CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 97-115

SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NO. 84-75 FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION AND SCHLUMBERGER TECHNOLOGY CORPORATION AND THE LAURA ANN LIEBERMAN ARTHUR AVENUE TRUST, THE NANCY LEE KAPLAN ARTHUR AVENUE TRUST, THE CHARLES E. FRANK ARTHUR AVENUE TRUST, THE ZOLLIE S. FRANK MARITAL TRUST, AND ELAINE S. FRANK

for the property located at

4300 REDWOOD HIGHWAY
SAN RAFAEL
MARIN COUNTY

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

1. **Site Location:** The former Fairchild Semiconductor Corporation Discrete Division Facility site (hereinafter the site) is a ten acre parcel located at 4300 Redwood Highway in northern San Rafael. It is bordered by the Northgate Industrial Park on the north and east. The north fork of Gallinas Creek is immediately south of the site. The creek flows eastward, discharging into tidal marshlands of San Pablo Bay about two miles from the site. U. S. Highway 101 and Redwood Highway lie along the site's western border.

2. **Site History:** The site was originally a tidal marsh. It was filled to an elevation of 10 feet above mean sea level for development in the late 1950's before Fairchild occupied the site. Fairchild began leasing the site and constructed an 89,000 square foot facility there in 1960. Subsequent additions were built in 1967 and 1980, increasing the total building square footage to 125,000 square feet. From 1960 to 1988, Fairchild manufactured semiconductor components there. Fairchild ceased operations at the site in March 1988. Stored hazardous materials formerly used in manufacturing were removed from the site by July 1988. The building was demolished in late 1995 and early 1996. The site is currently unoccupied.

   Soil and groundwater investigations performed by EMCON Associates and Woodward Clyde Consultants (WCC) from 1982 to 1983 found soil and shallow groundwater contaminated with organic solvents and heavy metals. Chemicals detected in the soil and groundwater were believed to have originated from either the acid neutralization system located on the south side of the Fairchild building, from occasional spills and leaks, and/or from imported fill materials that were placed over the site prior to its development. Based on the measured groundwater concentrations, WCC concluded there would be no significant impact on the adjacent Gallinas Creek's beneficial uses. Board staff agreed that there should be no significant impact to Gallinas Creek beneficial uses once the slurry wall and the groundwater extraction system were installed.

3. **Named Dischargers:** Fairchild Semiconductor Corporation and Schlumberger Technology Corporation are the former and current lessees, respectively, of the property under two long-term leases which expire on November 30, 2000. Fairchild's San Rafael facility has been inactive since 1988. The City of San Rafael General Plan 2000 land use designation for the property is Light Industrial/Office. This designation allows for warehousing, motor vehicle services and specialty retail uses.

   Fairchild Semiconductor Corporation (Fairchild) became a wholly-owned subsidiary of Schlumberger Technology Corporation (Schlumberger) in 1979. In 1987, all issued and outstanding shares of Fairchild stock were sold by Schlumberger to National Semiconductor Corporation (National). Following the sale, Schlumberger continued to lease the site of Fairchild's former San Rafael facility. However, Schlumberger indemnified National against environmental liabilities associated with Fairchild's past activities at the site. Schlumberger is currently managing the cleanup on behalf of Fairchild. Because the existing soil and groundwater pollution was partially or fully caused by spills and leaks from the former Fairchild facility, Fairchild Semiconductor Corporation and Schlumberger Technology Corporation (hereinafter dischargers) are named as primary dischargers in this order.

   Because of the indemnification agreement between Schlumberger and National and because Fairchild and Schlumberger have always been cooperative and responsive to investigation and remediation requests from the Board, National is not named as a discharger in this order. However, the Board reserves the right to name National as a discharger in the future.

