requirements be reexamined to clarify air monitoring and recordkeeping requirements.

The report also identified several violations of the underground injection control permit including failure to monitor for certain compounds and to follow certain groundwater monitoring procedures. Recently, the state suggested that U.S. EPA issue its own underground injection permit to assure that all federal requirements are met. U.S. EPA will address the violations in the issuance of a new federal permit, with public review and comment incorporated as part of the permit process.

Additionally, the report recommends making several improvements to the facility's draft emergency response plan. Later this year, U.S. EPA is planning a more extensive review of the facility's plan and how it operates in conjunction with the county's plan.

The inspection was initiated by U.S. EPA Regional Administrator Felicia Marcus after hearing concerns raised by community members during a visit she made to the Big Island.

(more)

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 4

To: Gilbert Kahoma-Hawaii Dept of Health
From: Lois Grunwald
Dept./Agency:
Phone #: 415-744-1588
Fax #: 808-587-0390
Fax #:

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

The Puna facility produces electricity using the steam from groundwater that is heated by a subsurface geothermal resource. The facility operates under permits issued by the Hawaii Department of Health and the Hawaii Department of Land and Natural Resources. and County of Hawaii

# # #

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • SAN FRANCISCO, CALIFORNIA MAY 1996

Compliance Inspection Report Released For Puna Geothermal Venture

The U.S. Environmental Protection Agency (EPA) has released a Compliance Inspection Report for the Puna Geothermal Venture (PGV) facility in Pahoa, Hawaii. The purpose of the investigation, conducted in February 1995, was to determine the facility's compliance with air, water and waste management regulations. In particular, the investigation reviewed the facility's air pollution control and underground injection control (UIC) permits, issued by the Hawaii Department of Health (DOH). The investigation also reviewed PGV's compliance with the Emergency Planning and Community Right-to-Know Act.

During the on-site inspection, investigators observed and evaluated facility operations, reviewed and copied facility records and had discussions with facility personnel. In addition, investigators reviewed state and federal files, sampled ground water monitoring wells and geothermal reinjection fluid, and monitored potential air emission points.

Summary of Findings

The facility was in compliance with most environmental requirements. EPA found some violations and made a number of recommendations to improve PGV's operations.

Review of the air permit showed compliance problems, including the absence of some sampling and monitoring data, failure to submit certain reports and records, and failure to have certain equipment in place. The report suggests that the permit be re-examined to determine needed controls, equipment and enforceable limits. It further suggests that the permit specify chemical analyses to be conducted, clarify recordkeeping requirements, and improve and clarify air monitoring and reporting requirements.

Two recommendations included in the air portion of the report are (1) to institute recommendations from previous investigations regarding drilling plans and the Emergency Steam Relief Facility (ESRF) and (2) to explore the possibility of combining Hawaii DOH and PGV monitoring data into one program.

In reviewing the underground injection control permit, the report identified several monitoring problems. It noted that not all of the parameters listed in the permit were monitored and, in some cases, standard monitoring procedures were not followed. Also noted was an exceedance of permit injection pressure limits. Suggestions for improving the UIC permit include modifying sampling and reporting procedures, and re-examining the permit to determine which chemical parameters should be sampled. In addition, the report recommended that PGV document the basis for assumptions of flows entering the ESRF pond and assess the sufficiency of the current bond for plugging and abandoning wells.

Recently, the state suggested that EPA issue its own underground injection control permit to assure that all federal requirements are met. EPA will address the violations in the issuance of a new federal permit, with public review and comment incorporated in the permit process.

In regard to compliance with the Emergency Planning and Community Right-to-Know Act, the report suggests that PGV include with incident reports the assumptions and calculations used to estimate the quantity of releases of hydrogen sulfide or other materials. It recommended locating the documentation in a central place within the plant to facilitate emergency prevention, preparedness and planning. The report also noted several deficiencies in the draft Emergency Response Plan and recommended improvements.

(continued on back side)

MUCH OF THE INFORMATION IN THIS FACT SHEET IS TAKEN FROM THE PUNA GEOTHERMAL VENTURE COMPLIANCE INVESTIGATION REPORT, DATED MARCH 1996.

THE DOCUMENT NUMBER IS EPA-330/2-96-009.

Site Background

The Puna Geothermal Venture facility produces electricity using geothermal fluids (steam). The PGV facility occupies approximately 25 acres within a 500-acre leased property and employs 40 people. PGV is located about 20 miles south of Hilo, Hawaii.

The geothermal fluids are produced as circulating ground water is heated to above 200 degrees Celsius by subsurface molten rock. Two production wells extract the fluids which are separated into steam and brine phases. The steam is routed to turbines to produce energy. Steam condensate is combined with the brine and noncondensible gasses, and disposed into three injection wells.

Community Concerns

In the process of developing geothermal energy on the island, various entities, both private and public, established a number of geothermal facilities. There were then a number of incidents and blow outs, which generated many community concerns. Among the concerns were respect for indigenous peoples and Native Hawaiian theology, community health and safety, and the public's right to know. Other concerns included industrialization and growth, noise, compliance with water and air pollution control regulations, and emergency response planning.

EPA Involvement

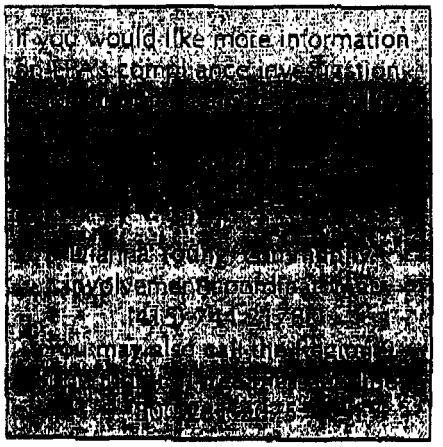
Members of the Puna community contacted EPA; EPA then worked with Hawaii DOH and the Department of Land and Natural Resources on a number of issues. In 1994, Felicia Marcus, EPA's regional administrator, visited the community and, following her visit, she directed the establishment of an EPA team to address issues that community members had raised.

The seven-member team visited Pahoa in February 1995, when they visited with community members, state and local government representatives and PGV personnel. After this visit, EPA developed a five-point strategy for addressing concerns. The compliance investigation was one component of that strategy. Other components of the strategy include community involvement, emergency response plan review and an evaluation of health concerns. Release of the report comes more than a year after the facility inspection was conducted. Part of the delay was caused by PGV claims that much of the information in the report was confidential.

To address citizens' concerns about the mechanical integrity of the injection wells, EPA arranged for an expert from the U.S. Bureau of Land Management (BLM) to review PGV's mechanical integrity testing (MIT) program. In April 1996, personnel from EPA and BLM then met with PGV, Hawaii DOH and the Hawaii Department of Land and Natural Resources to discuss the MIT program and review test results. The agencies concluded that the continuous monitoring that PGV does is actually better than once-a-year testing, which is normally required, because the continuous monitoring can detect a leak almost instantaneously. In addition, some modifications were made to the yearly tests. The BLM representative also assessed the plugging and abandonment of wells on PGV's site and found them satisfactory. After meeting with PGV and state representatives, EPA and BLM met with individuals in the surrounding community to explain and answer questions on the MIT program and test results.

Next Steps

- EPA and Hawaii DOH will work together to bring the facility back into compliance and make necessary permit revisions.
- EPA will fund an independent review of PGV's emergency response plan and how it operates in conjunction with the county's plan. The team will be comprised of three people who are experts in chemical emergency response planning at state and local levels. The team is scheduled to meet with PGV, state and local government, and the community in late summer 1996.
- Interviews have begun with community members, state representatives and PGV officials to explore the possibility of forming a community work group. EPA has scheduled a number of other interviews for a May visit to Pahoa. EPA will also meet with local government representatives. The basic goals of such a work group would be to foster an exchange of information and encourage various parties to work on the issues together.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

November 8, 1995

Mr. Lynn White
Vice President and General Manager
Puna Geothermal Venture
P.O. Box 30
Pahoa, Hawaii 96778

Dear Mr. White:

Thank you for your letter of October 17, 1995 in response to further comments on the U.S. Environmental Protection Agency's draft workplan for the review of the Puna Geothermal Venture and the County of Hawaii emergency response plans.

The nine concerns mentioned in that October 17 letter will be responded to in sequential order. Again, it is hoped that your concerns will be addressed with this letter.

1. **Statement of Purpose.** EPA very much agrees with you that our workplan should "specifically set forth the federal statutory authority..." and it is shown in the accompanying copy of the revised workplan dated October 30, 1995. First, there is authority under the Emergency Planning and Community Right-to-Know Act of 1986 (PL 99-499) to request a copy of facility emergency response plans for the purpose of establishing or improving local emergency response plans. Also, under the general duty clause of the Clean Air Act § 112 (r) (1), facility owners and operators are required to design and maintain safe facilities "taking such steps as are necessary to prevent releases."

2. **Prevention of Chemical Accidents.** One of the major objectives of EPA's chemical emergency preparedness and prevention program is to prevent chemical accidents. When this objective is mentioned in our documents it may refer to the general programmatic goal of preventing chemical accidents. Therefore, EPA respects PGV's perspective but will maintain reference to EPA's program goal.

3. **Site Visit.** It is agreed by EPA that Step 6 of the workplan should reiterate the purpose and scope of the site visit — review of the facility's emergency response plan. Therefore, you are correct — the site visit will not be "an open-ended review of PGV's facility, operations, procedures and protocols." That was conducted during EPA's National Enforcement Investigation Center (NEIC) review in February 1995.

4. **Community Groups.** It is agreed that EPA should also meet with interested "Puna community" members that may not belong to Puna Malama Pono. Thank you for bringing to our attention three other organizations in your community — Leilani Estates; Lani Puna Estates; and Puna Community Development Plan Committee. EPA would very much appreciate it if you could identify contact names and telephone numbers for representative members of those groups and any other individuals who have expressed an interest in being involved.

5. **Technical Expertise.** Your request that at least one member of the emergency response plans review team have technical expertise for geothermal facilities is appreciated by EPA and taken very seriously. If the immediate office of the yet-to-be-awarded Superfund Technical Assistance and Response Team (START) contract does not have anyone with geothermal expertise, there is a possibility that we may be able to tap someone from that company outside of California with the desired expertise. If that company, as a whole, has no one with the desired expertise — EPA will look at the possibility of bringing in a qualified member of another "START cross-over contract zone."

EPA examined whether someone from Bechtel, with known geothermal work experience, could be used under the ARCS (Alternative Remedial Contracting Strategy) contract. A special work assignment would need to be written for this task — and the possibility for conflict-of-interest will exist. Meanwhile, members of the community have expressed displeasure with the notion of EPA using someone from Bechtel.

6. **Health Impacts.** EPA agrees with you that mention of "health impacts" should be deleted from Step 5 of the workplan — "as the health risk assessment is beyond the scope of this project."

7. **Community Technical Advisor.** The first iteration of our workplan referenced a "community technical advisor." Based upon comments, it was deleted from the last edition of the workplan, because there is no concrete knowledge of the existence of the referenced report and it is uncertain if EPA could ever identify such a person or will ever see such a document. Therefore, EPA will not be able to supply you with a copy of an apparently non-existent report.

8. **Confidential Business Information.** Each of the "outside technical experts" will be **required** to sign a form **requiring** them to abide by EPA's CBI rules. Also contrary to your suggestion, the "outside technical experts" are not eligible to become EPA contractors. For this kind of work and most others at EPA, contracts are generally awarded to firms for multi-tasks and multi-years through EPA in Washington.

9. **Expectations.** You are concerned that enforcement actions are behind this "independent review" of the emergency response plans. That is not within the purview of this activity. Any recommendations made by the emergency response plans review team will be made as recommendations to improve the respective plans. As stated in our previous letter, EPA "expects that recommendations will be considered for incorporation into the various emergency response plans. If the recommendations are not accepted by Hawaii County or the facility, EPA will want to know the rationale."

Again, thank you for your careful and comprehensive review of our letters and draft workplan for the emergency response plans review. Additional adjustments have been made to the accompanying workplan based upon your most recent comments. If you have any further questions or need any further clarifications, please call me at (415) 744-2328. Again, EPA looks forward to working with you and PGV to provide support to improve the emergency response plans. You will probably be contacted before the end of 1995 to coordinate and confirm the prospective dates of the site visit in 1996 by the emergency response plans review team.

Sincerely,

Michael Ardito

Michael Ardito
Hawaii State Project Officer for Superfund Programs

enc: Revised workplan

cc: Mayor Stephen Yamashiro - County of Hawaii
Bruce Anderson - DOH
Steve Armann - DOH
Hiram Young - DLNR
Dean Nakano - DBEDT
Harry Kim - Hawaii County Civil Defense
Virginia Goldstein - Hawaii County Planning Department
Nelson Tsuji - Hawaii County Fire Department
Adrian Barber - Puna Malama Pono
Keith Takata - EPA

DRAFT WORKPLAN

Puna Geothermal Workgroup
Emergency Response Plans Review

Statement of Purpose

The purpose of this project is to provide an independent review and evaluate the effectiveness of the emergency response plans for Puna Geothermal Venture facility and the County of Hawaii. One associated objective of reviewing emergency response plans is to help prevent chemical accidents and improve emergency response capabilities. Examination of emergency response plans is authorized under the Emergency Planning and Community Right-to-Know Act of 1986 (PL 99-499) also identified as 42 U.S. Code 11001 - 11050. Examination of risk management plans is authorized under the Clean Air Act Amendments of 1990 § 112 (r) (1), (PL 101-549) also identified as 42 U.S. Code 7412 (r) (1).

Project Description

The project will consist of the following steps:

STEP 1 — The Superfund Technical Assistance and Response Team (START) will provide the contractor desk review of the emergency response plans for the County of Hawaii and Puna Geothermal Venture based on the review criteria contained in the National Response Team's NRT-1 guidance.

STEP 2 — Advisory group of technical experts will provide a desk review of the emergency response plans for the County of Hawaii and Puna Geothermal Venture and the contractor's review and recommendations.

STEP 3 — Advisory group of technical experts and EPA contractor will meet in San Francisco with the EPA Region 9 Puna Workgroup members for a general briefing on work progress to date.

STEP 4 — Advisory group and contractor will meet with representatives of state agencies in Honolulu (such as the Hawaii Department of Health and Department of Land and Natural Resources) to discuss issues of concern regarding geothermal in Hawaii.

STEP 5 — Advisory group, contractor, and a member of the EPA Puna Workgroup will meet with the community and public officials in Hawaii County to learn community concerns about accident potential and emergency preparedness. This advisory group will meet with Hawaii County Civil Defense, the Hawaii County Fire Department, and other local agencies.

STEP 6 — Advisory group will visit Puna Geothermal Venture to further review the facility's emergency response plan. The technical experts will each focus on a separate section for the site visit, contributing their own unique backgrounds to the overall project. The purpose of the site visit is to apply response plan recommendations more realistically and adequately for the facility and the community.

DRAFT WORKPLAN
Puna Geothermal Workgroup
Emergency Response Plans Review

STEP 7 Contractor will compile a report of the advisory group members' findings and recommendations and will send a preliminary draft report to the advisory group and EPA for review and comment.

STEP 8 The contractor will incorporate advisory group and EPA comments for the preliminary draft report which will be sent to the advisory group and EPA. Following advisory group and EPA review and comment, the draft will be revised. Then the draft will be sent to the community, local, county, and state officials, and Puna Geothermal Venture (PGV) for review and comment.

STEP 9 The final report of findings and recommendations from the advisory group of technical experts on emergency response and risk management planning (in and around Puna) will be sent to the community, public officials, and PGV. This will be a public document which we will make available to all interested people.

Advisory Group of Technical Experts

This proposed group will consist of the following people who bring considerable experience from the local, state, national, private non-profit, and private sectors in accident prevention, chemical safety reviews, and emergency and risk management planning.

-- Paul Hill, Executive Director of the National Institute of Chemical Studies, in Charleston, West Virginia
-- Randy Sawyer, Manager of the Risk Management Prevention Program, in Contra Costa County, California
-- Mark Zusy, Supervisor of the Chemical Accident Prevention Program, for the State of Nevada

Timeframe

Desk review of the emergency response plans by the START contractor will tentatively begin by February 1, 1996, and will be completed by February 27, 1996.

Copies of the emergency response plans will be sent to the technical experts by March 1, 1996 to allow ample time for their desk review prior to site visits.

