CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 95-016

SITE CLEANUP REQUIREMENTS FOR

VARIAN ASSOCIATES, and

PEERY/ARRILLAGA 1976 CHILDREN'S TRUST

for the property located at

3100 JAY STREET
SANTA CLARA
SANTA CLARA COUNTY

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

SITE DESCRIPTION

1. Groundwater pollution is present on the property at 3100 Jay Street in the City of Santa Clara in Santa Clara County. Peery/Arrillaga 1976 Children's Trust (Peery/Arrillaga), current owner of the property, and Varian Associates, Inc. (Varian), a former occupant of the property, are all hereinafter referred to as the dischargers. For the purposes of this Order, Peery/Arrillaga will be responsible for compliance in the event that Varian fails to comply with the requirements of this Order.

2. Varian is named as a discharger because of its chemical usage history and chemical release to soil and groundwater at the 3100 Jay Street property during its occupancy of the property. Peery/Arrillaga is named as a discharger because it is the current owner of the property. If additional information is submitted indicating that any other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the State, the Board will consider adding that party's name to this Order.

3. The existing site facility was first occupied in 1977 by Granger Associates, a telecommunications equipment manufacturer. Varian subleased portions of the facility from Granger from 1980 to 1985 for the manufacture of vacuum equipment. Granger continued to occupy the site after Varian vacated the facility in 1985. Granger was bought out in 1990 by Digital Switch Corporation, the current site occupant. Land use in the surrounding area is mainly light to heavy industrial with scattered residential and thoroughfare areas (Figure 1).

SITE HYDROGEOLOGY

4. The site is located in the Santa Clara Valley which extends southeast from San Francisco Bay. It is bounded by the Diablo range to the northeast and the Santa Cruz and Gavilan Ranges to the

southwest. The Santa Clara Valley is a large structural depression and the valley floor consists mainly of unconsolidated alluvial and fluvial deposits from the adjacent mountains. The site geology is consistent with that of the surrounding valley, with surface elevation contours sloping to the north at an approximate grade of 0.005.

5. The upper 3.5 to 8 feet of soils consists of silty clay, underlain by a 3.5 to 7.5 foot thick zone of sandy silty to silty sand with occasional clay interbeds. An interbedded clay layer is present at a depth from 12 to 15 feet bgs, and ranges in thickness from 2 to 5 feet. The interbedded clay layer separates two saturated permeable zones of the A-level aqifer. The A-level aquifer is unconfined and ranges from 7 to 10 feet thick. Fifty feet of clay with occasional thin silt and sand interbeds separate the A-level aquifer from the underlying B-level aquifer. Groundwater elevations in the B-level aquifer are consistently higher than elevations measured in the A-level aquifer. This indicates an upward vertical hydraulic gradient between the A- and B-level aquifers. Normal groundwater flow is to the northwest at a gradient from 0.002 to 0.004 ft/ft.

6. Water is not withdrawn from the shallow alluvium for any use other than VOC removal and monitoring at or in the vicinity of the Site. One active domestic well has been documented within a 1-mile radius of the site. This well penetrates to 85 feet or deeper and is located approximately 5,000 feet away at an angle of 30 degrees east of the predominant local groundwater flow direction.

SITE INVESTIGATIONS

7. On August 15, 1984, a leak developed in the piping which transported TCA from an outside storage tank to a degreasing area inside the building. Approximately 10 to 20 gallons of TCA was spilled on the ground just outside the building. On the same day, Varian excavated approximately 22 cubic feet of soil containing visual evidence of TCA. Based on analyses of soil samples collected from the sides of the excavation, Varian excavated an additional 13 cubic feet of soil on October 10, 1984.

8. From January to August 1986, Varian conducted soil and groundwater investigations at the site. Varian installed ten soil borings and ten monitoring wells. TCA was found in groundwater in concentrations up to 11,000 parts per billion (ppb).

9. The maximum concentrations of VOCs detected on-site in groundwater have been: TCA at 11,000 ug/l; 1,1-DCE at 53 ug/l; and 1,1-DCA at 54 ug/l. All these wells are completed in the shallow aquifer.

10. Varian has currently identified one shallow-groundwater pollutant plume. A small TCA plume extends northeastward from the source area to the northeast edge of the property boundary. TCA has not been detected at concentrations above the 200 ug/l State and Federal maximum contaminant level (MCL) at wells north of the property boundary. Current monitoring results show the plume still to be present and moving slowly towards the downgradient site boundary. The extent of the TCA plume and existing wells are shown on Figure 2.

12. Sample results from monitoring well E-13 show DCE and DCA concentrations consistently above State and Federal MCLs.

INTERIM REMEDIAL ACTIONS

13. During October and November 1985, 300 cubic yards of TCA-contaminated soil was excavated and aerated onsite. After aeration, the soil was returned to the excavation once non-detectable levels of VOCs were reached. Soil remediation is complete and no further work is to be done.