   The site consists of two parcels, one of which is owned by the Laura Ann Lieberman Arthur Avenue Trust, the Nancy Lee Kaplan Arthur Avenue Trust, and the Charles E. Frank Arthur Avenue Trust. The other parcel is owned by the Zollie S. Frank Marital Trust and Elaine S. Frank. The Laura Ann Lieberman Arthur Avenue Trust, the Nancy Lee Kaplan Arthur Avenue Trust, the Charles E. Frank Arthur Avenue Trust, the Zollie S. Frank Marital Trust, and Elaine S. Frank, as the current land owners, are also named as secondary dischargers in this order. The Laura Ann Lieberman Arthur Avenue Trust, the Nancy Lee Kaplan Arthur Avenue Trust, the Charles E. Frank Arthur Avenue Trust, the Zollie S. Frank Marital Trust, and Elaine S. Frank will be responsible for compliance only if the Board or the Executive Officer finds that Fairchild Semiconductor Corporation and Schlumberger Technology Corporation has failed to comply with the requirements of this order.

   If additional information is submitted indicating that 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.

4. **Regulatory Status:** This site is currently subject to the following Board order:

   Waste Discharge Requirements Order No. 84-75, adopted October 17, 1984

5. **Site Hydrogeology:** Approximately 7.5 acres of the 10 acre site are covered by pavement and landscaping. The eastern 2.5 acres of the property remain undeveloped. The developed site surface is an average of 10 feet above mean sea level (MSL). A topographic rise to +331 feet MSL occurs approximately one-half mile southeast of the site. An elevation of +407 feet MSL occurs within less than one-third of a mile to the northwest of the site. One-half mile east of the site, the surface elevation of undeveloped land is 0 feet MSL.

   Prior to urban and industrial development, the San Rafael site and immediate vicinity consisted of marsh land subject to flooding at high tide. The property was covered with imported fill in the late 1950s. The source of this fill is unknown. Boring logs and regional geology indicate that the Fairchild site is underlain by a layered sequence of imported fill, young bay mud and older bay sediments. WCC reported shale bedrock in one boring at a depth of 45 feet below the surface.

   Groundwater occurs in all soil layers below a depth of about five feet. However, well development results reported by both WCC and Smith Technology indicate that the young bay muds and older bay sediments are highly impermeable. Overlying fill soils are somewhat more permeable due to higher percentages of coarse grained material and irregular zones of lower compaction density that result in higher porosity. Groundwater beneath the site probably does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

   Numerous groundwater elevation measurements have been obtained from the site monitoring wells during the last fourteen years. These measurements yield an inconsistent pattern of groundwater elevations that cannot be reasonably interpreted as contours. The inconsistent pattern of groundwater elevations suggests poor lateral and vertical communication within the groundwater system. Efforts to correlate groundwater levels with tidal fluctuations, based on published tide tables and stream gauging, indicate no discernible tidal influences on the site's subsurface groundwater system. Surface water elevations in the north fork of Gallinas Creek mirror and are strongly controlled by the rise and fall of the tides. Regional groundwater flow for this area is reported in the literature to be in the easterly or southeasterly direction. Groundwater beneath the site is saline with ion concentrations and ion ratios very similar to that of seawater. Local groundwater contains high conductivity measurements (an average of over 17,000 mhos for groundwater samples taken from nine monitoring wells in March 1996) and high TDS measurements (between 4,340 and 45,600 mg/l for groundwater samples taken from 14 monitoring wells in 1982). Due to this salinity, high conductivity, and high TDS, local groundwater is not suitable for agricultural, industrial or domestic supplies and pursuant to State Water Resources Control Board Resolution No. 88-63 and the San Francisco Bay Regional Water Quality Control Board Resolution No. 89-39, groundwater beneath the site is not considered a potential source of drinking water.

6. **Remedial Investigation:** EMCON Associates was hired by Fairchild in January 1982, to install two monitoring wells (E-1 and E-2). Fairchild retained WCC and Canonie Environmental Services Corporation (Canonie, now Smith Technology Corporation) later in 1982 to expand the hydrogeologic

investigation. WCC installed twelve monitoring wells at the site. Canonie drilled and sampled six additional soil borings, two of which were completed as additional monitoring wells.