By March 1, 1996, copies of the START contractors' preliminary desk review comments will be provided to the team members.

Site visits in Hawaii are tentatively scheduled for May 1996.

The draft project report is tentatively scheduled to be available to the community and facility in August 1996.

The project completion date is scheduled to be September 30, 1996.

* Dates are subject to change based upon time and budget constraints.

Revised November 8, 1995

DIVISION OF WATER AND LAND DEVELOPMENT

FROM: JS DATE: 10-19 FILE IN: _____

TO:	INIT:		PLEASE:		REMARKS:
___	___	M. TAGOMORI	___	See Me	
___	___	S. Kokubun	___	Call	
			___	Review & Comment	
___	___	A. Monden	___	Take Action	
___	AY	A. Yim	___	Investigate & Report	
___	___	P. Manthos	___	Draft Reply	
___	___	H. Young	___	Acknowledge Receipt	
___	___	S. Yong	___	Type Draft	
___	___	D. Lee	___	Type Final	
___	___	E. Yuasa	___	Xerox ___ copies	
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___	___	_____	FOR YOUR:		
			___	Approval	
			___	Signature	
			___	Information	

Post Office Box 30
14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
Telephone (808) 965-6233
Facsimile (808) 965-7254

PUNA
GEOTHERMAL VENTURE
HAWAII

October 17, 1995

Confirmation of fax sent on 10/17/95

Mr. Mike Ardito
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Re: Emergency Response Plan Review

Dear Mr. Ardito:

Thank you for your letter of October 5, 1995 in response to my letters of September 12 and 18, 1995. Several questions have arisen from your response.

1. PGV continues to believe that the Statement of Purpose section of the Workplan should specifically set forth the federal statutory authority (EPCRA or otherwise) for EPA's review. This will allow all those involved in the process the opportunity to consider and understand that authority. Further, PGV does not believe that reference to the resolutions of the Hawaii legislature is appropriate, inasmuch as there is considerable disagreement as to the meaning and impact of the resolutions among persons and organizations in Hawaii.

2. The revised Workplan continues to focus, at least in part, on the prevention of chemical accidents. Indeed, the brief description of the advisory group members indicates that all the members are experienced in "chemical accident prevention" and risk management prevention.

As you know, in February 1995 the NEIC, in conjunction with Region IX staff, conducted a multimedia inspection of the PGV facility. As part of that inspection, the team reviewed the design, construction and operation of the facility. Operations and maintenance manuals for the facility were reviewed as were P & ID's and engineering reports for all of the major systems in the plant. Further, well drilling policies, procedures, plans and protocols were reviewed. All of this was done, at least in part, to enable EPA to issue recommendations designed to prevent accidents at the facility. PGV has committed to the Regional Director, to carefully consider implementation of the recommendations contained in the final report (which has not yet been issued).

Given this exhaustive review of the facility by EPA, we do not believe that another review, designed to "prevent chemical accidents," is necessary or appropriate. We suggest, therefore,

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that any reference to "accident prevention" in the Workplan be omitted. The focus of this latest project should be, as stated in the first sentence of the Workplan, a review of the emergency response plans for PGV and the County of Hawaii. We also suggest that the following language be added following the first sentence: "to evaluate the effectiveness of the PGV Emergency Response Plan."

3. Again, PGV believes that Step 6 of the Workplan should specifically set forth the purpose and scope of the site visit. By defining the purpose and scope, PGV will be able to have the necessary persons on site to enable EPA to accomplish its objectives. The site visit should not, however, be an open-ended review of PGV's facility, operations, procedures and protocols. As noted above, such a review has been previously completed by EPA.

4. While you indicate that all members of the "community" are encouraged to participate in the process, we note that you presently intend only to meet with Puna Malama Pono. PGV believes that most residents of the communities near the facility do not belong to this organization. Accordingly, we believe it is essential that EPA schedule meetings with the community associations for the neighboring communities. The Workplan should reference these meetings as well. The following organizations might be interested in meeting with EPA on this issue:

1. Leilani Estates
2. Lani Puna Estates
3. Puna Community Development Plan Committee

5. PGV continues to believe that it is imperative that the advisory group of technical experts includes at least one member with experience in geothermal facilities. The situations and issues experienced at geothermal facilities are unique and cannot be adequately addressed without input from persons knowledgeable in the subject.

6. In Step 5, the reference to "health impacts" should be deleted, as the health risk assessment is beyond the scope of this project.

7. Your letter did not provide an answer to Item 12 in my letter of September 18 regarding the "community technical advisor." I do note, however, that the new Workplan does not reference this person or their report. Again, please provide me with a copy of this report as well as the identity of this advisor and his/her expected participation in the review process.

8. There is still some confusion about treatment of confidential information. Under Documents on page 3 you state that members of the review team may request to see other documents, that PGV will be provided a determination as to the documents' confidential status before their release and that all documents provided to the review team will be public. This must mean that PGV's concerns about release of a confidential document will bar its use by the review team. On page

4, however, under Confidential Information you state that members of the review team, not being EPA contractors, will only be "requested" to follow EPA CBI rules. This is unacceptable. If EPA releases CBI to the review team, its members must be barred from releasing it. A "request" is not enough. Perhaps the review team members could become EPA contractors for the purpose of this project, if that would ensure their adherence to the CBI rules. Please provide much more specific information on this issue.

9. Finally, the Workplan should specifically set forth EPA's expectations with respect to the recommendations contained in the final report. The stated purpose of the project is to "provide an independent review" of the emergency response plans. Yet, your letter of October 5 seems to indicate a broader purpose, including enforcement by EPA of the implementation of the recommendations. The Workplan should accurately state the purpose of the review and the expectations of EPA with respect to the Final Report of Findings and Recommendations.

Thank you again for giving PGV the opportunity to participate in the preparation of an appropriate Workplan for EPA's review of the emergency response plans for PGV and the County of Hawaii. We look forward to working with you on this matter.

Sincerely,

Lynn White
Vice President and General Manager

bcc: Manabu Tagomori - DLNR

t:\admin\lynn\12459

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14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
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PUNA
GEOTHERMAL VENTURE
HAWAII

September 18, 1995

Mr. Michael Ardito
United States Environmental Protection Agency
75 Hawthorne St.
San Francisco, CA 94105

Re: Emergency Response Plan Review

Dear Mr. Ardito:

Further to my letter of September 12, 1995 commenting on EPA's Workplan for reviewing the emergency response plans of PGV and the County of Hawaii, set forth below are additional comments and questions of other members of the PGV management team. Your consideration of these items is greatly appreciated.

1. The resolutions of the Hawaii legislature do not appear to provide EPA with authority to execute the Workplan. Accordingly, the plan should clearly state the statutory authority pursuant to which EPA will conduct each of the tasks outlined in the plan.

2. The Workplan refers several times to the involvement of the "community." To which "community" are you referring? How will you ensure that all members of the community have the opportunity to be fairly represented in all aspects of the review process, and not just those members whose stated goal is to shut down PGV?

3. The preamble to the Workplan states an intent to "prevent accidents." As you know, EPA has conducted several comprehensive reviews of the PGV facility and its operations over the past several years. We trust that it is not EPA's intent to conduct yet another review of the operations of the facility for the purpose of "preventing accidents." Indeed, none of the steps outlined in the Workplan address the prevention of accidents. Rather, they seem to address the appropriate emergency response procedures should an accident occur. We suggest, therefore, that the reference to preventing accidents be deleted from the plan.

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FILE

4. The preamble speaks to the intention to improve the emergency response capability on the Big Island as it relates to the PGV facility. Will the County's general emergency response procedures for releases of hazardous substances for other facilities be examined, or is this project specifically focused on PGV? As you probably know, there are numerous facilities on the Big Island capable of releasing hazardous substances. Procedures related to these facilities should also be reviewed.

5. It is our understanding that no decision has been made with respect to whether EPA and ATSDR will conduct a health risk assessment. Is this understanding correct? If so, the last portion of the last sentence of the preamble should be deleted.

6. Step 1 refers to a Technical Assistance Team contractor. Has such a contractor been selected? If so, please provide PGV with the identity and capabilities of the contractor. If not, what are the criteria for selecting such a contractor? What specific capabilities are being considered?

7. The plan should set forth the intent of the site visit and the specific scope of the review of the site.

8. How does the EPA intend to ensure that members of the advisory group and the technical assistance team contractor and its representatives conform and adhere to the terms and conditions of the confidentiality agreement in effect with PGV regarding their receipt of information covering the facility. Further, PGV will require at least two weeks notice of any site visit to enable us to have the necessary personnel present during the visit to ensure that it is a productive endeavor.

9. We assume that all documents provided to EPA and its contractors in connection with the Workplan, and specifically designated as confidential by PGV, will be held confidential and will not be part of any draft or final reports issued by the agency. To this end, it would be helpful if PGV was provided with a list of documents EPA desires to review at least two weeks prior to when you require delivery of such documents, to enable PGV to make an appropriate and considered determination as to their confidential nature. It is not PGV's desire to request confidentiality on documents which are not confidential, and adequate review time will greatly assist this process.

10. Although PGV has not been provided with the biographies of the advisory group of technical experts, it does not appear from the references provided in the Workplan that any of them have any particular experience in geothermal matters. It seems appropriate to include on the advisory Group, persons with relevant experience in the matters under review. Further, have any of these group members had any previous contact with the State of Hawaii, County of Hawaii, or the "Puna community" or any other persons involved in, or connected to, this matter?

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11. Under the "Timeframe" portion of the plan, reference is made to "site assessment records." What is intended here? Many of these records may be confidential or otherwise inappropriate for dissemination. Please provide PGV with a list of such records prior to dissemination.

12. The "Timeframe" section also refers to a report by the "community technical advisor." Please provide PGV with a copy of this report. What role, if any, is the community technical advisor expected to play in the execution of the Workplan?

13. Finally, the plan should specifically state whether EPA intends to simply make recommendations for improving the County and facility ERP's, or require compliance with the Final Report of Findings and Recommendations?

Again, thank you for providing PGV with an opportunity to participate in this endeavor. We look forward to your responses to the questions raised in this letter and my letter of September 12, 1995.

Sincerely,

Lynn G. White
Vice President & General Manager

cc: Mayor Stephen Yamashiro - County of Hawaii

Michael Wilson - DLNR
Manabu Tagamori - DLNR

Maurice Kaya - DBEDT
Dean Nakano - DBEDT

Bruce Anderson - DOH
Tom Arizumi - DOH

Keith Takata EPA

Barry Mizuno PGV
Dave Berube PGV

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6/95

DIVISION OF WATER AND LAND DEVELOPMENT

FROM: _____ DATE: 10/11 FILE IN: _____

TO:	INIT:		PLEASE:	
		M. TAGOMORI	___	See Me
		S. Kokubun	___	Call
			___	Review & Comment
		A. Monden	___	Take Action
		A. Yim	___	Investigate & Report
		P. Manthos	___	Draft Reply
		H. Young	___	Acknowledge Receipt
		S. Yong	___	Type Draft
		D. Lee	___	Type Final
		E. Yuasa	___	Xerox ___ copies
			___	File
			FOR YOUR:	
			___	Approval
			___	Signature
			___	Information

REMARKS:

Confirmed by phone

1. REVIEW OF EMERGENCY RESPONSE PLANS IS A STATE/County AUTHORITY PER PERMIT OR OPERATIONS GRP WHICH EPA SAY THEY CAN OVERRIDE-
2. TONE SET BY EPA IN THEIR RESPONSE TO PGV IS A TOUGH ONE-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 5, 1995

Mr. Lynn G. White
Vice President & General Manager
Puna Geothermal Venture
P.O. Box 30
Pahoa, Hawaii 96778

Dear Mr. White:

Thank you for your letters of September 12 and September 18, 1995, commenting on the Environmental Protection Agency's draft workplan for the review of the Puna Geothermal Venture and the County of Hawaii emergency response plans. Thank you also for enclosing a copy of the Geothermal Resource Plan "permit conditions" which outlines the required emergency response plan elements.

In this letter it is hoped that most of your questions are answered and any concerns alleviated. As you stated in your letter of September 12, it is "important that we all understand the reason and basis for the review."

Independent Review. In that September 12 letter, you inquired about the "independent review" of the chemical accident prevention and emergency response plans. Included in the "independent review" would be three experts we have contacted who are not EPA employees or contractors. The short biographies of those individuals will be attached to the "final" workplan — once it is revised based upon comments received from Puna Geothermal Venture, Puna Malama Pono, the Hawaii Department of Land and Natural Resources, the County of Hawaii Planning Department, and any others. The proposed individuals for the "independent review" bring considerable experience in accident prevention, chemical safety reviews, emergency and risk management planning from the local, state, national, private non-profit or private sectors. Paul Hill is the Executive Director of the National Institute for Chemical Studies in Charleston, West Virginia. (His non-profit organization has a "cooperative agreement" with EPA at the national level for chemical accident prevention.) Randy Sawyer is manager of the Risk Management Prevention Program in Contra Costa County, California. Mark Zusy is the supervisor of the Chemical Accident Prevention Program for the State of Nevada. In addition to that team, EPA plans to send a member of the Superfund Technical Assistance and Response Team (START) — a firm with an EPA contract to bring additional expertise but primarily assist the independent team in compiling a report with recommendations for the various emergency response plans impacting Puna Geothermal Venture. Also, an EPA employee is scheduled to accompany the team to assist with logistics for the emergency response plan reviews and meetings scheduled in Honolulu, Hilo and the Pahoa area. At this time, I am scheduled to be that EPA employee in my role as Hawaii State Project Officer for the Superfund programs. There are no other EPA employees scheduled for the site review.

Of course, all of this is contingent upon EPA having the necessary contract resources and travel money under the budget for Fiscal Year 1996 which is currently being debated by the U.S. Congress.

Desk Review. The desk review by the current EPA contractor has been postponed and will probably not begin until the new START contract is awarded and work is transferred. The current contractor has only received and read two documents regarding PGV and the emergency response plans. One document is entitled "Geothermal Incident SOP" which was received by EPA in July 1995 from Hawaii County Divil Defense. The other document is entitled "Emergency Response to Puna Geothermal Venture (PGV)" which was received in August 1995 from the Hawaii County Fire Department. It is not anticipated that the current contractor will submit written comments on the documents in the near future.

Time Schedule. Regarding your concerns about the time sequence and schedule of events for the emergency response plan review team, several things have not been precisely decided. However, the travel logistics probably will include stopovers for meetings in San Francisco with the Puna Geothermal workgroup at the U.S. EPA, meetings with several state agencies in Honolulu (including the Hawaii Department of Health, the Department of Land and Natural Resources, and the Department of Business, Economic Development and Tourism), meetings in Hilo with several local agencies (including the Hawaii County Civil Defense, the Hawaii County Planning Department, the Hawaii County Department of Public Safety, and the Hilo Fire Department), meetings in the Pahoa area with representatives of the Pahoa Fire Department, the Puna Police Department, Puna Malama Pono, and perhaps others. However, there is a possibility that the emergency response plan review team may request a brief site visit to Puna Geothermal to become familiar with the area prior to meeting with the local agencies and groups.

Site Visit Date. Currently, the proposed dates of the emergency response plan review team visit to Honolulu, Hilo and Puna Geothermal Venture is an undetermined week in February 1996. Of course, the dates will be determined in consultation with PGV to accommodate a mutually acceptable schedule. You have requested that Puna Geothermal receive at least two weeks notice prior to the actual site visit. You will probably know at least two months in advance. The review team will need to agree on a schedule and make travel reservations.

Site Visit Team. It was unclear to you as to specifically who will be visiting the site. Again, the proposed team to visit PGV is the three outside technical experts, one START contractor, and myself (or another EPA employee for logistical support). You stated in your September 12 letter that, "If EPA intends to set up a meeting between the County Fire Department, Civil Defense, LEPC, and PGV to provide for an information exchange, it is suggested the review and the information sessions be separate." Yes, the review team will be briefed by the outside agencies away from the PGV site. In another matter and activity, not covered by the draft workplan for the emergency response review, there is the possibility that the first public forum regarding PGV hosted by EPA and the Hawaii Department of Health may be held the same week or month as the PGV site visit. In particular, this would consolidate travel time and expenses for EPA. Details of the proposed public forum are still being worked out — and may not be ironed out until later this calendar year.