14. Varian began operating a groundwater extraction trench INFL-1 (Trench 1) in March 1986. Subsequent evaluation of Trench 1 showed that the downgradient extent of groundwater capture was insufficient and a second trench (Trench 2) was installed in August 1987. Extracted groundwater is treated using an air stripper and discharged into San Tomas Aquinas Creek. The discharge is authorized by NPDES Permit No. CA0029033, adopted (and renewed) by the Board on March 18, 1992, in Order No. 92-026. Board staff gave approval to shut down Trench I after monitoring data for Trench 1 and the upgradient well E-1 showed VOC levels below MCL for several months. Trench 1 was shut down in September 1992.

15. Additional investigations around Trench 2 showed that two shallow, hydraulically-connected permeable zones are present and together comprise the A-level aquifer. Trench 2 intercepts groundwater in the upper permeable zone but off-site migration is likely to occur in the lower zone. Two groundwater extraction wells were installed in June 1993 to intercept groundwater in the lower zone. Groundwater extraction from the two wells was never initiated because shortly after installation, monitoring data from the wells and other nearby wells showed VOC levels below MCLs. Varian requested to shut down Trench 2 on a pilot basis to evaluate the effect of the shutdown on groundwater quality and to assess whether groundwater extraction can be halted indefinitely. Previous groundwater monitoring data showed a decreasing trend in contaminant levels and the surrounding wells showed VOC levels below MCLs. Board staff gave approval to shut down Trench 2 in September 1994.

16. The treatment system began operating in March 1986. Except for a few months in 1991, the instantaneous total concentration of VOCs at any time measured in the effluent has been less than the permit limit daily maximum. Approximately 7,600 gallons per day (gpd) of polluted groundwater were being extracted, treated and discharged in 1993. A total of about 41 million gallons of groundwater have been extracted and treated since the system was activated.

RISK ASSESSMENT

17. Varian included a public health and environmental assessment in its 1993 Remedial Investigation/Feasibility Study (RI/FS). One potential exposure pathway for chemicals remaining at this Site is through groundwater, by ingestion or other domestic use. The chemicals of concern that were considered were TCA, DCE, and 1,1-DCA. These chemicals are non-carcinogens (Class "C' or "D"). The assessment on risk at the Site calculates a non-carcinogenic health hazard index of less than one, under a scenario of on-site residential exposure, potable water ingestion and vapor inhalation; and residential exposure, irrigation water, dermal contact, using VOC concentrations detected at the time the risk assessment was made.

18. A second exposure pathway, by volatilization from soil and/or groundwater, could exist if excavation of shallow soil occurred and was not properly identified, monitored, and controlled if necessary.

The report did not include a calculation for estimated risk due to the escape of soil and/or groundwater vapor during excavations. This risk is minimal due to the low concentrations of VOCs remaining. The total risk is within the U.S. EPA recommended risk management levels for Site cleanup despite the maximum reasonable exposure scenario considered.

19. The remaining risk(s) can be managed by implementing deed restrictions, a long-term monitoring program, and a contingency plan if monitoring indicates that additional remediation is necessary.

MASS BALANCE CALCULATIONS

20. Varian made VOC mass balance calculations and determined that about 0.01 gallons of TCA remain in the aquifer, and estimated that this mass of VOCs will be attenuated on-site through dispersion, sorption onto soil, and natural degradation before dissolved VOCs greater than the appropriate MCLs would reach the Site's downgradient property boundary.

21. A regular monitoring program is needed to determine if off-site VOC migration will occur.

FINAL REMEDIATION PLAN

22. Varian submitted a Remedial Investigation/Feasibility Study in 1993 providing a summary of costs associated with four groundwater remediation alternatives:

    a. Alternative No. 1: **No Action**

    This alternative consists of leaving the site "as is" and performing no additional remedial actions. Interim remedial measures would be terminated and the existing groundwater extraction and treatment systems would be removed. Remedial action objectives would be achieved through natural processes such as biodegradation, volatilization, adsorption, and dilution. The period of time to achieve VOC reduction would be more than 10 years, based on observed trends. Total present worth is estimated at $295,000.

    b. Alternative No. 2: **Institutional Controls**

    Institutional controls would reduce the possibility of exposure to groundwater contaminated VOCs through the following actions:

    i. continue use of city-supplied water
    ii. establish deed restrictions preventing the installation of groundwater water-supply wells or use of shallow aquifer groundwater
    iii. establish building permit or land-use restrictions

    Remedial action objectives would be achieved through natural processes such as biodegregation, volatilization, adsorption, and dilution. The period of time to achieve VOC reduction would be more than 10 years, based on observed trends. Total present worth is estimated at $315,000.

c. Alternative No. 3: **Groundwater Extraction From Influent Trench 2, with Treatment and Discharge**

Groundwater containing VOCs would continue to be extracted from Trench 2 and treated using the existing air stripper. Remedial objectives would be achieved through the active removal of VOC mass from groundwater. The period of time to achieve VOC reduction would be approximately 8 years, based on observed trends. Total present worth is estimated at $477,550.

d. Alternative No. 4: **Groundwater Extraction From Influent Trench 2 and Well E-13, with Treatment and Discharge**

Well E-13 would be converted into an extraction well to remove VOC contaminated groundwater from this area. Groundwater containing VOCs would be extracted from Trench 2 and Well E-13, and treated using the existing air stripper. Remedial objectives would be achieved through the active removal of VOC mass from groundwater. The period of time to achieve VOC reduction would be approximately 5 years, based on observed trends. Total present worth is estimated at $426,600.

