CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO.: 94-182

SITE CLEANUP REQUIREMENTS FOR:

PACIFIC GAS AND ELECTRIC COMPANY
PETALUMA "A" SUBSTATION,
CORNER OF FIRST AND "D" STREETS,
PETALUMA, SONOMA COUNTY, CA

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter the Board) finds that:

1. The Pacific Gas and Electric Company, (hereinafter Discharger), owns and operates a transformer substation located at the northwest corner of First and "D" Streets in Petaluma, Sonoma County, California, hereinafter the site. This site was part of a larger parcel that was the former location of a manufactured gas plant (MGP) which operated from approximately 1885 until 1902. Gas manufacturing operations were reportedly conducted exclusively on an adjacent site, located across "D" Street. The Discharger purchased the property between 1906 and 1910.

2. The former MGP operation gassified coal to provide gas for lighting and heat. The byproducts of the coal gassification processes typically included tars, light oils, sludges, lampblack, and other materials. Although some of the by-products from the process were reportedly reused, excess residues may have been disposed of on-site.

3. Site Description: The site is currently an unmanned electrical substation and occupies approximately one third of an acre. The property is bounded by First Street to the south, "D" Street to the east, and the Petaluma River to the north. The site facilities consist of an unused building, a switch house, a power line support tower, an oil retention sump, and several concrete equipment pads. The ground surface is gravel and soil with some areas of asphalt. The oil retention sump was installed in 1989 in conjunction with the site's Spill Prevention Control and Countermeasure Plan.

4. Site Investigations and Remedial Actions to date:
   a. In 1986, the Discharger conducted a preliminary assessment of the site. One surface soil sample was collected and analyzed for polynuclear aromatic hydrocarbons (PAH's), arsenic, lead, mercury, and cyanide. The results of the analysis revealed 0.09 ppm - total PAH's, 13 ppm - arsenic, 2.8 ppm - lead, and .25 ppm - mercury.
   b. In 1988, the Discharger collected and analyzed an additional surface soil sample from the property immediately west of the site. The results of these analyses revealed 1.1 ppm - total PAH's, 5.5 ppm - arsenic, 1,300 ppm - lead, and 0.12 ppm mercury. As a result of the high lead concentration in the off-

site soil sample, four additional samples were collected, analyzed for lead, and revealed concentrations of lead ranging from 7.5 to 190 ppm.

c. In September 1991, CH2M Hill presented the *Preliminary Endangerment Assessment Report: Former Manufactured Gas Plant Site, Pacific Gas and Electric Company, Petaluma, California.* This report described the results of a sampling program and a risk assessment in accordance with California Department of Health Services directives. The investigation entailed the collection of samples from ten soil borings and the installation of three monitoring wells. Soil samples revealed levels of arsenic (up to 148 ppm), lead (up to 1,480 ppm), copper (up to 93 ppm), zinc (up to 885 ppm), and PAH's (up to 1.7 ppm). Groundwater samples from the three on-site monitoring wells revealed the presence of several constituents in groundwater at concentrations in excess of the salt water aquatic life protection criteria. These constituents include arsenic (up to 228 ppb), copper (up to 67 ppb), total chromium (up to 149 ppb), lead (up to 36 ppb), manganese (up to 2,210 ppb), nickel (up to 154 ppb), and zinc (up to 392 ppb).

5. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan was amended by the Board on September 16, 1992 and approved by the State Board on April 27, 1993; Office of Administrative Law approval is pending. The Board amended the Basin Plan on October 21, 1992 to adopt a site-specific water quality objective of 4.9 ug/l for copper for San Francisco Bay. Another amendment adopted by the Board on June 16, 1993 regulates the copper waste load allocations. A Basin Plan groundwater amendment was adopted by the Board on October 21, 1992. To date, the State Board has not approved the amendments. The Basin Plan and its amendments contain water quality objectives and beneficial uses for groundwater and the Petaluma River, San Pablo Bay and contiguous surface waters.

6. The prohibitions, specifications and provisions for this permit are based on the plans and policies of the Basin Plan, EPA water quality criteria, EPA guidance for NPDES permit issuance and best professional judgement.