Biographies. Only one biography of the three nominated technical experts has been received. At this time, we do not know the extent of particular experience in geothermal matters. For those three individuals, we are not aware of any contacts with the State of Hawaii, County of Hawaii, the "Puna community," or PGV.

Contractor Assistance. The Technical Assistance Team (TAT) contractor for the initial phase (desk review of county and fire department emergency response plans) has been Ecology and Environment. The contract ends this calendar year and it will be replaced with a new START (Superfund Technical Assistance and Response Team) contract which still has not been awarded. Therefore, at this time we can not identify the individual to be assigned and that person's background. These contracts are multi-year and incorporate a variety of activities to assist EPA. In our telephone conversation of September 21, you asked if we could use someone from Bechtel, with known geothermal work experience. Bechtel currently has an ARCS (Alternative Remedial Contracting Strategy) contract with EPA. However, we may not be able to write even a special work assignment for this project with Bechtel due to possible conflict-of-interest, but this has not been determined yet.

Authority. In your follow-up letter of September 18, 1995, you asked about any authority or provision under the Hawaii legislative resolution for the emergency response plan review. Although it is not necessary for EPA to receive authority from the State of Hawaii to perform an emergency response plan review for Puna Geothermal, what we are doing is consistent with the Hawaii legislative resolution. EPA is acting under authority of the Emergency Planning and Community Right-to-Know Act of 1986 (PL 99-499) that allows for emergency planning groups to request receipt of facility or public agency emergency response plans. Also, anyone could review PGV's emergency response plan because the Geothermal Resource Permit you are operating under states on page 16 that "copies of the emergency plan shall be made available to the public by the applicant."

Community Involvement. You have asked us to define "community involvement" and how we will ensure that all members of the community have the opportunity to be fairly represented in all aspects of the review process — not just community members whose stated goal is to shut down PGV. EPA believes "the community" is not an exclusive group and EPA desires to involve any interested member of the community.

Preamble. We have noted your comment regarding an inappropriate use of the term "prevent accidents" and "chemical accident prevention" in the preamble of the draft workplan. Although the focus of this review is improvement of the emergency response plans, EPA has incorporated and prioritized the prevention of public health accidents and environmental degradation into agency activities.

Emergency Plan Improvement. You asked about our "intention to improve the emergency response capability on the Big Island as it relates to the PGV facility." You also asked if releases of hazardous substances for other facilities will be examined. Although this particular project will focus on Puna Geothermal, there may be generic recommendations for the County emergency response plans and procedures that could be used for any facility.

Documents. During the desk review or the site visit, members of the advisory review team may request to see other documents — for which PGV will be given appropriate and considered determination as to the confidential nature before released in a draft or final report.

The site assessment records mentioned under the "Timeframe" portion of the draft workplan refers to the Superfund preliminary assessment that was conducted in 1994. Any EPA records provided to the advisory review team will be public documents available under the Freedom of Information Act.

Confidential Information. Regarding confidential business information (CBI), all EPA contractors must abide by the same CBI regulations as EPA. Members of the independent review team (who bring outside expertise) without contractual ties to EPA will be informed and requested to abide by the same set of CBI rules.

NRT-1. Per your request we have enclosed a copy of the National Response Team's document, *NRT-1, the Hazardous Materials Emergency Planning Guide.* This was referenced in our draft workplan that criteria for the desk review will be in concert with the NRT-1 guidance.

Health Issues. You mentioned that the preamble of our draft workplan said health issues would be handled through a health risk assessment that will be conducted by ATSDR. That is just information for clarification of this project. You are correct, the stated purpose of the review is to evaluate emergency response plans, not potential health impacts. Per your suggestion, we have deleted reference in the draft workplan that EPA and ATSDR will conduct a health risk assessment.

Recommendations. Recommendations will probably be made by the review team for improving the County and facility emergency response plans. EPA will expect that recommendations will be considered for incorporation into the various emergency response plans. If the recommendations are not accepted by Hawaii County or the facility, EPA will want to know the rationale.

Thank you for your careful and comprehensive review of our draft workplan. Thank you for understanding why EPA believes it needs to address the concerns of the Puna community. We will be making some adjustments to the workplan based upon your comments and the comments of others. If you have any further questions or need any other clarifications, please do not hesitate to contact us. (You may reach me at 415-744-2328.) EPA looks forward to working with you and PGV to provide support to improve the emergency response plans and resolve concerns of the community.

Sincerely,

Michael Ardito

Michael Ardito
Hawaii State Project Officer for Superfund Programs

enc: Revised draft workplan
NRT-1

cc: Mayor Stephen Yamashiro - County of Hawaii
Bruce Anderson - DOH
Steve Armann - DOH
Hiram Young - DLNR
Dean Nakano - DBEDT
Harry Kim - Hawaii County Civil Defense
Virginia Goldstein - Hawaii County Planning Department
Nelson Tsuji - Hawaii County Fire Department
Adrian Barber - Puna Malama Pono
Keith Takata - EPA

DRAFT WORKPLAN

Puna Geothermal Workgroup
Emergency Response Plan Review

Statement of Purpose

The purpose of this project is to provide an independent review of the emergency response plans for Puna Geothermal Venture facility and the County of Hawaii. Members of the Puna community and the Hawaii legislature have requested that EPA review the emergency management systems and conduct a health risk assessment of the geothermal industry in Hawaii. The health risk assessment is beyond the scope of this project. One associated objective of reviewing the emergency response plans is to help prevent chemical accidents and improve emergency response capabilities.

Project Description

The project will consist of the following steps:

STEP 1 Technical Assistance Team (TAT) -- technical and field support to Superfund and EPCRA programs -- soon to become the Superfund Technical Assistance and Response Team (START) will provide a desk review of the emergency response plans for the County of Hawaii and Puna Geothermal Venture based on the review criteria contained in the National Response Team's NRT-1 guidance.

STEP 2 Advisory group of technical experts will provide a desk review of the emergency response plans for the County of Hawaii and Puna Geothermal Venture and the contractor's review and recommendations.

STEP 3 Advisory group of technical experts and EPA contractor will meet in San Francisco with the EPA Region 9 Puna Workgroup members for a general briefing on work progress to date.

STEP 4 Advisory group and contractor will meet with representatives of state agencies in Honolulu (such as the Hawaii Department of Health and Department of Land and Natural Resources) to discuss issues of concern regarding geothermal in Hawaii.

STEP 5 Advisory group, contractor, and a member of the EPA Puna Workgroup will meet with the community and public officials in Hawaii County to learn community concerns about accident potential, emergency preparedness and health impacts. This advisory group will meet with Hawaii County Civil Defense, the Hawaii County Fire Department, and other local agencies.

STEP 6 Advisory group will visit Puna Geothermal Venture facility. The technical experts will each focus on a separate portion of the site visit, contributing their own unique backgrounds to the overall project.

STEP 7 Contractor will compile a report of the advisory group members' findings and recommendations and will send a preliminary draft report to the advisory group for review and comment.

DRAFT WORKPLAN

Puna Geothermal Workgroup
Emergency Response Plan Review

STEP 8 Contractor will incorporate advisory group comments and write draft #1 of the report which will be sent to the advisory group and EPA.

STEP 9 Following advisory group and EPA review and comment of draft #1, draft #2 of the report will be written and sent to the community, local, county and state officials, and PGV for review and comment.

STEP 10 Final Report of findings and recommendations from the advisory group of technical experts on emergency response and risk management planning (in and around Puna) will be sent to the community, public officials, and PGV. This will be a public document which we will make available to all interested people.

Advisory Group of Technical Experts

This proposed group will consist of the following people who bring considerable experience from the local, state, national, private non-profit, and private sectors in accident prevention, chemical safety reviews, and emergency and risk management planning.

-- Paul Hill, Executive Director of the National Institute of Chemical Studies, in Charleston, West Virginia
-- Randy Sawyer, Manager of the Risk Management Prevention Program, in Contra Costa County, California
-- Mark Zusy, Supervisor of the Chemical Accident Prevention Program, for the State of Nevada

Biographies will be attached to the final workplan.

Timeframe

Copies of the emergency response plans will be sent to the technical experts by November 15, 1995 to allow ample time for their desk review prior to site visits.

Desk review of the emergency response plans by the START contractor will tentatively begin by December 1, 1995, and will be completed by January 15, 1996.

By January 15, 1996, copies of the START contractors' preliminary desk review comments will be provided to the team members.

Site visits in Hawaii are tentatively scheduled for February 1996.

The draft project report is tentatively scheduled to be available to the community and facility in June 1996.

The project completion date is scheduled to be June 30, 1996.

* Dates are subject to change based upon time and budget constraints.

Revised September 25, 1995

FACSIMILE TRANSMISSION COVERSHEET

DATE Apr. 10, 1995

Total pages including coversheet 7

TO Mr. Hiram Young
Hawaii Dept. of Land and Natural Resources
Div. of Water and Land Development

FAX (808) 587-0283

PHONE (808) 587-0259

FROM **Mike Ardito**
Office of Emergency Planning
U.S. EPA Region 9 H-8-5
75 Hawthorne Street
San Francisco California 94105

FAX (415) 744-1796 **PHONE (415) 744-2206**

Notes Advance copy by fax as courtesy; original copy is in the mail.

U.S. ENVIRONMENTAL PROTECTION AGENCY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

April 7, 1995

Mr. James Ikeda
Acting Deputy Director
Hawaii Department of Health
1250 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Ikeda:

Thank you very much for coordinating and participating in the meetings recently held between EPA and the State on geothermal activities and the Puna Geothermal Venture (PGV) facility. The exchange of information was very beneficial and will help pave the way for future coordination.

Based on all of our meetings, we believe that there are five areas which require additional government attention. Within each area, we are proposing a number of activities. We will be expanding on the specifics of these activities in future communications.

(1) PGV Site Inspection

1. Follow-up on multi-media inspection conducted by EPA and State of Hawaii. (Contact: Stacy Pogorzelski, 415/744-1083)

2. Increase EPA involvement in UIC permitting process. (Contact: Shannon FitzGerald, 415/744-1830)

3. Recommend enhancements to state air monitoring and air permit. (Contact: Stacy Pogorzelski, 415/744-1083)

4. Conduct independent technical review of wells with potential problems. (Contact: Shannon FitzGerald, 415/744-1830)

(2) Health

1. Coordinate with health survey by University of Texas. (Contact: Gerry Hiatt, 415/744-2283)

2. Based on results of health survey, consider health studies or other health activities. (Contact: Gerry Hiatt, 415/744-2283)

(4) Emergency Response

1. Evaluate emergency response training and related-equipment needs of county. (Contact: Mike Ardito, 415/744-2206)

2. Conduct independent review of county and facility emergency response plans. (Contact: Mike Ardito, 415/744-2206)

(4) Community Involvement

1. Respond to information requests received from the community. (Contact: Mike Ardito, 415/744-2206)

2. Facilitate release of air monitoring data for PGV to community. (Contact: Stacey Pogorzelski, 415/744-1083)

(5) HGP-A and True Sites

1. Gather and share information with community regarding each well. (Contact: Shannon FitzGerald, 415/744-1830)

2. Conduct independent technical review of wells with potential problems. (Contact: Shannon FitzGerald, 415/744-1830)

3. Encourage state to cleanup and restore HGP-A and True sites with community participation. (Contact: Mike Ardito, 415/744-2206)

Please discuss these proposals with the Department of Land and Natural Resources and the Department of Business and Economic Development, and Tourism. We are also providing this same information to elected officials, the County of Hawaii, Puna Geothermal Venture, and members of the community.

I have enclosed our draft Trip Report. If you have any questions, please feel free to call me at 415/744-2356.

Sincerely,

Keith Takata

Keith Takata
Deputy Director for Superfund

Enclosure

cc: DLNR
DBED

TRIP REPORT
FOR EPA MEETINGS RE: GEOTHERMAL ACTIVITIES IN HAWAII

INTRODUCTION

The purpose of this trip report is to briefly summarize each meeting held during the week of February 6, 1995 between representatives of the Environmental Protection Agency (EPA) and various officials from the U.S. Congress, State and local government, and Puna community groups. The EPA delegation included Bill Nelson from the Agency for Toxic Substances Disease Registry (ATSDR); this agency works closely with EPA on health issues.

The purpose of the trip was to hold meetings with the community groups and various government officials regarding geothermal activities within the State and at the Puna Geothermal Venture (PGV) facility located on the Big Island. These activities have had high involvement from community groups, EPA, State, and local government agencies. In addition, this trip was in follow-up to the June 1994 meetings that EPA Regional Administrator, Felicia Marcus, held with members of the community on these issues.

Each meeting began with introductory remarks including background information on EPA's involvement with geothermal activities and the Puna Geothermal Venture facility, the purpose for this trip, a review of EPA's itinerary, information on the EPA multi-media inspection of PGV during mid-February, and the possible outcomes of this visit. EPA outlined two documents that would be produced as a result of this visit and the multi-media inspection. These will be provided to meeting participants and the public:

- This trip report;
- A copy of the PGV multi-media inspection report which will be available within the next few months.

Attached is a copy of the EPA itinerary package and sign-up sheets from the various meetings.

D I S C U S S I O N

FEBRUARY 1, 1995, Meeting with Rep. Patsy Mink (Washington, DC)

Who Attended: Rep. Patsy Mink & Staff
EPA: Keith Takata

We discussed background information and an overview of the plans and itinerary for the EPA trip to Hawaii. Rep. Mink discussed overall geothermal activities within the State and her concern about future expansion of geothermal exploration.

FEBRUARY 7, 1995, Meeting with Sen. Akaka's Office (Honolulu)

Who Attended: Mike Kitimura, State Director for Sen. Akaka
EPA: Keith Takata, Rachel Loftin, Vicki Tsuhako
ATSDR: Bill Nelson

During this meeting we discussed energy alternatives within the State and energy resources on the Big Island. We also discussed agricultural and economic issues concerning the Big Island, community involvement in geothermal activities, known concerns over impacts to the Native Hawaiian culture, and the need to view geothermal energy in the context of the "big picture".

FEBRUARY 7, 1995, Meeting with Dr. Miike, HI Dept. of Health (Honolulu)

DOH: Dr. Lawrence Miike, Director of Health; James Ikeda, Acting Deputy Director; Thomas Arizumi, Chief for Environmental Management Division
EPA: Keith Takata, Rachel Loftin, Vicki Tsuhako
ATSDR: Bill Nelson

Subjects covered during this meeting included background on State involvement on geothermal activities and PGV. The State indicated a need to distinguish EPA activities from those of the State; this is also important for any follow-up actions that EPA may take. Health studies, groundwater and air issues, and energy resources throughout the State were also discussed.

FEBRUARY 7, 1995, Meeting with Dept. of Health; Dept. of Land & Natural Resources; Dept. of Business, Economic Dev. & Tourism (Honolulu)

REFER TO ATTACHED SIGN-IN SHEET FOR LIST OF ALL PARTICIPANTS

The State provided background information on the early studies for energy development for the State, a study for transferring geothermal energy from the Big Island to Oahu via undersea cable, identification of geothermal zones in Puna, exploration of geothermal resources in lower Puna, and history and status of geothermal sites in Puna. We also discussed various activities conducted by the State at PGV including permits, air and groundwater monitoring, emergency response and Local Emergency Planning Committee (LEPC) coordination, health/risk assessment, USGS volcanic emissions studies, and State involvement with the Puna community.

FEBRUARY 8, 1995, Meeting with Sen. Inouye's Office (Hilo)

Who Attended: William Kikuchi, State Director for Sen. Inouye

REFER TO ATTACHED SIGN-IN SHEET FOR LIST OF ALL PARTICIPANTS

This meeting included members of the Puna community, business, Hawaii Geothermal Alliance, staff conducting volcanic emissions observations from the United States Geological Survey (USGS), and representatives of the Leilani Estates Community Association. Senator Inouye has had a long-term interest in geothermal activities throughout the State and continues to be interested in the Puna area in particular. Topics covered included energy use in Puna, agricultural issues, air quality, health studies, and noise issues. The group expressed a desire for continuing communication between EPA and all members of the community regardless of their views on geothermal activities.

FEBRUARY 8, 1995, Meeting with Hawaii County Officials (Hilo)

REFER TO ATTACHED SIGN-IN SHEET FOR LIST OF ALL PARTICIPANTS

The County participants included the Mayor's Managing Director, Civil Defense Director, County Planning Dept. representatives, and Fire Dept. representatives. EPA was provided background information on activities conducted under the County lead. This included permits, emergency response topics, asset and royalty funds, LEPC coordination, noise issues, and community outreach.