23. Varian's proposed final remediation plan (alternative 2) consists of:

a. Termination of groundwater extraction pumping and placing the treatment system on standby status.

b. Execution of deed restrictions for the property.

c. Implementation of a quarterly sampling schedule with quarterly reporting to the Board for two years.

d. Implementation of contingency procedures if certain criteria are exceeded.

BASIS FOR CLEANUP STANDARDS

24. The Board establishes the overall cleanup level for a waterbody based upon the most sensitive beneficial use identified. In all cases, the Board first considers high quality or naturally occurring "background" concentration objectives as the cleanup levels for polluted groundwater with a beneficial use of municipal and domestic supply, such as at this Site. If background concentrations cannot be achieved, cleanup levels are normally set no higher than:

a. Maximum Contaminant Levels (MCLs), or where MCLs have not been adopted, other valid technical data supporting maintenance of the beneficial use (i.e., adopted Secondary Maximum Contaminant Levels, etc.); or,

b. A more stringent level (below MCLs) based upon a Site specific risk assessment; or,

c. At a level lower than MCLs that is technically and economically feasible.

Groundwater cleanup levels are approved on a case-by-case basis by the Board. Proposed final cleanup levels are based on a discharger-developed feasibility study of cleanup alternatives that compares effectiveness, cost, time to achieve cleanup standards, and a risk assessment to determine impacts on beneficial uses, human health and the environment. Cleanup levels must also take into account the mobility, toxicity, and volume of pollutants. Feasibility studies of cleanup alternatives may include the guidance provided by Subpart E of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300); Section 25356.1(c) of the California Health and Safety Code; U.S. EPA's Comprehensive Environmental Response, Compensation, and Liability Act; the State Water Board's Resolutions Nos. 68-16 and 92-49; and the Regional Water Board's Resolution No. 88-160.

25. Final cleanup levels for polluted groundwater shall be background water quality if feasible, but shall not be greater than the California (State) DHS drinking water Action Level (AL) or Maximum Contaminant Level (MCL), whichever is more stringent. An AL does not apply if an MCL has been adopted for the chemical pollutant

26. The Federal EPA has adopted Maximum Contaminant Levels MCLs for pollutants, and the State and Federal MCLs are not always identical. The Federal EPA has also adopted Maximum Contaminant Level Goals (MCLGs) for certain chemicals, which may be lower than the Federal MCLs. Groundwater cleanup standards for the site are the more stringent of the Federal or State MCLs. The current Federal and State MCLs/MCLGs for VOCs of interest, and the appropriate MCL for this site, are tabulated below, in Table 1.

Table 1: MCLs for VOCs of Interest (ug/l)

Chemical	Federal MCL/MCLG	State MCL
1,1-DCE	7	6
1,1-DCA	--	5
1,1,1-TCA	200/200	200

NON-ATTAINMENT AREA

27. Available options for removing or treating *in situ* groundwater pollution are limited. At many sites in this region and elsewhere, pump and treat technology is not adequate to meet low cleanup standards because the costs and timeframe may be prohibitive. Groundwater pollution cleanup is a lengthy process which requires significant resources.

28. Varian has documented the following in its RI/FS:

    a. An appropriate cleanup program, including adequate source removal, has been fully implemented and reliably operated for a period of time which is adequate to understand both the hydrogeology of the site and pollutant dynamics; and

    b. Groundwater pollutant levels have reached an asymptotic level; and

c. Best available technologies are not technically or economically feasible to achieve further significant reductions in pollutant concentrations; and

d. The remaining human health, water quality, and environmental risks posed by residual soil and groundwater pollution will be contained and managed by an acceptable plan. The plan includes a risk assessment, deed restriction, a contingency plan, and regular groundwater monitoring.

29. Based on the above two findings and in consideration of the reasonable protection of beneficial uses and maximum benefit to the people of the State pursuant to State Board Resolution 68-16, a limited non-attainment area is appropriate on the 3100 Jay Street site. Within this area, pollutant concentrations may exceed relevant water quality objectives.

30. The proposed remediation plan is basically acceptable but does not contain all elements needed to qualify for a non-attainment area. The proposed plan is acceptable with the following changes and additions:

    a. Quarterly monitoring and reporting will be required for two years after this Order is adopted with reduced frequency thereafter (if warranted). The dischargers may request and the Executive Officer may approve reductions of monitoring and reporting sooner than two years with submittal of satisfactory evidence of a stable groundwater plume configuration.

    b. A contingency plan will be prepared to trigger additional corrective action if certain criteria are met. The contingency plan is considered to be a self-regulating mechanism to assure that compliance with the Order is met at all times.

    c. The NPDES permit for this Site, or a substitute acceptable to the Executive Officer, will be maintained as part of an approved contingency plan.

    d. Remaining risk will be managed by requiring the maintenance of a viable contingency plan, implementation of acceptable deed restrictions, and containment of polluted groundwater within boundry wells.