7. The present and potential beneficial uses of groundwater underlying and adjacent to the site include:
   a. Municipal and domestic water supply
   b. Industrial process water supply
   c. Industrial service water supply
   d. Agricultural water supply

8. The beneficial uses of the Petaluma River, San Pablo Bay, and contiguous surface waters include:

a. Warm freshwater habitat
b. Industrial service supply
c. Navigation
d. Water contact recreation
e. Non-contact water recreation
f. Ocean commercial and sport fishing
g. Wildlife habitat
h. Preservation of rare and endangered species
i. Fish migration and spawning
j. Estuarine habitat

9. The Discharger has caused or permitted, or threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution and/or nuisance.

10. This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

11. Containment and cleanup measures need to be implemented to alleviate the threat to the environment posed by the migration of pollutants and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup measures.

12. The Board has notified the Discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

13. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code and regulations adopted thereunder, that the dischargers, their successors and assigns, shall comply with the following:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade, or threaten to degrade, water quality or adversely affect, or threaten to adversely affect, the beneficial uses of the waters of the State is prohibited.

2. Significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The Discharger shall conduct monitoring and investigatory activities as needed to define the current local hydrogeologic conditions, and the horizontal and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of pollutant migration, additional characterization of pollutant extent may be required.

3. The cleanup goals for source area soils shall be background concentrations for metals and petroleum products and no greater than 1 mg/kg for total volatile organic compounds (VOC's). Alternate soil cleanup goals may be proposed by the Discharger based on site specific data. If leaving higher levels of pollutants in soils is proposed, the Discharger must demonstrate that the aforementioned cleanup goal is infeasible, that alternate levels will not threaten the quality of waters of the State, and that human health and the environment are protected. Final cleanup goals for source area soils must be acceptable to the Executive Officer. If any significant concentrations of chemicals are left in the soil, follow-up groundwater monitoring will be required.

4. Final cleanup goals for polluted groundwater, including sources of drinking water, on-site and off-site, shall be background water quality if feasible, in accordance with the State Water Resources Control Board's Resolution No. 68-16. If background water quality goals are not achievable, as determined by data submitted in annual reports, alternative goals may be proposed but must be approved by the Board. Alternate goals may include applicable standards, such as Maximum Contaminant Levels, and shall be based on an evaluation of the cost, effectiveness and a risk assessment to determine the effects on human health and the environment. These goals shall reduce the mobility, toxicity and volume of pollutants.

5. If groundwater extraction and treatment is considered as an alternative, the feasibility of water reuse or disposal to the sanitary sewer must be evaluated. Based on Regional Board Resolution 88-160, the Discharger shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The Discharger shall not be found in violation of this Order if documented factors beyond the Discharger's control prevent the Discharger from attaining this goal, provided the Discharger has made a good faith effort to attain this goal. If reuse is part of a proposed alternative, an application for Waste Discharge Requirements may be required. If discharge to waters of the State is part of a proposed alternative, an NPDES permit application must be completed and submitted, and must include the evaluation of the feasibility of water reuse and disposal to the sanitary sewer.

6. Pursuant to Section 13304 of the Water Code, the Discharger has been notified that the Regional Board is entitled to, and may, seek reimbursement for all reasonable costs actually incurred by the Regional Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. Upon receipt of a billing statement for such costs the Discharger shall reimburse the Board.

C. PROVISIONS

1. The Discharger shall perform all investigation and remedial measures in accordance with the requirements of this Order. All technical reports submitted in compliance with this Order shall be satisfactory to the Executive Officer, and, if necessary, the Discharger may be required to submit additional information.

2. To comply with all of the Prohibitions, Specifications and Provisions of this Order and the Self-Monitoring Program, the Discharger shall meet the following compliance task and time schedule:

COMPLIANCE DATE AND TASKS

a. **TASK: WORKPLAN FOR GROUNDWATER QUALITY REVIEW, GROUNDWATER SAMPLING, AND SEDIMENT SAMPLING.**
COMPLIANCE DATE: March 20, 1995

Submit a technical report acceptable to the Executive Officer containing a proposal to:

1. Summarize water quality data from publicly available records of well sampling conducted within a 1/2 mile radius of the site.
2. Collect and analyze one round of samples (for specified constituents) from each of the three existing on-site monitoring wells, and if possible, from the on-site water well.
3. Collect data on variations in the groundwater surface elevations over a minimum of two tidal cycles in the Petaluma River.
4. Collect and analyze for polynuclear aromatic hydrocarbons and metals one sample of Petaluma River sediment from the undredged area immediately adjacent to the site.

b. **TASK: COMPLETION OF GROUNDWATER QUALITY REVIEW, GROUNDWATER SAMPLING, AND SEDIMENT SAMPLING.**
COMPLIANCE DATE: 90 days after written approval by the Executive Officer of the workplan described in Provision 2.a.

Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Provision 2.a. The report should contain Discharger's recommendations regarding any additional monitoring or groundwater remedial measures. Should monitoring results show evidence of pollutant migration, additional characterization of pollutant extent may be required.

c. **TASK: FINAL REMEDIAL ACTION PLAN.**
COMPLIANCE DATE: To be established by Executive Officer based on reports submitted pursuant to Provisions 2.b.

Submit a technical report acceptable to the Executive Officer containing a remedial action plan and an implementation time schedule. This report shall evaluate the removal and/or capping of on-site soils which could affect the beneficial uses of waters of the State, as well as a proposal to conduct remedial measures, if warranted, for polluted groundwater and/or sediment, pursuant to the information presented in the report detailed in Provision 2.b. Such report shall include, but will not be limited to:

1. a feasibility study developed in accordance with Provision 3 of this Order, to evaluate the alternatives for final remediation;
2. cleanup objectives and levels to be attained and the rationale which shows these cleanup objectives and levels comply with the Basin Plan;
3. the recommended measures necessary to achieve final cleanup levels and objectives;
4. a proposal for treatment and/or disposal of all extracted ground water, soil, and sediment;
5. a workplan and implementation time schedule for the proposed final remediation alternatives, including an estimation of the time needed to complete all remediation; and
6. a proposed monitoring and project review plan.

d. **TASK: IMPLEMENTATION OF FINAL REMEDIAL ACTION PLAN.**
COMPLIANCE DATE: Within 180 days of Executive Officer approval of the final remedial action plan submitted for Provision 2.c.

Submit a technical report acceptable to the Executive Officer, documenting completion of tasks necessary to implement the selected final remediation activities proposed in the workplan submitted for PROVISION 2.c. This report shall include, but will not be limited to, documentation of:

1. installation of all proposed soil caps, ground water extraction wells, pumps, conveyance and treatment systems;
2. unexpected or unusual conditions encountered during the installation;
3. any soil removal; and
4. any variations from, or modifications to the approved remediation workplan or time schedule determined technically necessary.

e. **TASK: EVALUATION OF THE FINAL REMEDIAL ACTION PLAN.**
COMPLIANCE DATE: 1 year after implementation of the final remedial action plan described in Provision 2.d. and annually thereafter

Submit a technical report, acceptable to the Executive Officer which evaluates the effectiveness of the final remedial action plan. If applicable, this report should also include any necessary modifications or additional measures, with an implementation schedule, to fully remediate or contain polluted groundwater.

3. The submittal of technical reports evaluating all interim and final remedial measures will include a projection of the cost, effectiveness, benefits and impact on public health and welfare, and the environment, of each alternative measure. The reports shall be consistent with the guidance provided by:
   a. State Water Resources Control Board's Resolution No. 92-49;"Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304."
   b. State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California."
   c. Basin Plan for the San Francisco Bay Region.

4. If the Discharger is delayed, interrupted or prevented from meeting one or more of the compliance dates specified in this Order, the Discharger shall promptly notify the Executive Officer, and the Board may consider revision to this Order.

5. All hydrogeologic plans, specifications, reports and documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist or a California registered civil engineer.

6. The Discharger shall comply with any Self-Monitoring Program as adopted by the Board and as may be amended by the Executive Officer.

7. The Discharger shall file a report with the Board at least 30 days in advance of any changes in occupancy or ownership associated with the site described in this Order.

8. The Board will review this Order periodically and may revise the requirements or compliance schedule when necessary.

9. Pursuant to California Water Code Sections 13304, 13305, 13350, 13385, 13386, and 13387, if the Discharger fails to comply with this Order or any subsequent amendments, the Executive Officer may request the Attorney General to take appropriate enforcement action against the Discharger, including injunctive relief; or the Board may schedule a hearing to consider requesting the Attorney General to take appropriate enforcement action against the Discharger, including injunctive and civil monetary remedies; or the Board may schedule a hearing to administratively impose

civil liability not to exceed five thousand dollars ($5,000) for each day this Order is violated.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on December 15, 1994.

for Steven R. Ritchie
Executive Officer