FEBRUARY 8, 1995, Tour of the PGV Facility

PGV: Lynn White, Site Mgr., PGV Managers & Staff

EPA: Keith Takata, Lori Lewis, Shannon FitzGerald, Gerry Hiatt, Stacey Pogorzelski, Rachel Loftin, Ann Lyons

ATSDR: Bill Nelson

The tour included a presentation on the facility history and plant operations, and a walk-through of the site led by Lynn White.

FEBRUARY 8, 1995, Slide Presentation by Community Representatives (Hilo)

COMMUNITY: Bill Smith, Spokesperson; various members of the community; and Representatives of Life of the Land and Pele Defense Fund
EPA: Keith Takata, Lori Lewis, Shannon FitzGerald, Gerry Hiatt, Stacey Pogorzelski, Ann Lyons
ATSDR: Bill Nelson

Community representatives presented slides of PGV, True, and the Hawaii Geothermal Project sites. They also raised issues regarding cleanup of closed geothermal facilities and the impacts of geothermal activities upon Native Hawaiian culture.

FEBRUARY 9, 1995, Meeting with Community and Environmental Group Representatives (Puna)

COMMUNITY: Bill Smith, Spokesperson; Representatives from Pele Defense Fund, Sierra Club Legal Defense Fund, Life of the Land, Big Island Rainforest Action Group, Lanipuna Gardens Community Association, Kapoho Community Association, Puna Malama Pono, The Hawaii Laieikawai Association Inc, Hawaii's Thousand Friends, and other members of the community
EPA: Keith Takata, Lori Lewis, Shannon FitzGerald, Gerry Hiatt, Stacey Pogorzelski
ATSDR: Bill Nelson

The day began with introductions and opening remarks followed by a drive-by tour of the PGV facility, the air monitors and the community. Members of the Big Island Rainforest Action Group held a demonstration at the gate of the PGV site to coincide with the tour. The afternoon was divided into sessions which were led by members of the community groups and covered the following areas:

- Environmental Justice
- Well Integrity
- Emergency Response
- EPCRA & Water
- Air
- Health

The day's events were summarized through a "talk story" session where each meeting participant spoke about their perspectives and impressions on the events of the day. This was followed by closing comments given by Tom Luebben, Bill Smith, and Keith Takata.

Post Office Box 30
14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
Telephone (808) 965-6233
Facsimile (808) 965-7254

PUNA
GEOTHERMAL VENTURE
HAWAII

September 12, 1995

Mr. Michael Ardito
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Mr. Ardito:

Reference: Emergency Response Plan Review

Thank you for the opportunity to review and comment on your DRAFT WORK PLAN for the review of the Puna Geothermal Venture and the County of Hawaii emergency response plans. While I am aware that a small number of people within the Puna Community have asked for inspections of the PGV Facility, I was not aware that the State Resolution to which you refer requested anything more than a review of the several existing health studies that have already been conducted in and around this Facility. While PGV is not adverse to having a review in the interest of improving the emergency response capability, it is important that we all understand the reason and basis for the review. Find enclosed a copy of the Geothermal Resource Plan "permit conditions" which outlines required ERP elements for PGV under which PGV has developed their emergency response plan. With these thoughts in mind, find below some comments on the DRAFT WORK PLAN you sent me for review on August 16, 1995.

1) In the preamble of your DRAFT WORK PLAN, you indicate your purpose is to provide an "independent review" of the chemical accident prevention and emergency response plans. It is therefore my understanding that this review will be conducted only by EPA personnel and their contractors. If personnel other than those cited above are to participate during the desk or Site reviews, please advise.

2) You state that biographies of the Advisory Group of Technical Experts were attached when sent to the "Community." Please also send a copy of these biographies to PGV,

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3) Your letter was received in late August and the desk review was and is assumed to be underway. As PGV is not sure of the basis under which these reviews are being conducted, we urge you to make copies of the enclosed sections of the GRP available to the TAT reviewers so the parameters of responsibility between the County and PGV are clearly understood.

4) Your work plan includes a discussion of the "issues of concern" with State agencies, the "community" and public officials prior to a Site review of the PGV Site and evaluating the County's plan. It seems more appropriate to perform a visit to the County and PGV to establish the validity of these concerns prior to meeting with the above groups.

5) You state in STEP 1 of your work plan that the criteria for the desk reviews will be in concert with the National Response Team's NRT-1 guidance. Please provide PGV with this document.

6) STEP 5 of your work plan discusses meeting with the "community" and learning about their perception of accident potential, emergency preparedness and **health impacts.** You mentioned in the preamble of your letter that health issues would be handled through a health risk assessment that will be conducted by ATSDR. The stated purpose of this review is to evaluate emergency response plans not potential health impacts.

7) In STEP 5, you mention that a member of the EPA Puna Workgroup will be present at meetings held with the "Community" and public officials. Is this an EPA employee? Please define the status of this EPA Workgroup member.

8) I assume you meant to have Site visits in Hilo and Pahoa in early winter 1995 not 1996.

9) In STEP 6 of your work plan, it is unclear as to specifically who will be visiting the Site, If the intent of your visit is to evaluate the Facility's ability to respond to an emergency condition, PGV assumes only EPA technical experts will be present. If EPA intends to set up a meeting between the County Fire Department, Civil Defense, LEPC and PGV to provide for an information exchange, it is suggested the review and the information sessions be separate.

T:\ADMIN\LYNN\12453
FILE

Thank you again for the opportunity to participate and be an active part of this review EPA is conducting. While we feel the intent of the State Legislative Resolution was to review existing health data, we understand the need to address the concerns of a small but very active part of the Puna Community. To that end, PGV looks forward to providing whatever support is necessary to perform the review of our programs and resolve the concerns that some of the members of the Community in the Puna District may have.

Sincerely,

Lynn G. White
Vice President & General Manager

enc: Senate Concurrent Resolution 103, S.D.2, H.D.1 & Committee Report

cc: Mayor Stephen Yamashiro - County of Hawaii

Michael Wilson - DLNR
Manabu Tagamori - DLNR

Maurice Kaya - DBEDT
Dean Nakano - DBEDT

Bruce Anderson - DOH
Tom Arizumi - DOH

Keith Takata EPA

John Farrell CEI
Nick Yancich CEI
Peggy Stover-Catha CEI
Frank Andracchi CEI

Barry Mizuno PGV
Dave Berube PGV

T:\ADMIN\LYNN\12453
FILE

Oct 3, 1989
Response To Geothermal Resource Permit Application (GRP 87-1
(Effective GRP From Planning Commission)

d. For the purposes of these noise conditions, the "nearest residence" is hereby defined as: For three years following the date of granting of the Geothermal Resource Permit, that permanently occupied dwelling nearest the applicable noise emission point as of the date of the granting of this permit; for all following years, that permanently occupied dwelling nearest the applicable noise emission point.

e. Sound level measurements shall be conducted using standard procedures with sound level meters using the "A" weighting and "slow" meter response unless otherwise stated.

25. Pursuant to Article 12-8 of the Rules of Practice and Procedure of the County of Hawaii Planning Commission, prior to initiating construction of the project, the permittee shall submit the following to the Planning Director:

a. Copies of approved permits and other applicable approvals for the project from other county, state, or federal agencies as applicable;

b. Final plans or provisions for monitoring environmental effects of the project as required by this Geothermal Resource Permit or otherwise required to ensure compliance with County rules and the rules of the State Department of Health and Board of Land and Natural Resources and other permit-issuing agencies;

c. A final plan of action to deal with emergency situations which may threaten the health, safety, and welfare of the employees and other persons in the vicinity of the proposed project site; and

d. A final site plan and elevations of proposed temporary and/or permanent structures for the project.

ERP

26. Prior to commencing any activity approved under this Geothermal Resource Permit on the project site, the permittee shall submit to, and secure the approval of, the Hawaii County Civil Defense Director a final plan of action to deal with emergency situations which may threaten the

health, safety, and welfare of the employees and other persons in the vicinity of the proposed project site. The plan shall include but not be limited to, the following elements:

a. A description of the project facilities and operations, with site plans identifying areas of potential hazards, such as high pressure piping and the presence, storage and transportation of flammable or hazardous materials, such as lubrication or fuel oil, isopentane, hydrogen sulfide, and sodium hydroxide;

b. A description of emergency services available off-site to respond to any emergency;

c. A description of the current onsite chain of command and responsibilities of project personnel in the event of an emergency; and

d. A description of potential project emergency situations, such as loss of well control, chemical spills, hydrogen sulfide exposure, pipeline rupture, fires, contaminated solids, etc. identifying:

(i) technical data on the nature of the hazard (for example, the concentrations of hydrogen sulfide in the various areas and the hazard associated with these concentrations, the corrosive characteristics of the abatement chemicals), or any data regarding the possible aerial extent of each potential emergency situation;

(ii) the warning systems (such as hydrogen sulfide detectors) used to alert personnel of the hazard;

(iii) the location and use of equipment used to control the hazard (such as fire protection equipment or isolation valves) or repair hazardous equipment (such as welding equipment or casing sleeves), and safety equipment for personnel (such as respiratory packs), including identification of the personnel trained in the use of that equipment; and

(iv) provisions for the monitoring, detection, and inspection of wells and plant facilities for the prevention of emergency situations.

e. Provisions to address natural hazards (such as lava flows, earthquakes, and storms) that identify warning systems, control options, steps for securing and shutting down the facility, personnel evacuation, and notification to appropriate agencies;

f. The location and capabilities of available medical services and facilities and plans for treating and transporting injured persons;

g. Evacuation plans, including meeting points, personnel rosters, and escape routes;

h. Training requirements for personnel, including procedures for emergency shutdown, handling of emergency equipment, spill prevention, first aid and rescue, fire fighting procedures, and evacuation training;

i. Provisions for periodic emergency preparedness drills for personnel;

j. Detailed procedures to be used to facilitate coordination with appropriate federal, state, and county officials during and after any emergency situation; and

k. Procedures to be used to identify and inform all residents within applicable distances of the project of the possible emergency situations, warnings, and responses in advance of commencement of project operations and the methods by which all individuals affected by a given emergency will be notified and evacuated, as necessary.

Copies of the emergency plan shall be made available to the public by the applicant.

27. Reports and records of emergency situations shall be submitted to the Planning Department upon occurrence of such emergencies.

4690

Post Office Box 30
14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
Telephone (808) 965-6233
Facsimile (808) 965-7254

PUNA GEOTHERMAL VENTURE
HAWAII

September 18, 1995

Mr. Michael Ardito
United States Environmental Protection Agency
75 Hawthorne St.
San Francisco, CA 94105

Re: Emergency Response Plan Review

Dear Mr. Ardito:

Further to my letter of September 12, 1995 commenting on EPA's Workplan for reviewing the emergency response plans of PGV and the County of Hawaii, set forth below are additional comments and questions of other members of the PGV management team. Your consideration of these items is greatly appreciated.

1. The resolutions of the Hawaii legislature do not appear to provide EPA with authority to execute the Workplan. Accordingly, the plan should clearly state the statutory authority pursuant to which EPA will conduct each of the tasks outlined in the plan.

2. The Workplan refers several times to the involvement of the "community." To which "community" are you referring? How will you ensure that all members of the community have the opportunity to be fairly represented in all aspects of the review process, and not just those members whose stated goal is to shut down PGV?

3. The preamble to the Workplan states an intent to "prevent accidents." As you know, EPA has conducted several comprehensive reviews of the PGV facility and its operations over the past several years. We trust that it is not EPA's intent to conduct yet another review of the operations of the facility for the purpose of "preventing accidents." Indeed, none of the steps outlined in the Workplan address the prevention of accidents. Rather, they seem to address the appropriate emergency response procedures should an accident occur. We suggest, therefore, that the reference to preventing accidents be deleted from the plan.

T:\ADMIN\LYNN\12455
FILE

4. The preamble speaks to the intention to improve the emergency response capability on the Big Island as it relates to the PGV facility. Will the County's general emergency response procedures for releases of hazardous substances for other facilities be examined, or is this project specifically focused on PGV? As you probably know, there are numerous facilities on the Big Island capable of releasing hazardous substances. Procedures related to these facilities should also be reviewed.

5. It is our understanding that no decision has been made with respect to whether EPA and ATSDR will conduct a health risk assessment. Is this understanding correct? If so, the last portion of the last sentence of the preamble should be deleted.

6. Step 1 refers to a Technical Assistance Team contractor. Has such a contractor been selected? If so, please provide PGV with the identity and capabilities of the contractor. If not, what are the criteria for selecting such a contractor? What specific capabilities are being considered?

7. The plan should set forth the intent of the site visit and the specific scope of the review of the site.

8. How does the EPA intend to ensure that members of the advisory group and the technical assistance team contractor and its representatives conform and adhere to the terms and conditions of the confidentiality agreement in effect with PGV regarding their receipt of information covering the facility. Further, PGV will require at least two weeks notice of any site visit to enable us to have the necessary personnel present during the visit to ensure that it is a productive endeavor.

9. We assume that all documents provided to EPA and its contractors in connection with the Workplan, and specifically designated as confidential by PGV, will be held confidential and will not be part of any draft or final reports issued by the agency. To this end, it would be helpful if PGV was provided with a list of documents EPA desires to review at least two weeks prior to when you require delivery of such documents, to enable PGV to make an appropriate and considered determination as to their confidential nature. It is not PGV's desire to request confidentiality on documents which are not confidential, and adequate review time will greatly assist this process.

10. Although PGV has not been provided with the biographies of the advisory group of technical experts, it does not appear from the references provided in the Workplan that any of them have any particular experience in geothermal matters. It seems appropriate to include on the advisory Group, persons with relevant experience in the matters under review. Further, have any of these group members had any previous contact with the State of Hawaii, County of Hawaii, or the "Puna community" or any other persons involved in, or connected to, this matter?

11. Under the "Timeframe" portion of the plan, reference is made to "site assessment records." What is intended here? Many of these records may be confidential or otherwise inappropriate for dissemination. Please provide PGV with a list of such records prior to dissemination.

12. The "Timeframe" section also refers to a report by the "community technical advisor." Please provide PGV with a copy of this report. What role, if any, is the community technical advisor expected to play in the execution of the Workplan?

13. Finally, the plan should specifically state whether EPA intends to simply make recommendations for improving the County and facility ERP's, or require compliance with the Final Report of Findings and Recommendations?

Again, thank you for providing PGV with an opportunity to participate in this endeavor. We look forward to your responses to the questions raised in this letter and my letter of September 12, 1995.

Sincerely,

Lynn G. White
Vice President & General Manager

cc: Mayor Stephen Yamashiro - County of Hawaii

Michael Wilson - DLNR
Manabu Tagamori - DLNR

Maurice Kaya - DBEDT
Dean Nakano - DBEDT

Bruce Anderson - DOH
Tom Arizumi - DOH

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Barry Mizuno PGV
Dave Berube PGV

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FILE

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PUNA
GEOTHERMAL VENTURE
HAWAII

September 18, 1995

Mr. Michael Ardito
United States Environmental Protection Agency
75 Hawthorne St.
San Francisco, CA 94105

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Sincerely,

Lynn G. White
Vice President & General Manager

cc: Mayor Stephen Yamashiro - County of Hawaii

Michael Wilson - DLNR
Manabu Tagamori - DLNR

Maurice Kaya - DBEDT
Dean Nakano - DBEDT

Bruce Anderson - DOH
Tom Arizumi - DOH

Keith Takata EPA

Barry Mizuno PGV
Dave Berube PGV

T:\ADMIN\LYNN\12455
FILE

DATE: 9/20/95 **FAX TRANSMISSION**

To	**Name:** Hiram Young		
	Organization: Hawaii Dept. of Land and Natural Resources		
	Mail Stop: Honolulu, HI		
	FAX No.:	**Area Code** 808	**Number** 587-0283
	Verification No.:	**Area Code** 808	**Number** 587-0259
From	**Name:** Mike Ardito		
	U.S. Environmental Protection Region 9, Field Operations, HWMD, $Fund 75 Hawthorne Street San Francisco, California 94105		
	Division / Branch (mail stop): PERB/PAS		
	Phone No.:	**Area Code** 415	**Number** 744-2328
	Fax No.:	**Area Code** 415	**Number** 744 - 1916
Pages	**(Including cover)** 6		
Subject	Puna Geothermal Venture		
Note	Attached is EPA's response to the recent editorial in the Honolulu Star-Bulletin.		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

September 18, 1995

David Shapiro, Editor
Honolulu Star-Bulletin
P.O. Box 3080
Honolulu, Hawai'i 96802

Dear Mr. Shapiro,

In response to your editorial, "Geothermal emission project is a travesty", dated August 14, 1995, I am submitting, for your consideration, the enclosed response for publication as an opinion editorial in the Honolulu Star-Bulletin. Should you have any questions regarding this opinion editorial, please contact me at (415) 744-1566.