STATE BOARD RESOLUTIONS

31. State Board Resolution 68-16
    On October 28, 1968, the State Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affected beneficial uses. This is based on a Legislative finding, contained in section 13000, California Water Code, which states in part that it is State policy that "waters of the State shall be regulated to attain the highest water quality which is reasonable". The cleanup standards and non-attainment area established by this Order are consistent with this policy.

32. State Board Resolution 88-63
On May 19, 1988, the State Board adopted Resolution 88-63, "Sources of Drinking Water". This resolution states that, with certain exceptions, surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply.

33. State Board Resolution 92-49
On June 18, 1992, the State Board adopted Resolution 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304". Resolution 92-49 was amended on April 21, 1994. This Order and the steps leading up to its adoption are consistent with Resolution 92-49.

REGIONAL BOARD RESOLUTIONS

34. Regional Board Resolution 88-160
Resolution 88-160 strongly encourages the maximum feasible reuse of extracted water from groundwater pollution remediations either by the dischargers or other public or private water users. The dischargers have already demonstrated that reuse is not feasible at the site.

35. Regional Board Resolution 89-39
Resolution 88-39, "Incorporation of 'Sources of Drinking Water' Policy into the Water Quality Control Plan" was adopted on March 15, 1989. This policy defines groundwater as suitable or potentially suitable for municipal or domestic supply if it:

a. has a total dissolved solids content of less than 3,000 mg/l, and

b. is capable of producing sufficient water to supply a single well with at least 200 gallons per day.

For purposes of establishing cleanup objectives, the water bearing zones at this site qualify as potential sources of drinking water.

BASIN PLAN

36. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 16, 1986 and amendments thereafter. The Basin Plan contains water quality objectives for Calabazas Creek and South San Francisco Bay and contiguous surface waters and groundwater.

37. The existing and potential beneficial uses of the groundwater underlying and adjacent to the property include:

a. Industrial process water supply
b. Industrial service supply
c. Municipal and domestic supply
d. Agricultural supply

CEQA

38. The discharger has caused or permitted, and 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 or nuisance.

39. 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.

NOTICE

40. Pursuant to Section 13304 of the Water Code, the dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized dischargers of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order.

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

42. 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, that the dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

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

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

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

B. SPECIFICATIONS

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

2. The Dischargers shall conduct further reporting and monitoring activities as needed and as described in this Order. Results of such monitoring activities shall be submitted to the Board. The Dischargers shall submit to the Board acceptable monitoring program reports containing results of work performed.

3. Final cleanup levels for polluted groundwater sampled from the boundary wells as defined in the SMP and as may be designated according to Task 5 of this Order shall be the appropriate MCLs, as shown in Table 2.

Table 2: Final Cleanup Levels (ug/l)		
Chemical	Boundary Well[1]	Appropriate MCL
1,1-DCE	6	6
1,1-DCA	5	5
1,1,1-TCA	200	200

[1] Wells E-4, E-12, E-15, and MW-3

CONTINGENCY PLAN

4. The contingency plan for groundwater remediation shall be implemented whenever:

   a. The confirmed concentration of any chemical of Table 2 in any boundary well (as defined in the SMP) equals or exceeds the appropriate MCL; or

   b. The trend of the concentration of TCA, DCA, or DCE in any boundary well (as defined in the SMP) exhibits a rate of increase which indicates that the appropriate MCL will be reached or exceeded (i) before the next normally scheduled sampling event or (ii) before the time required to implement the contingency plan.

C. PROVISIONS

1. The dischargers shall comply with all Prohibitions and Specifications of this Order, in accordance with the following time schedule and tasks:

TASKS	COMPLETION DATE
a. **DEED RESTRICTIONS**	
Task 1 Submit a technical report acceptable to the Executive Officer which consists of deed restrictions for the property at 3100 Jay Street.	March 1, 1995
Task 2 Submit a technical report acceptable to the Executive Officer which documents that the deed restrictions have been filed with the proper County Office and are in effect.	May 1, 1995

b. CONTINGENCY PLAN

Task 3: **April 1, 1995**
Submit a technical report acceptable to the Executive Officer which describes a contingency plan to be implemented if necessary to prevent violation of the requirements of this Order.

c. **EVALUATION OF NEW HEALTH CRITERIA**

Task 4: **90 days after request from Executive Officer**
Submit a technical report acceptable to the Executive Officer which contains an evaluation of how the final plan and cleanup standards would be affected, if the concentrations listed in Specification B.3 changes as a result of promulgation of drinking water standards, maximum contaminant levels or action levels or other health based criteria.

e. **EVALUATION OF NEW TECHNICAL INFORMATION**

Task 5: **90 days after request from Executive Officer**
Submit a technical report acceptable to the Executive Officer that documents an evaluation of new technical and economic information which indicates that cleanup standards or cleanup technologies in some areas may be considered for revision. Such technical reports shall not be required unless the Executive Officer or the Board determines that such new information indicates a reasonable possibility that the Order may need to be changed.

f. **FIVE YEAR STATUS REPORT**

Task 6: **February 1, 2000**
Submit a technical report acceptable to the Executive Officer which describes the results of the past monitoring program, any trends or changes in contaminant plume configurations, additional work or investigations performed, and projected work to be done in the next five years.

2. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer. In the event of such delays,the Board may consider modification of the task completion dates established in this Order.

3. The Discharger shall submit quarterly technical reports commencing with the October through December 1994 quarterly report due February 15, 1995. The quarterly technical report shall include, but need not be limited to, all information required to be submitted by

the Self-Monitoring Program on a quarterly basis for this Site. This requirement may be deleted or modified by the Executive Officer in two years or sooner upon request by the dischargers and submittal of information to demonstrate that a reduction is appropriate.

4. On an annual basis, technical reports on the progress of compliance with all requirements of this Order shall be submitted, commencing with the report for 1994, due February 15, 1995. The annual report may be combined with other technical report(s) which are due to be submitted on February 15, 1994. The progress reports shall include, but need not be limited to: information required to be submitted by the Self-Monitoring Program on an annual basis; updated water table/piezometric surface contour maps, pollutant concentration contour maps for all affected water-bearing zones, and base map(s) showing locations of all properly identified monitoring and extraction wells and identifying adjacent facilities and structures; and an evaluation of the effectiveness of the cleanup actions/systems and the feasibility of attaining groundwater and soil cleanup goals.

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

6. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.

7. The Dischargers shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

8. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided to the following agencies:

    a. Santa Clara Valley Water District
    b. Santa Clara County Environmental Health Department
    c. City of Santa Clara

9. The Dischargers shall permit the Board or its authorized representative, in accordance with Section 13267 (c) of the California Water Code:

    a. Entry upon dischargers' premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

    b. Access to copy any records required to be kept under the terms and conditions of this Order.

    c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.

10. The property owner shall file a report on any changes in site occupancy, ownership and/or property use including redevelopment associated with the facility described in this Order, within 15 days of each occurrence. If redevelopment is proposed, notice to the Board shall be made when a final plan is adopted or accepted by the property owners.

11. If any hazardous substance is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any waters of the State, the Dischargers shall report such a discharge to this Board, at (510) 286-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be filed with the Board within five (5) working days and shall contain information relative to: the nature of the waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.

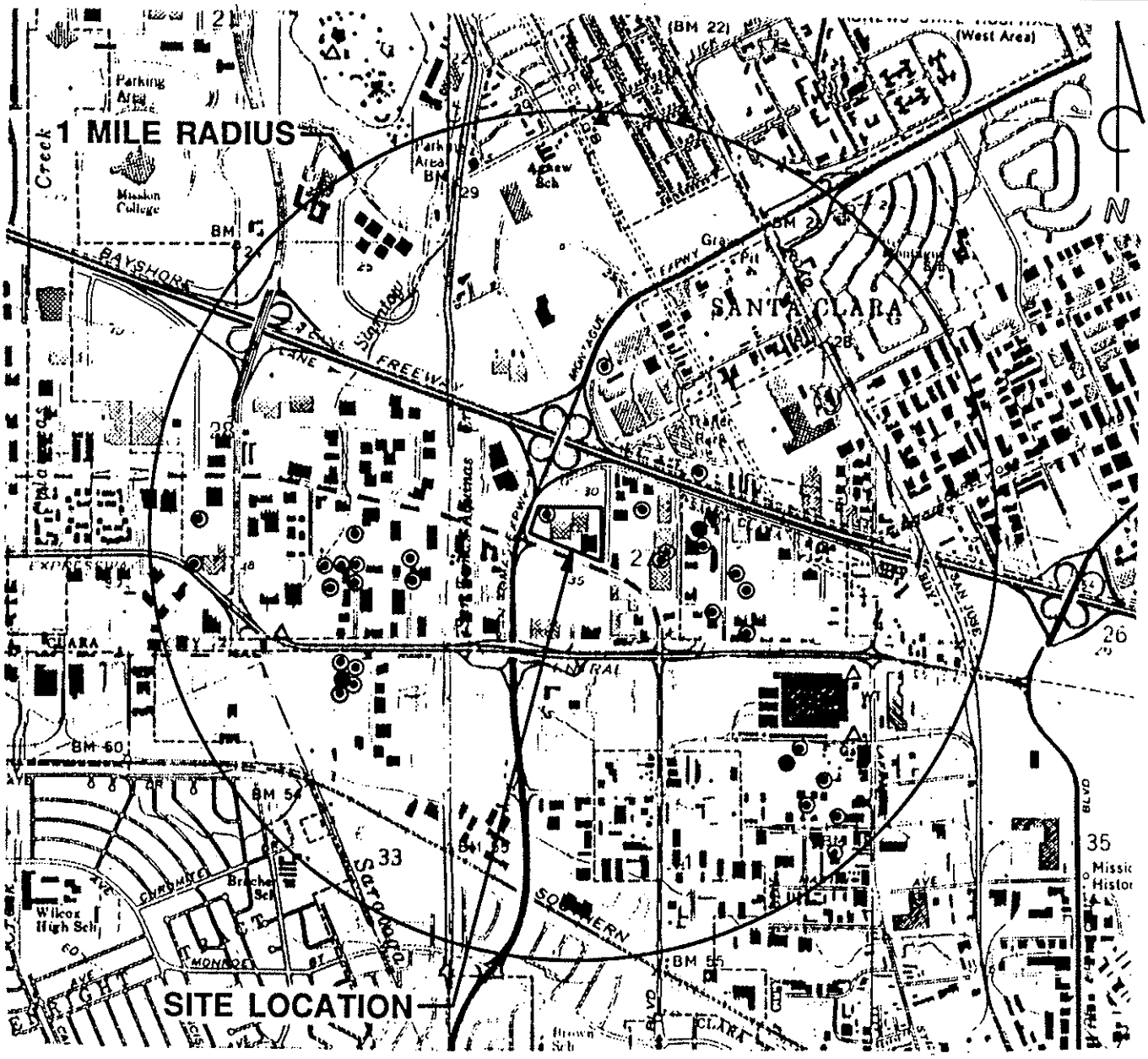
12. Within sixty (60) days of the Executive Officer's determination and actual written notice to Peery/Arrillaga that Varian has failed to comply with the Provisions of this Order, Peery/Arrillaga, as landowner, shall comply with this Order.