Sincerely,

Deanna M. Wieman

Deanna M. Wieman, Director
Office of External Affairs

Enclosure

MEMORY TRANS REPORT

****

:STATE/DLNR/DOWALD (MAR 15 '95 08:32AM)

FILE NO.	FILE TYPE	DEPT. CODE	PAGES	RESULTS	GROUP	REMOTE TERMINAL IDENTIFICATION
183	SEND IMMEDIATE		4/4	OK		ERIC TANAKA

THIS FILE HAS BEEN CLEARED.

DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT
State of Hawaii

BUDGET REPORT
ON
IMPROVEMENTS TO FARM LOTS
HONOKAIA, HAMAKUA, HAWAII

The improvements to the farm lots in Honokaia as requested as Hamakua North Hilo Agriculture Cooperation (HNHA Coop) which are phased by priority and are as follows:

Phase I — Access Infrastructure - The scope of work shall consist of repair the existing cane roads by filling the bad spots of road with No. 3 gravel and construct new bridge over the Hamakua Ditch and new access road from Honokaa-Waipio Road to new bridge. The order of repairing the cane roads is Area A, Area B and above the Honokaa-Waipio Road.

Phase II — Water Infrastructure - The scope of work shall consist of constructing a retention reservoir with a filtering system to connect to the existing drip field irrigation lines.

Phase III — Warehousing/Process - The scope of work shall consist of constructing a 10,000-sq.ft. rigid frame building including all utilities and off-site improvements. This building will be used for storage and house a processing plant.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Environmental Justice Grants
by
Deanna M. Wieman

The award of an environmental justice grant by the U.S. Environmental Protection Agency (U.S. EPA) to Puna Malama Pono to monitor air emissions from the Puna Geothermal Venture (PGV) facility has raised questions regarding U.S. EPA's Environmental Justice Grant Program. I wish to take this opportunity to explain the program, the $20,000 grant award, and how the data collected by Puna Malama Pono can assist U.S. EPA, state and local agencies and members of the community.

In its 1992 report, Environmental Equity: Reducing Risk for All Communities, U.S. EPA found that people of color and low-income communities experience higher than average exposure to toxic pollutants than the general population. Under an executive order issued by President Clinton on February 11, 1994, all federal agencies are required to focus attention and resources on the environmental and human health conditions in minority and low-income communities with the goal of achieving environmental justice.

A primary goal of the environmental justice grant program is to provide funding to community groups, like Puna Malama Pono, to address environmental concerns in their neighborhoods. Puna Malama Pono was one of 108 applicants that competed for limited funds through U.S. EPA-Region 9's 1995 Environmental Justice Small Grant program. U.S. EPA applied the same review standards to all environmental justice grant applications. Eighteen groups were awarded environmental justice grants by U.S. EPA-Region 9, which includes Hawai'i, California, Arizona, Nevada, Guam, American Samoa, Commonwealth of the Northern Mariana Islands and Republic of Palau.

In 1989, the Hawai'i Department of Health (HDOH) and Hawai'i County issued PGV permits to build and operate a geothermal power plant. Since that time, some members of the community have raised concerns about the impacts of geothermal operations on their health and the environment. Unfortunately, despite ongoing regulatory controls, some members of the community do not find these controls to be adequate and do not feel safe and protected. Consequently, it wishes to conduct its own monitoring.

-more-

NEW FILE REPORT

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:STATE/DLNR/DOWALD (MAR 06 '95 03:38PM)

FILE NO.	FILE TYPE	DEPT. CODE	PAGES	GROUP	REMOTE TERMINAL IDENTIFICATION
156	SEND IMMEDIATE		6		95276195

REMAINING CALL CAPACITY 397

Puna Malama Pono will use funds from the $20,000 grant to lease portable monitors that measure hydrogen sulfide emissions. It is important to note that the handheld, portable monitors differ from the existing HDOH and PGV facility stationary monitors. Portable monitors allow for spot checking. Unlike stationary monitors, which are continuously set to the same level for continuity purposes, portable monitors can be set to detect and measure various levels of hydrogen sulfide.

Hydrogen sulfide is a malodorous, colorless gas which can be detected by human sense of smell at very low concentrations and which in higher concentrations can cause a variety of adverse health effects; including severe irritation to the skin, eyes, nose, throat and the upper respiratory system.

Since U.S. EPA is funding Puna Malama Pono with a federal grant, all data collected using the portable monitors will be in the public domain and made available to anyone upon request. Thus, anyone can review and analyze the data.

U.S. EPA recognizes the importance of a reliable energy source for the people and the economy of Hawai'i. Working together with all concerned parties, we believe we can protect human health and the environment and at the same time promote a strong economy in Hawai'i.

Deanna M. Wieman is the Director of the Office of External Affairs at U.S. EPA-Region 9 in San Francisco, California.

Honolulu Star-Bulletin

Published by Liberty Newspapers Limited Partnership

Rupert E. Phillips, CEO

John M. Flanagan, Editor and Publisher

David Shapiro, Managing Editor

Diane Yukihiro Chang, Senior Editor and Editorial Page Editor

Frank Bridgewater and Michael Rovner, Assistant Managing Editors

A.A. Smyser, Contributing Editor

Geothermal emission project is a travesty

A group dedicated to the elimination of the Puna geothermal power plant has received a $20,000 federal grant to monitor emissions from the plant. That's $20,000 wasted. The leader of the group, Puna Malama Pono, says its goal is "to get rid of this poison gas horror in our neighborhood." So much for objectivity. Who in his right mind is going to take seriously the data this group produces to reinforce its scare tactics?

There is no need to monitor the emissions from the plant, because the state is already doing it. Air quality is monitored at six sites near the plant — three operated by the state, three by the company, Puna Geothermal Venture.

Bruce Anderson, deputy director of the state Health Department and a respected figure on environmental issues in Hawaii, says he doesn't think "there is any facility in the country, certainly not in the state, that has a more elaborate monitoring system." Anderson adds that since the power plant began operation two years ago there have been no major incidents, that if the department felt the plant posed a serious health threat it would be shut down.

Such assurances mean nothing to the geothermal opponents, of course. They want to produce their own data, for their own admitted purpose of shutting down geothermal power production. They contend that the plant is poorly monitored and nothing the state may say will change their minds.

What is disheartening is that the federal Environmental Protection Agency has given them $20,000 for this charade. An EPA spokesman explains that a grant like this one "gives the community a chance to be brought into the process. And it gives them a source of information they can have confidence in." That sounds great, but don't expect anyone else to have confidence in their findings.

This is just another attempt to sabotage a worthwhile energy project, one that is already contributing 19 percent of the Big Island's electrical power and has the potential for more. This project is a travesty — financed with federal money.

MEMORY TRANS REPORT

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:STATE/DLNR/DOWALD (MAR 06 '95 04:11PM)

FILE NO.	FILE TYPE	DEPT. CODE	PAGES	RESULTS	GROUP	REMOTE TERMINAL IDENTIFICATION
158	SEND IMMEDIATE		6/6	OK		9180822449026

THIS FILE HAS BEEN CLEARED.

3/6/95

SAFE DRINKING WATER SATELLITE TELECONFERENCE

MARCH 8 - 9, 1995

Ala Moana Hotel - Hibiscus Room II

AGENDA

March 8, 1995

8:00 - 9:15am	Registration
9:15 - 9:30am	Welcome - Paul L. Seitz, Chair Hawaii Section American Water Works Association
9:30 - 10:00am	State Primacy - Robert Y. Akinaka, Akinaka & Associates, Ltd.
10:00 - 10:30am	Discussion of Issues Faced by Water Departments to Comply with the Drinking Water Standards?
10:30 - 10:45am	Break
10:45 - 11:30am	Kapalua Water System, Warren Suzuki Kapalua Land Company
11:30-12:00pm	Ms. Alice Lee, Maui County Council Chairperson

Geothermal foes get $20,000 fed grant

Puna plant advocates question the ethics of funding foes as monitors

BY PETE PICHASKE
Phillips News Service

WASHINGTON — An outspokenly anti-geothermal group has been given a $20,000 federal grant to monitor emissions from a controversial geothermal plant on the Big Island, and the group hopes the data will force the plant to close.

The grant has raised eyebrows among geothermal advocates, who question the appropriateness of giving federal money to a group so it can monitor an industry it so vehemently opposes. State health officials say the plant is already the most closely monitored in the state, if not the nation.

But leaders of the group that received the Environmental Protection Agency grant say the plant is poorly monitored and a health hazard to the community. The money, they say, will help them make their case for getting rid of the plant.

"We want to show that there's a relationship between the health of the people here and the plant," said Adrian Barber, president of Puna Malama Pono. "Our unabashed goal is to get rid of this poison gas horror in our neighborhood."

There's little question the Puna Geothermal Venture power plant, built in a residential area, has been problem-plagued from the start.

A blowout during construction in 1991 caused noxious gas to be released into the air for some 31 hours. In 1993, near-lethal levels of hydrogen sulfide were released when workers were cleaning a well.

In the wake of those incidents, angry residents formed Puna Malama Pono, which means "preserving the good in Puna."

Even without the accidents, Barber said, the area often smells like rotten eggs from the hydrogen sulfide. Barber and others allege the gas emissions have caused widespread health problems in the Puna District.

The federal grant would be used to buy equipment to monitor air emissions from the plant and to train area residents to use it. The money will also fund a health study by a University of Texas group, Barber said.

"The state monitoring is totally inadequate," Barber said. "We need to do this ourselves."

Bruce Anderson, deputy director for the state Department of Health, disputed that assessment. "I don't think there's any facility in the country, certainly not in the state, that has a more elaborate monitoring system," Anderson said. "We've expended a great deal of money to monitor that facility."

Air quality is monitored at six sites near the plant: three run by the state Health Department, three by Puna Geothermal.

Anderson said the state welcomes the additional monitoring for the "extra layer of assurance it will provide to the community." The facility's problems, he said, occurred largely while it was being built. Since the power plant opened about two years ago, there have been no major incidents, he said.

"If we felt it posed a serious threat, we'd shut it down," Anderson said. "There's no evidence of that."

Barry Mizuno, spokesman for Puna Geothermal, said monitoring emissions requires "a great deal of expertise" and is a job best left to the state. "At a time when you have a lot of needs for funds, I must question this money being spent like this," said Mizuno.

Although only two years old, Puna Geothermal provides 19 percent of the power used on the island, said Walt Southward, spokesman for the Hawaii Island Geothermal Alliance.

"If these people are successful in their efforts to close the plant, it would have serious consequences for the people of this island," said Southward. "Our concern is that the federal government is paying $20,000 to monitor geothermal energy to a group that wants to get rid of geothermal energy."

An EPA spokesman in California said the so-called environmental justice small grants often go to disadvantaged or disenfranchised groups unhappy with controversial facilities.

"Data collection in and of itself is not for or against closure," said Arnold Robbins. "This is something that gives the community a chance to be brought into the process. And, it gives them a source of information they can have confidence in."

Watchdogs fight power increase

Star-Bulletin staff

PAHOA, Hawaii — Hawaii County should not allow Puna Geothermal Venture to increase its power output from 25 megawatts to 30 megawatts, says the community organization Puna Malama Pono.

The group's president, Adrian Barber, raised questions of possible increased threats to public health and safety.

Puna Geothermal announced during a second anniversary celebration June 15 that it was ready to sell an additional 5 megawatts to the Hawaii Electric Light Co., although a contract still had to be negotiated.

Days later, according to documents released by Puna Malama Pono, county Planning Director Virginia Goldstein granted the geothermal company a "deviation" from its permit, allowing increased power production.

Goldstein told the company her decision was based on its assurance the increase could be made without added equipment.

But Puna Malama Pono released a 1993 legal opinion by Deputy County Attorney Patricia O'Toole that said the geothermal company's permit prevents it from producing more than 25 megawatts.

O'Toole said yesterday there has been no new legal opinion, but like all such statements, her previous analysis was only an opinion, not a binding ruling.

6/95

DIVISION OF WATER AND LAND DEVELOPMENT

FROM: _____ DATE: 9/12 FILE IN: _____

TO:	INIT:		PLEASE:	
✓		M. TAGOMORI		See Me
		S. Kokubun	✓	Call
				Review & Comment
✓		A. Monden		Take Action
	m	A. Yim		Investigate & Report
✓		P. Manthos		Draft Reply
✓		H. Young		Acknowledge Receipt
		S. Yong		Type Draft
		D. Lee		Type Final
		E. Yuasa		Xerox ___ copies
				File
			FOR YOUR:	
				Approval
				Signature
				Information

REMARKS:

- Pls get SCR 103 SD.2 HDI + Committee Rpt. copies attached

- We need to be on top of this from Plan & Study view

Post Office Box 30
14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
Telephone (808) 965-6233
Facsimile (808) 965-7254

PUNA
GEOTHERMAL VENTURE

HAWAII

September 12, 1995

Mr. Michael Ardito
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Mr. Ardito:

Reference: Emergency Response Plan Review

Thank you for the opportunity to review and comment on your DRAFT WORK PLAN for the review of the Puna Geothermal Venture and the County of Hawaii emergency response plans. While I am aware that a small number of people within the Puna Community have asked for inspections of the PGV Facility, I was not aware that the State Resolution to which you refer requested anything more than a review of the several existing health studies that have already been conducted in and around this Facility. While PGV is not adverse to having a review in the interest of improving the emergency response capability, it is important that we all understand the reason and basis for the review. Find enclosed a copy of the Geothermal Resource Plan "permit conditions" which outlines required ERP elements for PGV under which PGV has developed their emergency response plan. With these thoughts in mind, find below some comments on the DRAFT WORK PLAN you sent me for review on August 16, 1995.

1) In the preamble of your DRAFT WORK PLAN, you indicate your purpose is to provide an "independent review" of the chemical accident prevention and emergency response plans. It is therefore my understanding that this review will be conducted only by EPA personnel and their contractors. If personnel other than those cited above are to participate during the desk or Site reviews, please advise.

2) You state that biographies of the Advisory Group of Technical Experts were attached when sent to the "Community." Please also send a copy of these biographies to PGV,

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3) Your letter was received in late August and the desk review was and is assumed to be underway. As PGV is not sure of the basis under which these reviews are being conducted, we urge you to make copies of the enclosed sections of the GRP available to the TAT reviewers so the parameters of responsibility between the County and PGV are clearly understood.

4) Your work plan includes a discussion of the "issues of concern" with State agencies, the "community" and public officials prior to a Site review of the PGV Site and evaluating the County's plan. It seems more appropriate to perform a visit to the County and PGV to establish the validity of these concerns prior to meeting with the above groups.

5) You state in STEP 1 of your work plan that the criteria for the desk reviews will be in concert with the National Response Team's NRT-1 guidance. Please provide PGV with this document.

6) STEP 5 of your work plan discusses meeting with the "community" and learning about their perception of accident potential, emergency preparedness and health impacts. You mentioned in the preamble of your letter that health issues would be handled through a health risk assessment that will be conducted by ATSDR. The stated purpose of this review is to evaluate emergency response plans not potential health impacts.

7) In STEP 5, you mention that a member of the EPA Puna Workgroup will be present at meetings held with the "Community" and public officials. Is this an EPA employee? Please define the status of this EPA Workgroup member.

8) I assume you meant to have Site visits in Hilo and Pahoa in early winter 1995 not 1996.

9) In STEP 6 of your work plan, it is unclear as to specifically who will be visiting the Site, If the intent of your visit is to evaluate the Facility's ability to respond to an emergency condition, PGV assumes only EPA technical experts will be present. If EPA intends to set up a meeting between the County Fire Department, Civil Defense, LEPC and PGV to provide for an information exchange, it is suggested the review and the information sessions be separate.