13. The dischargers shall be liable, pursuant to Section 13304 of the Water Code, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such wastes, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to procedures established in that program. Any disputes raised by the dischargers over the reimbursements amounts or methods used in that program shall be consistent with the dispute resolution procedures of that program.

14. The Board will review this Order periodically and may revise the requirements when necessary.

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 January 18, 1995.

Steven R. Ritchie
Executive Officer



QUADRANGLE LOCATIONS

LEGEND

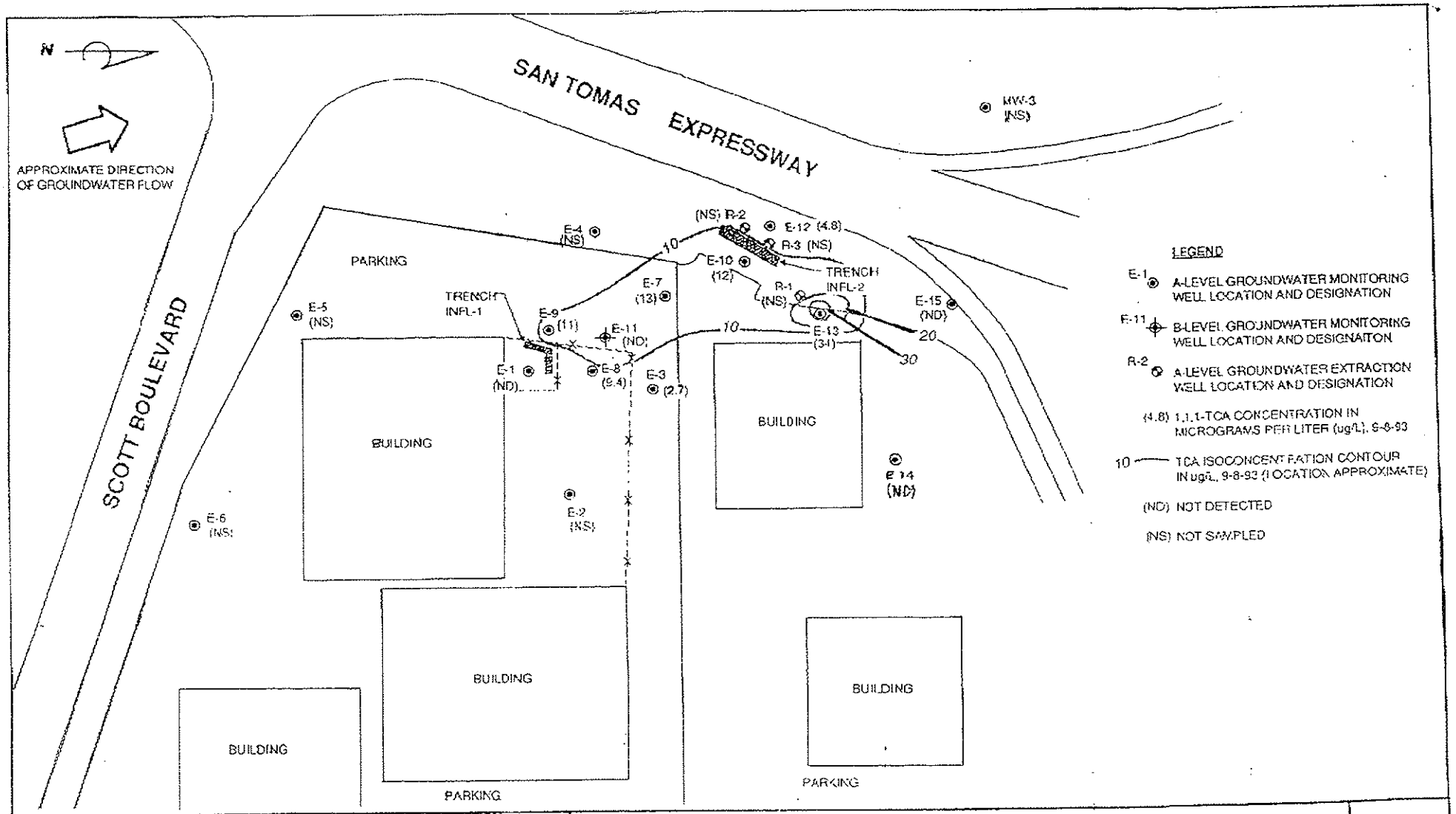
- ▲ ACTIVE DOMESTIC WATER-PRODUCING WELLS
- △ ACTIVE MUNICIPAL AND INDUSTRIAL WATER-PRODUCING WELLS
- ◉ ACTIVE B-LEVEL MONITORING WELLS
- ● DESTROYED B-LEVEL MONITORING WELLS