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Thank you again for the opportunity to participate and be an active part of this review EPA is conducting. While we feel the intent of the State Legislative Resolution was to review existing health data, we understand the need to address the concerns of a small but very active part of the Puna Community. To that end, PGV looks forward to providing whatever support is necessary to perform the review of our programs and resolve the concerns that some of the members of the Community in the Puna District may have.

Sincerely,

Lynn G. White
Vice President & General Manager

enc: Senate Concurrent Resolution 103, S.D.2, H.D.1 & Committee Report

cc: Mayor Stephen Yamashiro - County of Hawaii

Michael Wilson -	DLNR
Manabu Tagamori -	DLNR
Maurice Kaya -	DBEDT
Dean Nakano -	DBEDT
Bruce Anderson -	DOH
Tom Arizumi -	DOH
Keith Takata	EPA
John Farrell	CEI
Nick Yancich	CEI
Peggy Stover-Catha	CEI
Frank Andracchi	CEI
Barry Mizuno	PGV
Dave Berube	PGV

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Oct 3, 1989

Response To Geothermal Resource Permit Application (GRP 87-1 (Effective GRP From Planning Commission)

d. For the purposes of these noise conditions, the "nearest residence" is hereby defined as: For three years following the date of granting of the Geothermal Resource Permit, that permanently occupied dwelling nearest the applicable noise emission point as of the date of the granting of this permit; for all following years, that permanently occupied dwelling nearest the applicable noise emission point.

e. Sound level measurements shall be conducted using standard procedures with sound level meters using the "A" weighting and "slow" meter response unless otherwise stated.

25. Pursuant to Article 12-8 of the Rules of Practice and Procedure of the County of Hawaii Planning Commission, prior to initiating construction of the project, the permittee shall submit the following to the Planning Director:

a. Copies of approved permits and other applicable approvals for the project from other county, state, or federal agencies as applicable;

b. Final plans or provisions for monitoring environmental effects of the project as required by this Geothermal Resource Permit or otherwise required to ensure compliance with County rules and the rules of the State Department of Health and Board of Land and Natural Resources and other permit-issuing agencies;

c. A final plan of action to deal with emergency situations which may threaten the health, safety, and welfare of the employees and other persons in the vicinity of the proposed project site; and

d. A final site plan and elevations of proposed temporary and/or permanent structures for the project.

ERP 26. Prior to commencing any activity approved under this Geothermal Resource Permit on the project site, the permittee shall submit to, and secure the approval of, the Hawaii County Civil Defense Director a final plan of action to deal with emergency situations which may threaten the

MEMORY TRANS REPORT

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:STATE/DLNR/DOWALD (JUN 08 '95 02:34PM)

FILE NO.	FILE TYPE	DEPT. CODE	PAGES	RESULTS	GROUP	REMOTE TERMINAL IDENTIFICATION
079	SEND IMMEDIATE		0/8	E,4)4)4)4)		93944089

THIS FILE HAS been CLEARED.

REASON FOR ERROR

4) NO FACSIMILE CONNECTION

SECTION 07311 - ASPHALT SHINGLES

PART I - GENERAL

1.01 - COORDINATION WITH OTHER SECTIONS: Coordinate installation of roofing with Section 06100 - Rough Carpentry and Section 09900 - Painting.

1.02 - GENERAL REQUIREMENTS:

A. The Contractor shall visit the job site to verify the site conditions and dimensions prior to submitting his bid.

B. The roofing operations shall be so coordinated with appurtenant work, such as flashing and sheet metal work, that roof surfacing operations once started shall be continuous to completion.

C. The Roofing Contractor shall be an approved applicator of the manufacturer whose roofing system he proposes to apply and his men shall have been instructed by that manufacturer (or their representative or independent roofing auditor/inspector) in the proper application of his system.

D. The Roofing Manufacturer's Representative and their independent roofing auditor/inspector (where applicable) shall be competent, thoroughly trained and experienced in the work and shall be completely familiar with the products, equipment and the specified

Fax Note 7671 | Date 5-30 | # of pages ▶ 80 | To JEFF CLEAVES | From DICK LEE | Co. DLNR | Phone # 587-0280 | Fax # 587-0283 | 394-4006 | 94-4089

health, safety, and welfare of the employees and other persons in the vicinity of the proposed project site. The plan shall include but not be limited to, the following elements:

a. A description of the project facilities and operations, with site plans identifying areas of potential hazards, such as high pressure piping and the presence, storage and transportation of flammable or hazardous materials, such as lubrication or fuel oil, isopentane, hydrogen sulfide, and sodium hydroxide;

b. A description of emergency services available off-site to respond to any emergency;

c. A description of the current onsite chain of command and responsibilities of project personnel in the event of an emergency; and

d. A description of potential project emergency situations, such as loss of well control, chemical spills, hydrogen sulfide exposure, pipeline rupture, fires, contaminated solids, etc. identifying:

(i) technical data on the nature of the hazard (for example, the concentrations of hydrogen sulfide in the various areas and the hazard associated with these concentrations, the corrosive characteristics of the abatement chemicals), or any data regarding the possible aerial extent of each potential emergency situation;

(ii) the warning systems (such as hydrogen sulfide detectors) used to alert personnel of the hazard;

(iii) the location and use of equipment used to control the hazard (such as fire protection equipment or isolation valves) or repair hazardous equipment (such as welding equipment or casing sleeves), and safety equipment for personnel (such as respiratory packs), including identification of the personnel trained in the use of that equipment; and

(iv) provisions for the monitoring, detection, and inspection of wells and plant facilities for the prevention of emergency situations.

e. Provisions to address natural hazards (such as lava flows, earthquakes, and storms) that identify warning systems, control options, steps for securing and shutting down the facility, personnel evacuation, and notification to appropriate agencies;

f. The location and capabilities of available medical services and facilities and plans for treating and transporting injured persons;

g. Evacuation plans, including meeting points, personnel rosters, and escape routes;

h. Training requirements for personnel, including procedures for emergency shutdown, handling of emergency equipment, spill prevention, first aid and rescue, fire fighting procedures, and evacuation training;

i. Provisions for periodic emergency preparedness drills for personnel;

j. Detailed procedures to be used to facilitate coordination with appropriate federal, state, and county officials during and after any emergency situation; and

k. Procedures to be used to identify and inform all residents within applicable distances of the project of the possible emergency situations, warnings, and responses in advance of commencement of project operations and the methods by which all individuals affected by a given emergency will be notified and evacuated, as necessary.

Copies of the emergency plan shall be made available to the public by the applicant.

27. Reports and records of emergency situations shall be submitted to the Planning Department upon occurrence of such emergencies.

ak 4/24

STAND. COM. REP. NO. 1909

Honolulu, Hawaii
April 24, 1995

RE: S.C.R. No. 103
S.D. 2
H.D. 1

Honorable Joseph M. Souki
Speaker, House of Representatives
Eighteenth State Legislature
Regular Session of 1995
State of Hawaii

Sir:

Your Committee on Energy and Environmental Protection, to which was referred S.C.R. No. 103, S.D. 2, entitled:

"SENATE CONCURRENT RESOLUTION REQUESTING A RISK-ANALYSIS STUDY OF ALL AVAILABLE GEOTHERMAL DATA,"

begs leave to report as follows:

The purpose of this concurrent resolution is to request the United States Environmental Protection Agency to conduct a risk-analysis study of all available geothermal data to ensure that the public health, safety, and welfare is not being compromised by the Puna geothermal project.

Testimony in support of this measure was received from the Department Health, the Department of Land and Natural Resources, and the Democratic Party of Hawaii.

Testimony was also received from the Puna Geothermal Venture expressing their concerns that the overall objectives of this resolution would not be achieved without a mechanism to effectively disseminate the information in the study to the general public.

During the Committee's discussion on this matter, it was agreed that there is still a need for this study and that the report which is to follow must be user friendly and comprehensible to both legislators and the general public.

Your Committee has amended this Concurrent Resolution by adding a directive to the Department of Health and the Department of Land and Natural Resources to assist the United States Environmental Protection Agency in this effort by disseminating copies of the forthcoming report to the residents of Puna and the general public.

As affirmed by the record of votes of the members of your Committee on Energy and Environmental Protection that is attached to this report, your Committee concurs with the intent and purpose of S.C.R. No. 103, S.D. 2, as amended herein, and recommends its adoption in the form attached hereto as S.C.R. No. 103, S.D. 2, H.D. 1.

Respectfully submitted on
behalf of the members of the
Committee on Energy and
Environmental Protection,

JAMES T. SHON, Chair

State of Hawaii
House of Representatives
The Eighteenth Legislature

Record of Votes of the Committee on Energy and Environmental Protection

Bill/Resolution No.:	Date:
SCR 103 SD 2	April 19, 1995
Committee Referral:	☐ The committee is reconsidering its previous decision on this measure.
EEP, FIN	

The recommendation is to: ☐ Pass, unamended ☒ Pass, with amendments ☐ Hold ☐ Recommit

EEP Members		Ayes	Ayes (WR)	Nays	Excused
1. SHON, Jim (C)	375	✓			
2. OSHIRO, Marcus R. (VC)	345	✓			
3. KANOHO, Ezra R.	285				✓
4. McMURDO, Mary Jane	310				
5. SANTIAGO, Alexander C.	365	✓			
6. TAKAMINE, Dwight Y.	405				✓
7. TARNAS, David A.	415	✓			
8. YAMANE, Brian Y.	440	✓			
9. YOSHINAGA, Terry Nui	450				✓
10. MEYER, Colleen	320				✓
11. THIELEN, Cynthia	420	✓			
TOTAL		6	0	0	4

The measure is: ☐ Passed, unamended ☒ Passed, with amendments ☐ Recommitted

☐ Held If joint referral, _____ did not support recommendation.
committee acronym(s)

Vice Chair's or designee's signature: Glenn Wakai

Distribution: ☐ If passed, attach to Committee Report ☐ Data Entry

THE SENATE
EIGHTEENTH LEGISLATURE, 1995
STATE OF HAWAII

S.C.R. NO. 103 S.D. 2 H.D. 1

SENATE CONCURRENT RESOLUTION

REQUESTING A RISK-ANALYSIS STUDY OF ALL AVAILABLE GEOTHERMAL DATA.

WHEREAS, geothermal energy has been touted as an important alternative energy source to fossil fuel to meet the growing demand for energy consumption in the State; and

WHEREAS, there have been two reported incidents, in 1991 and 1993, when hydrogen sulfide was released into the air from wells at the Puna Geothermal Venture facility on the island of Hawaii; and

WHEREAS, these hazardous emissions have caused immense community concerns about the effects of geothermal energy on the environment and on public health and safety, particularly on nearby Puna residents; and

WHEREAS, while the use of geothermal energy may help reduce Hawaii's dependency on imported oil and make the State more energy self-sufficient, further development of geothermal energy should only take place insofar as the health, safety, and welfare of the community are not compromised; and

WHEREAS, given the hazards of hydrogen sulfide emissions from geothermal wells, it is imperative that increased government oversight and follow-up of these incidents be employed to protect the public well-being and to ensure accountability from the Puna Geothermal Venture facility and any other geothermal facilities operating in the State; now, therefore,

BE IT RESOLVED by the Senate of the Eighteenth Legislature of the State of Hawaii, Regular Session of 1995, the House of Representatives concurring, that the United States Environmental Protection Agency is requested to conduct a risk-analysis study and investigation as it deems appropriate in evaluating the environmental and health claims made by members of the Puna community with respect to geothermal development; and

BE IT FURTHER RESOLVED that the following factors be included in the risk-analysis study:

(1) The risks that hazardous chemicals or substances released from geothermal facilities pose to the general health and safety of the community and to the environment, such as those that may be identified by an epidemiological study of cysts, cancer, stress, and other health problems associated with emissions from geothermal facilities;

(2) Recommendations to prevent future emissions of noxious gases and to prevent other accidents from occurring;

(3) Procedures for safeguarding the public health and safety should a geothermal leak occur;

(4) Improved oversight and monitoring of geothermal energy production and hazardous emissions on the island of Hawaii;

(5) Increased enforcement of geothermal ventures to ensure compliance with federal notification and chemical inventory requirements;

(6) Follow-up reports to the appropriate state and county agencies regarding the efforts taken to prevent the release of hazardous substances from occurring; and

(7) Greater coordination of activity by government agencies, including timely notification and accurate information, with regard to noxious emissions from geothermal facilities;

and

BE IT FURTHER RESOLVED that the County of Hawaii, the Department of Health, and the the Department of Land and Natural Resources are requested to assist the United States Environmental Protection Agency in this study; and

BE IT FURTHER RESOLVED that the United States Environmental Protection Agency, with the assistance of the County of Hawaii, the Department of Health, and the Department of Land and Natural Resources, is urged to submit a report of its findings and the action taken pursuant to this measure to the Legislature before the convening of the Regular Session of 1996; and

BE IT FURTHER RESOLVED that the Department of Health and the Department of Land and Natural Resources shall make available copies of said report to the residents of the Puna district through dissemination to public facilities, including but not limited to, the state public library system, area schools, and all interested community groups; and

BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be transmitted to the Hawaii office of the United States Environmental Protection Agency, the Mayor of the County of Hawaii, the Director of Health, and the Chairperson of the Board of Land and Natural Resources.

alk 1-27

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Honolulu, Hawaii
April 24, 1995

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HSCR EEP SCR103 HD1

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behalf of the members of the
Committee on Energy and
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JAMES T. SHON, Chair

State of Hawaii
House of Representatives
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Record of Votes of the Committee on Energy and Environmental Protection

Bill/Resolution No.:	Date:
SCR 103 SD 2	April 19, 1995
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The recommendation is to: ☐ Pass, unamended ☒ Pass, with amendments ☐ Hold ☐ Recommit

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10. MEYER, Colleen	320				✓
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TOTAL		6	0	0	4

The measure is: ☐ Passed, unamended ☒ Passed, with amendments ☐ Recommitted

☐ Held If joint referral, _____ did not support recommendation.
committee acronym(s)

Vice Chair's or designee's signature: Marcus Oshiro

Distribution: ☐ If passed, attach to Committee Report ☐ Data Entry

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EIGHTEENTH LEGISLATURE, 1995
STATE OF HAWAII

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BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be transmitted to the Hawaii office of the United States Environmental Protection Agency, the Mayor of the County of Hawaii, the Director of Health, and the Chairperson of the Board of Land and Natural Resources.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

June 30, 1995

Mr. Steve Armann
Manager, Hazard Evaluation and Emergency Response
Hawaii Department of Health
919 Ala Moana Blvd., Room 206
Honolulu, Hawaii 96814-4912

Dear Mr. Armann:

This is a follow-up to the letter sent in April (addressed to James Ikeda of Hawaii Department of Health) outlining EPA's proposal for a number of activities involving our continued coordination and exchange of information on geothermal activities and the Puna Geothermal Venture (PGV) facility. Since my April letter, the Hawaii State Senate and Hawaii House of Representatives adopted resolutions which called for more involvement in geothermal issues by both the State and EPA.

As you know, the community has expressed an interest in knowing the status and participating in the closure and restoration of the True site. We agreed to help facilitate their involvement. As a start, it would be very helpful to know the current status of the site.

- Please identify the agencies involved in monitoring, cleaning up, and restoring the True site. Which agency has the lead? Please provide all restoration requirements contained in permits for the True site.

- Is there a plan for cleanup and restoration of the site — including closure of any sumps? If so, please provide a description of the plan for the site, including any studies, analytical data, and research to ensure that the site will be returned to its native condition. Also if a plan exists, what is the status in terms of the State's formal approval of the plan?

- Please provide any analytical data collected from the sump pond(s), groundwater, drilling mud and fluids brought to the site from PGV in Halliburton vacuum trucks. Include laboratory and field quality assurance / quality control guidelines and procedures implemented during sample collection and analysis of drilling muds, sump pond(s), and groundwater for the analytical data.

- Please provide all past, present, and future groundwater and air monitoring program workplans for the site, and all formal written State approval for future use of the site.

- Please identify all mechanical integrity tests performed on the well. If the mechanical integrity tests have not been performed, what tests will be done and when will they be conducted?