REFERENCE:
USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: MILPITAS, CALIFORNIA
DATED: 1961 REVISED: 1980
TITLED: SAN JOSE WEST, CALIFORNIA
DATED: 1961 REVISED: 1980

SCALE

2000 0 2000 FEET

	FORMER VARIAN FACILITY 3100 Jay Street Santa Clara, California	FIGURE: 1
	SITE LOCATION AND WELL SURVEY MAP	



APPROXIMATE SCALE

0 100 200 FEET

JAY STREET FACILITY.
3100 Jay Street
Santa Clara, California

TCA CONCENTRATION MAP

FIGURE: 2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

VARIAN ASSOCIATES

and

PEERY ARRILLAGA 1976 CHILDREN'S TRUST

FOR THE PROPERTY LOCATED AT

3100 JAY STREET
SANTA CLARA
SANTA CLARA COUNTY

SITE CLEANUP REQUIREMENTS

ORDER NO. 95-016

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

Former Varian Associates Facility
3100 Jay Street Site

GROUNDWATER SELF-MONITORING PROGRAM

A. General

1. Reporting responsibilities of waste Dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No.73-16.

2. The principal purposes of a self-monitoring program by a waste Discharger are the following:

    a. To document compliance with Site Cleanup Requirements and prohibitions established by the Board;

    b. To facilitate self-policing by the waste Discharger in the prevention and abatement of pollution arising from waste discharge;

    c. To develop or assist in the development of standards of performance, toxicity standards and other standards; and,

    d. To prepare water and wastewater quality inventories.

B. Sampling And Analytical Methods

1. Sample collection, storage, and analyses shall be performed according to the most recent version of Standard Methods for the Analysis of Wastewater, and Test Methods for Evaluating Solid Waste EPA Document SW-846, or other EPA approved methods and in accordance with an approved sampling and analysis plan.

2. Water and waste analysis (except total suspended solids) shall be performed by a laboratory approved for these analyses by the State Department of Health. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.

3. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. Definition Of Terms

1. A grab sample is a discrete sample collected at any time.

2. Duly authorized representative is a duly authorized representative may thus be either a named individual or any individual occupying a named position such as the following:

    a. Authorization is made in writing by a principal executive officer; or,

    b. Authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as general partner in a partnership, sole proprietor in a sole proprietorship, the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company.

D. Records To Be Maintained By The Discharger

Written reports shall be maintained by the Discharger for ground water monitoring and wastewater sampling, and shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample:

a. Identity of sample and sample station number;
b. Date and time of sampling;
c. Date and time that analyses are started and completed, and name of the personnel performing the analyses;
d. Calculation of results;
e. Results of analyses, and detection limits for each analyses; and,
f. Chain of custody forms for each sample.

E. Reports To Be Filed With The Board

Groundwater monitoring results shall be filed quarterly, unless a different schedule is adopted by the Board and/or Executive Officer. Written self-monitoring reports shall be filed no later than 45 calendar days following the end of the report period. In addition an annual report shall be filed if and as indicated. The reports shall be comprised of the following:

a. Letter of Transmittal - A letter transmitting the essential points in each self-monitoring report should accompany each report. Such a letter shall include a discussion of any requirement violations found during the last report period, and actions taken or planned for correcting the violations, such as, operation and/or facilities modifications. If the Discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated

in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct. The letter shall contain the following certification:

"I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

b. Each monitoring report shall include a compliance evaluation summary sheet. Until the Order's amended to specify ground water protection standards, the following shall apply and the compliance sheet shall contain:

   i. The method and time of water level measurement, the type of pump used for purging, pump placement in the well, method of purging, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of the pH, temperature conductivity and turbidity testing, well recovery time, and method of disposing of the purge water; and,

   ii. Type of pump used, pump placement for sampling, a detailed description of the sampling procedure; number and description of equipment, field and travel blanks; number and description of duplicate samples; type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations; the chain of custody record.

c. A summary of the status of any remediation work performed during the reporting period.

d. The Discharger shall describe, in the quarterly or periodic report, the reasons for significant increases in a pollutant concentration at a well onsite. The description shall include the following:

   i. The source of the increase;

   ii. How the Discharger determined or will investigate the source of the increase; and,

   iii. What source removal measures have been completed or will be proposed.

e. A map or aerial photograph showing observation and monitoring station locations, and TCA contours in the A-aquifer shall be included as part of the quarterly or periodic Self-Monitoring Report.

f. Laboratory statements of results of analyses must be included in each report. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Board. The following information shall be provided:

   i. The methods of analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods other than EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review; and,

   ii. In addition to the results of the analyses, laboratory quality assurance/quality control (QA/QC) information must be included in the monitoring report. The laboratory QA/QC information should include the method, equipment and analytical detection limits; the recovery rates; an explanation for any recovery rate that is less than 80%; the results of equipment and method blanks; the results of spiked and surrogate samples; and the frequency of quality control analysis.

g. By February 15 of each year the Discharger shall submit an annual report to the Board covering the previous calendar year. This report shall contain:

   i. Tabular and graphical summaries of the monitoring data obtained during the previous year;

   ii. A comprehensive discussion of the compliance record, and the corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the Site Cleanup Requirements; and,

   iii. A written summary of the ground water analyses indicating any change in the quality of the ground water.

F. In the event the Discharger violates or threatens to violate the conditions of the Site Cleanup Requirements and prohibitions or intends to experience a plant bypass or treatment unit bypass due to:

   a. Maintenance work, power failures, or breakdown of waste treatment equipment, or;
   b. Accidents caused by human error or negligence, or;
   c. Other causes, such as acts of nature.

The Discharger shall notify the Regional Board office by telephone as soon as he or his agents have

knowledge of the incident and confirm this notification in writing within 7 working days of the telephone notification. The written report shall include time and date, duration and estimated volume of waste bypassed, method used in estimating volume and person notified of the incident. The report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

In addition, the waste Discharger shall promptly accelerate his monitoring program to analyze the discharge at least once every day. Such daily analyses shall continue until such time as the effluent limits have been attained, until bypassing stops or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

G. Description Of Observation Stations And Schedule Of Observations

1. The observation stations shall consist of the existing downgradient property boundary wells E-4, E-12, E-15, and MW-3; and any other groundwater monitoring wells selected from wells existing or added during the soil and groundwater characterization or the evaluation of remediation work.

2. The schedule of well observations and grab sampling shall be conducted as described in the following table:

Monitoring Well Location	Sampling Frequency
E-1	annually
E-2	semi-annually
E-3	quarterly
E-4*	**quarterly**
E-5	annually
E-6	annually
E-7	quarterly
E-8	semi-annually
E-9	semi-annually
E-10	quarterly
E-11	annually
E-12*	**quarterly**
E-13	quarterly
E-14	semi-annually

E-15*	**quarterly**
R-1	annually
MW-3*	**quarterly**

*denotes Boundary Well

H. Observations and Test Procedures

1. The groundwater well observations for all wells shall consist of the following:

   a. Water elevation reported to the nearest 0.01 foot for both depth to water from the ground surface and the elevation of the groundwater level;

   b. Groundwater temperature measured at the time of sampling and reported in degrees Fahrenheit;

   c. Groundwater conductivity measured at the time of sampling as per Standard Methods 205 using potentiometric methodology;

   d. Groundwater pH measured at the time of sampling as per Standard Methods 423 using potentiometric methodology; and,

   e. Groundwater turbidity measured at the time of sampling.

2. The test procedures for the groundwater samples taken from all wells shall be as described herein:

   a. Volatile organic compounds by EPA Method 8010.

   b. Detection limits shall be adequate for determining compliance with cleanup standards.

   e. If the analyses confirm increase(s), the dischargers must provide verbal notice within 72 hours and written notice within 7 days of the date of such confirmation, to the Regional Board.

   f. Within 15 days after receiving written notification from the Board, the dischargers must implement a contingency plan and within 90 days following notification must begin groundwater extraction; implementation and extraction will continue until confirmed groundwater analyses indicate a return to pre-existing conditions. Groundwater monitoring/sampling and analyses will be accelerated according to a plan proposed to and approved by the Board Executive Officer within 30 days after written notification first received by the dischargers.

g. If the dischargers fail to implement the contingency plan and concentrations of one or more VOCs above MCLs migrate beyond boundary wells, this will be considered a violation and subject to enforcement action.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program is as follows:

1. Developed in accordance with the procedures set forth in this Board's Resolution No. 73-16;

2. Effective on January 18, 1995; and,

3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer, or request from the Discharger.

Steven R. Ritchie
Executive Officer