The community has suggested that an advisory group be formed to inform and give them an opportunity for input. I understand that a settlement was reached in February 1995 between the State of Hawaii and Wao Kele O Puna et al. The State of Hawaii agreed to participate in an advisory council established by the plaintiffs whereby the plaintiffs and the State will work cooperatively with the private landowner to propose and implement enhanced protection measures for Wao Kele O Puna. I'd like to discuss at our meeting in July how you are planning to setup this advisory council.

Under separate cover we are also making this request for information to the Department of Land and Natural Resources (DLNR) and to the Department of Business and Economic Development and Tourism (DBEDT). I understand that much of the information requested is in the hands of DLNR and DBEDT. If you have any questions, please feel free to call me at (415) 744-2356.

Sincerely,

Keith Takata

Keith Takata
Deputy Director for Superfund

cc: DLNR
DBEDT
County of Hawaii

Post Office Box 30
14-3860 Kapoho Pahoa Road, Pahoa, Hawaii 96778
Telephone (808) 965-6233
Facsimile (808) 965-7254

PUNA
GEOTHERMAL VENTURE
HAWAII

September 12, 1995

Mr. Michael Ardito
United States Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Mr. Ardito:

Reference: Emergency Response Plan Review

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Sincerely,

Lynn G. White
Vice President & General Manager

enc: Senate Concurrent Resolution 103, S.D.2, H.D.1 & Committee Report

cc: Mayor Stephen Yamashiro - County of Hawaii

Michael Wilson - DLNR
Manabu Tagamori - DLNR

Maurice Kaya - DBEDT
Dean Nakano - DBEDT

Bruce Anderson - DOH
Tom Arizumi - DOH

Keith Takata EPA

John Farrell CEI
Nick Yancich CEI
Peggy Stover-Catha CEI
Frank Andracchi CEI

Barry Mizuno PGV
Dave Berube PGV

T:\ADMIN\LYNN\12453
FILE

Oct 3, 1989

Response To Geothermal Resource Permit Application (GRP 87-1 (Effective GRP From Planning Commission)

d. For the purposes of these noise conditions, the "nearest residence" is hereby defined as: For three years following the date of granting of the Geothermal Resource Permit, that permanently occupied dwelling nearest the applicable noise emission point as of the date of the granting of this permit; for all following years, that permanently occupied dwelling nearest the applicable noise emission point.

e. Sound level measurements shall be conducted using standard procedures with sound level meters using the "A" weighting and "slow" meter response unless otherwise stated.

25. Pursuant to Article 12-8 of the Rules of Practice and Procedure of the County of Hawaii Planning Commission, prior to initiating construction of the project, the permittee shall submit the following to the Planning Director:

a. Copies of approved permits and other applicable approvals for the project from other county, state, or federal agencies as applicable;

b. Final plans or provisions for monitoring environmental effects of the project as required by this Geothermal Resource Permit or otherwise required to ensure compliance with County rules and the rules of the State Department of Health and Board of Land and Natural Resources and other permit-issuing agencies;

c. A final plan of action to deal with emergency situations which may threaten the health, safety, and welfare of the employees and other persons in the vicinity of the proposed project site; and

d. A final site plan and elevations of proposed temporary and/or permanent structures for the project.

ERP

26. Prior to commencing any activity approved under this Geothermal Resource Permit on the project site, the permittee shall submit to, and secure the approval of, the Hawaii County Civil Defense Director a final plan of action to deal with emergency situations which may threaten the

health, safety, and welfare of the employees and other persons in the vicinity of the proposed project site. The plan shall include but not be limited to, the following elements:

a. A description of the project facilities and operations, with site plans identifying areas of potential hazards, such as high pressure piping and the presence, storage and transportation of flammable or hazardous materials, such as lubrication or fuel oil, isopentane, hydrogen sulfide, and sodium hydroxide;

b. A description of emergency services available off-site to respond to any emergency;

c. A description of the current onsite chain of command and responsibilities of project personnel in the event of an emergency; and

d. A description of potential project emergency situations, such as loss of well control, chemical spills, hydrogen sulfide exposure, pipeline rupture, fires, contaminated solids, etc. identifying:

(i) technical data on the nature of the hazard (for example, the concentrations of hydrogen sulfide in the various areas and the hazard associated with these concentrations, the corrosive characteristics of the abatement chemicals), or any data regarding the possible aerial extent of each potential emergency situation;

(ii) the warning systems (such as hydrogen sulfide detectors) used to alert personnel of the hazard;

(iii) the location and use of equipment used to control the hazard (such as fire protection equipment or isolation valves) or repair hazardous equipment (such as welding equipment or casing sleeves), and safety equipment for personnel (such as respiratory packs), including identification of the personnel trained in the use of that equipment; and

(iv) provisions for the monitoring, detection, and inspection of wells and plant facilities for the prevention of emergency situations.

e. Provisions to address natural hazards (such as lava flows, earthquakes, and storms) that identify warning systems, control options, steps for securing and shutting down the facility, personnel evacuation, and notification to appropriate agencies;

f. The location and capabilities of available medical services and facilities and plans for treating and transporting injured persons;

g. Evacuation plans, including meeting points, personnel rosters, and escape routes;

h. Training requirements for personnel, including procedures for emergency shutdown, handling of emergency equipment, spill prevention, first aid and rescue, fire fighting procedures, and evacuation training;

i. Provisions for periodic emergency preparedness drills for personnel;

j. Detailed procedures to be used to facilitate coordination with appropriate federal, state, and county officials during and after any emergency situation; and

k. Procedures to be used to identify and inform all residents within applicable distances of the project of the possible emergency situations, warnings, and responses in advance of commencement of project operations and the methods by which all individuals affected by a given emergency will be notified and evacuated, as necessary.

Copies of the emergency plan shall be made available to the public by the applicant.

27. Reports and records of emergency situations shall be submitted to the Planning Department upon occurrence of such emergencies.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT
P.O. BOX 373
HONOLULU, HAWAII 96809

September 7, 1995

Mr. Michael Ardito
Hawaii State Project Officer
for Superfund Programs
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105-3901

Dear Mr. Ardito:

We have reviewed the draft workplan for your forthcoming trip to review Puna Geothermal Venture's emergency response plan and have no comments.

Should you have any questions or require any assistance, please do not hesitate to call Hiram Young of my staff at (808) 587-0260.

Sincerely,

MANABU TAGOMORI
Manager-Chief Engineer

HY:ek

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

95 AUG 21 A 9:54

August 16, 1995

WATER &
LAND DEVELOPMENT

Mr. Hiram M. Young
State of Hawaii
Department of Land and Natural Resources
Division of Water and Land Development
Kalanimoku Bldg., Room 227
P.O. Box 373
Honolulu, Hawaii 96809

Dear Mr. Young:

Enclosed is the draft workplan from EPA's Puna Geothermal Workgroup regarding review of the emergency response plans for the Puna Geothermal Venture facility and Hawaii County.

Please provide any comments about EPA's workplan to me at the above address (indicating mail code H-8-1) by September 12, 1995, so that suggestions may be considered before the workplan becomes final. If you have any questions, you may contact me at (415) 744-2328. Thank you in advance for reviewing this document.

Sincerely,

Michael Ardito

Michael Ardito
Hawaii State Project Officer for
Superfund Programs

Enclosure

cc: DOH
DBED
Hawaii County
Puna Geothermal Venture
Puna Malama Pono

DRAFT WORKPLAN
Puna Geothermal Workgroup
Emergency Response Plan Review and Risk Management Planning

Statement of Purpose

The purpose of this project is to provide an independent review of the chemical accident prevention measures and emergency response plans for Puna Geothermal Venture facility and the County of Hawaii and to begin the process of risk management planning for both the community and the facility. Members of the Puna community and the Hawaii legislature have requested that EPA review the emergency management systems and conduct a health risk assessment of the geothermal industry in Hawaii. All of this is intended to prevent accidents and improve the emergency response capability on the Big Island in the event of an accidental release of hazardous substances from the facility. The health risk assessment is beyond the scope of this project; it will be conducted by EPA and ATSDR.

Project Description

The project will consist of the following steps:

STEP 1 Technical Assistance Team contractor (technical and field support to Superfund and EPCRA programs) will provide a desk review of the emergency response plans for the County of Hawaii and Puna Geothermal Venture based on the review criteria contained in the National Response Team's NRT-1 guidance.

STEP 2 Advisory group of technical experts will provide a desk review of the emergency response plans for the County of Hawaii and Puna Geothermal Venture and the contractor's review and recommendations from above.

STEP 3 Advisory group of technical experts and EPA contractor will meet in San Francisco with the EPA Region 9 Puna Workgroup members for a general briefing on work progress to date.

STEP 4 Advisory group will meet with Hawaii Department of Health and Department of Land and Natural Resources to discuss issues of concern to state agencies.

STEP 5 Advisory group, contractor, and a member of the EPA Puna Workgroup will meet with the community and public officials in Hawaii to learn community concerns about accident potential, emergency preparedness and health impacts.

STEP 6 Advisory group, contractor, and EPA will meet with Hawaii County Civil Defense & Hawaii County Fire Department and visit Puna Geothermal Venture facility. The technical experts will each focus on a separate portion of the site visits, contributing their own unique backgrounds to the overall project.

STEP 7 Contractor will compile a report of the advisory group members' findings and recommendations and will send a preliminary draft report to the advisory group for review and comment.

STEP 8 Contractor will incorporate advisory group comments and write Draft #1 of the report which will be sent to the advisory group and EPA.

STEP 9 Following Advisory Group and EPA review and comment of Draft #1, Draft #2 of the report will be written and sent to the community, local, county & state officials, and PGV for review and comment.

STEP 10 Final Report of Findings and Recommendations from the Advisory Group of Technical Experts on Emergency Response and Risk Management Planning in and around Puna will be sent to the community, public officials, and PGV. This will be a public document which we will make available to all interested people.

Advisory Group of Technical Experts

This group will consist of the following people who bring considerable experience from the local, state, national, private non-profit, and private sectors in accident prevention, chemical safety reviews, and emergency and risk management planning.

-- Paul Hill, Executive Director of the National Institute for Chemical Studies, in Charleston, West Virginia
-- Randy Sawyer, Manager of the Risk Management Prevention Program, in Contra Costa County, California
-- Mark Zusy, Supervisor of the Chemical Accident Prevention Program, for the State of Nevada

Biographies will be attached when this workplan is sent to the community.

Timeframe

Desk review of the emergency response plans by the TAT contractor will begin by August 15, 1995, and will be completed by **September 30, 1995.**

As soon as we receive the report of the TAT review, this report and copies of the emergency response plans, site assessment records, and a report by the community technical advisor will be sent to the technical experts by **October 15, 1995** to allow ample time for their desk review prior to site visits.

Site visits in Hilo and Pahoa, Hawaii will be scheduled for **early winter 1996.** 1995 ?

The draft project report is scheduled to be available to the community and facility **April 30, 1996.**

Project completion date will be **June 30, 1996.**

Puna Geothermal Venture

P.O. Box 30
Pahoa, HI 96778
808/965-6233
Fax: 808/965-7254

FAX TRANSMISSION COVER SHEET

Date: *May 3, 1995*

To: *Manabu Tagomri*

Fax: *808/587-0283*

Subject: *Anti-geothermal meeting & Phone call to EPA*

Sender: *Lynn G. White*

YOU SHOULD RECEIVE 6 PAGE(S), INCLUDING THIS COVER SHEET. IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL 808/965-6233.

Manabu,

PGV received this from a friend in the Community.. Since this has items that may affect DLNR, I thought it prudent to fax you a copy. It looks like there will be a phone call with EPA on Friday.

Regards,
Lynn

Talked to Shannon FitzGerald of EPA - Mtg ~~RESCHEDULED~~ SCHEDULED for 5/15/95 is A GENERAL Mtg - EPA is NOT READY to RELEASE THEIR INSPECTION REPORT - EST TIME for RELEASE is JULY/AUG 1995

EPA FOLLOW-UP MEETING

EPA Follow-up Meeting
April 29, 1995, 10:00 am, Puna

I. Conference call on Friday May 5th at 10:00 am HST
   A. Agenda for call
      1. Keith Takata facilitates
      2. EPA staff reports
      3. General discussion
      4. Action plan
   B. Action plan
      1. Work priorities and available time
         (a) Their agenda, their time
         (b) Our agenda, our time
         (c) Community-EPA cooperation & work focus
      2. Cooperation vs. regulation (as to PGV)
   C. EPA-community working sub-groups
      1. Working relationship on issues & action
      2. Requests to DOH (DLNR, PGV) for info
         (a) From community
         (b) From EPA
   D. Letters to encourage EPA action
      1. Felicia Marcus
         Regional Administrator
         U.S. EPA Region IX
         75 Hawthorne Street
         San Francisco, CA 94105
      2. Keith Takata
         Superfund Manager (H-1-S)
      3. EPA Puna Work Group members
      4. Patsy Mink
   E. Support for SR 89
      1. Senate Ways and Means Committee
      2. Senators generally

SB7 - SUPPLY 1994

II. Intended results
   A. Close and cleanup HGP-A site
   B. Close and cleanup True site
   C. Close and cleanup PGV site

III. Overall strategy
   A. Regulatory & political methods vs. litigation
   B. Health impacts
      1. Governor's reversal of position
      2. EPA/UTex/etc. cooperation (?)
      3. OSHA, worker health
   C. Pollution prevention
      1. Air
      2. Water
      3. Noise
      4. Well integrity
      5. Hazardous waste
   D. Related areas
      1. Emergency response
      2. Community information and involvement
      3. Financial integirty

Contacts/Idea List

Gerry Hiatt 4/6/95 tfc
Cooperative approach to health study will strengthen results
DOH data and reports should be made available to Univ Tex
Agree, but maintain integrity of positions
(later letters re aim straight for target and the governor's change of position on health study)

Keith Takata 4/7/95 letter to James Ikeda
Site inspection
- follow-up (Stacey)
- EPA UIC involvement (Shannon)
- Air monitoring enhancements (Stacey)
- Air permit enhancements (Stacey)
- Independent technical review of wells (Shannon)

Health
- Coordinate with Univ Tex
- Further study based on results

Emergency response
- Evaluate training and equipment (Mike)
- Independent review of plans (Mike)

Community involvement
- information requests (Mike)
- Air monitoring data (Stacey)

HGP-A and True sites
- Information regarding each well (Shannon)
- Independent technical review of wells (Shannon)
- Cleanup and restoration with community participation (Mike)

Ann Lyons 4/27/95 tfc
§112r possibilities (follow-up later)
Environmental justice ideas (refer to Lori Lewis)

Shannon Fitzgerald 4/27/95 tfc
Just got well integrity test information from 11/94
- sending it out for consultant review

HGP-A clean-up delayed by land owner's claims?
Discussed WKP clean-up and financial integrity

Annie Szvetecz 4/28/95 letter to Keith Takata
Environmental justice
Air monitoring
- All hydrogen sulfide releases

Water pollution
- UIC permit
- injectate volume

Emergency Response
- generally
- as to seismic events

Hazardous waste

- dumping on site
- isopentane releases
- CERCLA status

Well integrity
- active wells
  - poor welding (per inspector)
- abandoned wells
- well integrity test information
- effects of shut in

Financial integrity
- Butch Clark

OSHA
- injured worker

Chemical analysis

Permit copies

Unpermitted wells
- Harry Kim

E N A
t e call
Friday, May 5th, 1995
10:00 am (HST)

DRAFT: 4/18/95

Purpose: to review follow-up [illegible] and ideas for the EPA Region IX Puna Work GROUP and [illegible] community

Keith Takata (415/744-2356; fax: 415 [illegible] 1047) (:15)

10:00 - 10:15 Roll call and agency evidence
EPA Puna Work Group report
EPA-Community-State-County

Stacey Pogorzelski (4[illegible]4-1083) (:25)

10:15 - 10:40 PGV Site Inspection
Air pollution matters

Gerry Hiatt (415/744-2283) (:15)

10:40 - 10:55 Health study

Mike Ardito (415/744-2328) (:15)

10:55 - 11:10 Emergency response; information requests (including PGV's FOIA and privacy claims)

Shannon Fitzgerald (415/744-1830) (:25)

11:10 - 11:35 PGV well and financial integrity;
Well abandonment and clean-up at HGP-A and True (Wao Kele o Puna)

11:35 - noon Community comment, feedback, plans (:25)

onference call: PHONE LIST
r day, May 5th, 1995
10:0[illegible] am to noon (HST)

DRAFT: 4/18/95

Please tell Bill Smith (808-878-6776, Maui) soon if you cannot be on the conference call, or if you want to be called at a phone number different from the one listed by your name or if you think some one else should be added to the list.

[redacted]

Palikapu Dedman & Margaret McGuire

Jim Albertini

Aurora Martinovich

Adrian Barbe

Jane Hedtke

Jenny Perry

Jon Olson

Rene Siracusa

Annie Szvetecz (& Denis[illegible]lini?)

Barbara Bell

Tom Luebben

Lehua Lopez

Bill Smith

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

April 7, 1995

Mr. James Ikeda
Acting Deputy Director
Hawaii Department of Health
1250 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Ikeda:

Thank you very much for coordinating and participating in the meetings recently held between EPA and the State on geothermal activities and the Puna Geothermal Venture (PGV) facility. The exchange of information was very beneficial and will help pave the way for future coordination.

Based on all of our meetings, we believe that there are five areas which require additional government attention. Within each area, we are proposing a number of activities. We will be expanding on the specifics of these activities in future communications.

PGV Site Inspection

1. Follow-up on multi-media inspection conducted by EPA and State of Hawaii. (Contact: Stacy Pogorzelski, 415/744-1083)

2. Increase EPA involvement in UIC permitting process. (Contact: Shannon FitzGerald, 415/744-1830)

3. Recommend enhancements to state air monitoring and air permit. (Contact: Stacy Pogorzelski, 415/744-1083)

4. Conduct independent technical review of wells with potential problems. (Contact: Shannon FitzGerald, 415/744-1830)

Health

1. Coordinate with health survey by University of Texas. (Contact: Gerry Hiatt, 415/744-2283)

2. Based on results of health survey, consider health studies or other health activities. (Contact: Gerry Hiatt, 415/744-2283)

Emergency Response

1. Evaluate emergency response training and related-equipment needs of county. (Contact: Mike Ardito, 415/744-2206)

2. Conduct independent review of county and facility emergency response plans. (Contact: Mike Ardito, 415/744-2206)

Community Involvement

1. Respond to information requests received from the community. (Contact: Mike Ardito, 415/744-2206)

2. Facilitate release of air monitoring data for PGV to community. (Contact: Stacey Pogorzelski, 415/744-1083)

HGP-A and True Sites

1. Gather and share information with community regarding each well. (Contact: Shannon FitzGerald, 415/744-1830)

2. Conduct independent technical review of wells with potential problems. (Contact: Shannon FitzGerald, 415/744-1830)

3. Encourage state to cleanup and restore HGP-A and True sites with community participation. (Contact: Mike Ardito,415/744-2206)

Please discuss these proposals with the Department of Land and Natural Resources and the Department of Business and Economic Development, and Tourism. We are also providing this same information to elected officials, the County of Hawaii, Puna Geothermal Venture, and members of the community.

I have enclosed our draft Trip Report. If you have any questions, please feel free to call me at 415/744-2356.

Sincerely,

Keith Takata

Keith Takata
Deputy Director for Superfund

Enclosure

cc: DLNR
DBED

TRIP REPORT
FOR EPA MEETINGS RE: GEOTHERMAL ACTIVITIES IN HAWAII

INTRODUCTION

The purpose of this trip report is to briefly summarize each meeting held during the week of February 6, 1995 between representatives of the Environmental Protection Agency (EPA) and various officials from the U.S. Congress, State and local government, and Puna community groups. The EPA delegation included Bill Nelson from the Agency for Toxic Substances Disease Registry (ATSDR); this agency works closely with EPA on health issues.

The purpose of the trip was to hold meetings with the community groups and various government officials regarding geothermal activities within the State and at the Puna Geothermal Venture (PGV) facility located on the Big Island. These activities have had high involvement from community groups, EPA, State, and local government agencies. In addition, this trip was in follow-up to the June 1994 meetings that EPA Regional Administrator, Felicia Marcus, held with members of the community on these issues.

Each meeting began with introductory remarks including background information on EPA's involvement with geothermal activities and the Puna Geothermal Venture facility, the purpose for this trip, a review of EPA's itinerary, information on the EPA multi-media inspection of PGV during mid-February, and the possible outcomes of this visit. EPA outlined two documents that would be produced as a result of this visit and the multi-media inspection. These will be provided to meeting participants and the public:

- This trip report;
- A copy of the PGV multi-media inspection report which will be available within the next few months.

Attached is a copy of the EPA itinerary package and sign-up sheets from the various meetings.

D I S C U S S I O N

FEBRUARY 1, 1995, Meeting with Rep. Patsy Mink (Washington, DC)

Who Attended: Rep. Patsy Mink & Staff
EPA: Keith Takata

We discussed background information and an overview of the plans and itinerary for the EPA trip to Hawaii. Rep. Mink discussed overall geothermal activities within the State and her concern about future expansion of geothermal exploration.

FEBRUARY 7, 1995, Meeting with Sen. Akaka's Office (Honolulu)

Who Attended: Mike Kitimura, State Director for Sen. Akaka
EPA: Keith Takata, Rachel Loftin, Vicki Tsuhako
ATSDR: Bill Nelson

During this meeting we discussed energy alternatives within the State and energy resources on the Big Island. We also discussed agricultural and economic issues concerning the Big Island, community involvement in geothermal activities, known concerns over impacts to the Native Hawaiian culture, and the need to view geothermal energy in the context of the "big picture".

FEBRUARY 7, 1995, Meeting with Dr. Miike, HI Dept. of Health (Honolulu)

DOH: Dr. Lawrence Miike, Director of Health; James Ikeda, Acting Deputy Director; Thomas Arizumi, Chief for Environmental Management Division
EPA: Keith Takata, Rachel Loftin, Vicki Tsuhako
ATSDR: Bill Nelson

Subjects covered during this meeting included background on State involvement on geothermal activities and PGV. The State indicated a need to distinguish EPA activities from those of the State; this is also important for any follow-up actions that EPA may take. Health studies, groundwater and air issues, and energy resources throughout the State were also discussed.

FEBRUARY 7, 1995, Meeting with Dept. of Health; Dept. of Land & Natural Resources; Dept. of Business, Economic Dev. & Tourism (Honolulu)

REFER TO ATTACHED SIGN-IN SHEET FOR LIST OF ALL PARTICIPANTS

The State provided background information on the early studies for energy development for the State, a study for transferring geothermal energy from the Big Island to Oahu via undersea cable, identification of geothermal zones in Puna, exploration of geothermal resources in lower Puna, and history and status of geothermal sites in Puna. We also discussed various activities conducted by the State at PGV including permits, air and groundwater monitoring, emergency response and Local Emergency Planning Committee (LEPC) coordination, health/risk assessment, USGS volcanic emissions studies, and State involvement with the Puna community.

FEBRUARY 8, 1995, Meeting with Sen. Inouye's Office (Hilo)

Who Attended: William Kikuchi, State Director for Sen. Inouye

REFER TO ATTACHED SIGN-IN SHEET FOR LIST OF ALL PARTICIPANTS

This meeting included members of the Puna community, business, Hawaii Geothermal Alliance, staff conducting volcanic emissions observations from the United States Geological Survey (USGS), and representatives of the Leilani Estates Community Association. Senator Inouye has had a long-term interest in geothermal activities throughout the State and continues to be interested in the Puna area in particular. Topics covered included energy use in Puna, agricultural issues, air quality, health studies, and noise issues. The group expressed a desire for continuing communication between EPA and all members of the community regardless of their views on geothermal activities.

FEBRUARY 8, 1995, Meeting with Hawaii County Officials (Hilo)

REFER TO ATTACHED SIGN-IN SHEET FOR LIST OF ALL PARTICIPANTS

The County participants included the Mayor's Managing Director, Civil Defense Director, County Planning Dept. representatives, and Fire Dept. representatives. EPA was provided background information on activities conducted under the County lead. This included permits, emergency response topics, asset and royalty funds, LEPC coordination, noise issues, and community outreach.

FEBRUARY 8, 1995, Tour of the PGV Facility

PGV: Lynn White, Site Mgr., PGV Managers & Staff

EPA: Keith Takata, Lori Lewis, Shannon FitzGerald, Gerry Hiatt, Stacey Pogorzelski, Rachel Loftin, Ann Lyons

ATSDR: Bill Nelson

The tour included a presentation on the facility history and plant operations, and a walk-through of the site led by Lynn White.

FEBRUARY 8, 1995, Slide Presentation by Community Representatives (Hilo)

COMMUNITY: Bill Smith, Spokesperson; various members of the community; and Representatives of Life of the Land and Pele Defense Fund
EPA: Keith Takata, Lori Lewis, Shannon FitzGerald, Gerry Hiatt, Stacey Pogorzelski, Ann Lyons
ATSDR: Bill Nelson

Community representatives presented slides of PGV, True, and the Hawaii Geothermal Project sites. They also raised issues regarding cleanup of closed geothermal facilities and the impacts of geothermal activities upon Native Hawaiian culture.

FEBRUARY 9, 1995, Meeting with Community and Environmental Group Representatives (Puna)

COMMUNITY: Bill Smith, Spokesperson; Representatives from Pele Defense Fund, Sierra Club Legal Defense Fund, Life of the Land, Big Island Rainforest Action Group, Lanipuna Gardens Community Association, Kapoho Community Association, Puna Malama Pono, The Hawaii Laieikawai Association Inc, Hawaii's Thousand Friends, and other members of the community
EPA: Keith Takata, Lori Lewis, Shannon FitzGerald, Gerry Hiatt, Stacey Pogorzelski
ATSDR: Bill Nelson

The day began with introductions and opening remarks followed by a drive-by tour of the PGV facility, the air monitors and the community. Members of the Big Island Rainforest Action Group held a demonstration at the gate of the PGV site to coincide with the tour. The afternoon was divided into sessions which were led by members of the community groups and covered the following areas:

- Environmental Justice
- Well Integrity
- Emergency Response
- EPCRA & Water
- Air
- Health

The day's events were summarized through a "talk story" session where each meeting participant spoke about their perspectives and impressions on the events of the day. This was followed by closing comments given by Tom Luebben, Bill Smith, and Keith Takata.

State Meeting

SIGNUP SHEET

AGENDA: EPA/DNLR, DOH, DBEDT

DATE: 2/7/95

NAME	ORGANIZATION/DIVISION
Hiram Young	DLNR / DOFAWD
Stan Hamann	DOH/HEER
William Nelson	ATSDR (415
Keith Takata	EPA
Thomas E. Arizumi	DOH/EMD
Kathy Handschy	DOH/CAB
Jerry Haruno	DOH/NR
Willy Nagamine	DOH/CAB
Rachel Loftin	EPA-Superfund Sta
Bill Wong	DOH/SDWB-UIC
Henry Yee	DOH/ASAB
Gerry Hiatt	U.S. EPA, San Francisco (415)
Vicki Tsutsuko	USEPA - Honolulu
Ann Lyons	USEPA, Reg. 9, Office of Reg. Counsel
Stacey Pogorzelski	USEPA, Reg 9, Air+Toxics Div.
Shannon FitzGerald	USEPA, (Underground) Inj. Contro
DEAN NAKANO	DBEDT-Energy Division
Maurice Kaya	DBEDT- Energy Div.

Sen. Inouye's Ofc

ENVIRONMENTAL PROTECTION AGENCY MEETING
WEDNESDAY, FEBRUARY 8, 1995
8:30 AM - 9:30 AM
Hilo Lagoon Centre Conference Room

S I G N - I N S H E E T

PLEASE PRINT

Name	Address	Zip Code	
Jeff Sutton	USGS P.O Box 51 Hawaii Nat'l Pk	96718	808
David Clague	USGS P.O. Box 51 HNP	96718	808
James Mould	[redacted]		
PAULA HELFRICH			95
TONY HANLEY			
Diego Martin			
Wayne Blyth			
Jesse MANCAP			959-7077
Dan Matsukage			965-7126
June R. Curtis	[redacted]		
Bill Cook			
William Wilson	75		
Shannon FitzGerald			
Ann Lyons	EPA 75		
Donna Nash	13-117		

ENVIRONMENTAL PROTECTION AGENCY MEETING
WEDNESDAY, FEBRUARY 8, 1995
8:30 AM - 9:30 AM
Hilo Lagoon Centre Conference Room

S I G N - I N S H E E T

PLEASE PRINT

Name	Address	Zip Code	Phone
Rachel Loftin	USEPA H-87 75 Hawthorne St S.F, CA 94105	94105	415 744-2317
Stacey Pogorzelski	US EPA A-3-2 75 Hawthorne St SF CA 94105	94105	415-744-108
Lori Lewis	US EPA E-1 75 Hawthorne SF CA 94105		415-744-1561
Gerald Hiatt	US EPA H-9-3 75 Hawthorne S.F. CA	94105	(415) 744-2283
Keith Takata	EPA		(415) 744 2356
Tim Curley	13-349 Pahoa/Luana	96778	965-9065
Heather E. Hedrick	P.O. Box 350 Pahoa Hi	96778	(808) 934-130

SIGN IN

County Mtg 2-8-95

Name	Organization	Phone
Rachel Loftin	EPA Superfund	415
Paul PAIVA	HFD, EMS COORDINATOR	80
Trisha MACOMBER	University of Hawaii	808
BILL DAVIS	Mayor Off	808
NELSON TSUJI	HFD	80
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Gerald Hiatt	U.S. EPA	
Keith Takata	EPA	

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To Hiram Young	From D. Nakano
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95:650-D

May 2, 1995

MEMORANDUM

TO: Tom Arizumi, Chief
Environmental Management Division
Department of Health

FROM: Maurice H. Kaya, Energy Program Administrator
Energy Division

SUBJECT: Puna Geothermal Venture's (PGV) Underground Injection Control (UIC) Permit

Thank you for the opportunity to provide the following comments on PGV's request to amend its UIC permit:

o The Department of Business, Economic Development, and Tourism (DBEDT) has no objections to PGV's proposed plans to increase its current power generation to meet the Big Island's growing demand for electricity.

The additional generation of electrical power is consistent with the state's current geothermal policy which supports geothermal development exclusively for the Big Island. Additionally, the state's energy policy advocates energy diversification through greater utilization of renewable energy resources.

o The 1995 forecasted demand for electrical energy on the Big Island is 166.2 MW. Hawaii Electric Light Company (HELCO) has a firm capacity of 197.6 MW which includes 18 MW from Hilo Coast Processing Company (HCPC) and 25 MW from PGV. However, given the uncertainties associated with HELCO's existing agreement with HCPC and the utility's scheduled maintenance of its Hill 6 unit (23 MW) in June 1995, HELCO's system load service capability during this maintenance period may be marginal.

Our assessment of the Big Island's energy situation concludes that HELCO should be able to meet expected demand in 1995 provided that HELCO: 1) continues to receive power from HCPC, 2) defers scheduled unit retirements, 3) modifies its unit maintenance schedule, 4) utilizes voluntary customer Demand-Side Management (DSM) savings, 5) utilizes all available electricity generation resources (e.g. additional power from PGV, HCPC, and existing sources of as-available power), and 6) has no major unanticipated breakdowns or forced outages of major power plants.

- Approval of HELCO's proposed 56 MW expansion of its Keahole Power Facility is still pending, subject to completion of a court-ordered contested case hearing to review evidence on HELCO's application for a Conservation District Use Permit (CDUP). The contested case hearing is expected to be held in July 1995, however, potential litigation over the issuance of the permit may further delay the installation of CT-4 and the generation of 20 MW of additional power for the Big Island.

- The PGV facility is comprised of 10 steam/OEC units which are rated at 3.5 MW each, with a total generation capacity of 35 MW (gross). We understand that the project can generate an additional 5 MW of power (30 MW net) with little or no modification to the existing equipment or power plant configuration. We are also aware that PGV's resource consultants have determined that the three existing injection wells can safely accept the increased volume of fluids with no anticipated adverse impacts.

In view of the above, DBEDT encourages the Department of Health (DOH) to expeditiously process PGV's permit amendment application. We believe that DOH's review and final determination should be based on technical/engineering considerations and assessment of any potential impact to the environment related to the proposed increase in injection capacity.

Recognizing the growing demand for electricity and concerns over HELCO's system load service capability, DBEDT supports the proposed amendment to the UIC permit which will enable PGV to increase its power generation and thereby reduce the risks of rolling blackouts during the coming months. Should you have any questions, please contact me at 587-3807.

c: Manabu Tagomori