Analytical results of soil samples taken from these borings indicated the presence of several solvents, principally trichloroethylene, 1,1,1-trichloroethane, toluene, and 1,2-dichloroethylene. Additional borings were completed in September and December of 1983. Three exploration trenches were also excavated at the north side of the Fairchild building to further investigate the nature of fill materials in that area. The major portion and concentration of solvents occurred in the imported fill layers. Solvents detected in the underlying silty clay (bay mud) appeared as localized conditions, possibly reflecting cross-contamination during sampling. Vertical migration of solvents was demonstrated to be impeded by the impermeable silty clays.

Since 1982 a total of 27 monitoring wells have been installed and numerous soil borings have been drilled to define the lateral and vertical extent of chemicals at the site. Inconsistent groundwater levels recorded in monitoring wells on-site indicated the absence of a definable groundwater gradient across the site and indicate that there is no significant movement of groundwater on or off the site. Lateral migration of solvents in the groundwater system would occur primarily by the action of diffusion.

Results of the above hydrogeologic and environmental investigations are summarized in the following two reports: (1) "Final Report, Soil and Ground-water Assessment" by WCC (dated September 13, 1982) and (2) "Report, Hydrogeologic Data Update" by Canonie (dated February 1984). These two reports documented the existence, magnitude, and areal extent of solvents and heavy metals in the subsurface soils and groundwater.

Up to 1,500 ppm of TCE, 480 ppm of DCE, 60 ppm of chloroform, 5.3 ppm of vinyl chloride, and 6.0 ppm of xylenes have been detected in the groundwater beneath the site. Heavy metals have been detected in soil samples from the site at up to 200 ppm for chromium, 670 ppm for copper, 310 ppm for lead, and 740 ppm for nickel. Groundwater samples contained up to 320 ppb of chromium, 70 ppb of cadmium, 140 ppb of copper, 630 ppb of nickel, 60 ppb of silver, 220 ppb of lead, 560 ppb of zinc, and 24 ppb of mercury.

7. **Interim Remedial Measures:** Based on the results of previous soil investigations and on-going groundwater monitoring, Canonie prepared a remedial action plan (RAP) for the Fairchild San Rafael site in early 1984. The RAP was approved by the Board on June 13, 1984. The RAP recommended installing a soil-bentonite cutoff wall (slurry wall), a groundwater extraction system, and a groundwater treatment system.

   The RAP was implemented between 1984 and 1985 with construction of the slurry wall around the entire site to isolate and contain site groundwater. The slurry wall was constructed approximately 30 inches thick, and ranges from 23 to 36 feet in depth. The slurry wall is generally located 20 feet inward from the property boundary. The slurry wall extends through the on-site fill material and New Bay Mud into the Old Bay Muds underlying the site. Approximately 1500 cubic yards of soil

in areas of known hotspots were excavated to construct the groundwater extraction trenches to the north and south sides of the then existing building. Groundwater recovery/reinjection wells were also installed. The trenches and wells were connected to a ground water treatment system that was constructed as part of the facilities wastewater treatment system in 1985.

Testing of the efficacy of reinjection took place in 1985, and determined that reinjection was not feasible at the site due to the extremely low permeability of the site materials. The use of the three recovery/reinjection wells ceased at that time. Following the end of manufacturing at the site in 1988, a new groundwater treatment system was constructed at the southeast corner of the property in 1989.

Groundwater extraction and treatment began in 1989 and has continued to the present. Groundwater has been continuously collected in two extraction trenches and pumped to the granular activated carbon treatment system prior to discharge, under local permit, to the Las Gallinas Valley Sanitary District (LGVSD) sanitary sewer system. Approximately 400,000 gallons of groundwater are pumped from the site and treated during the wet season, from November 1 through April 15 of each year (the LGVSD permit allows the discharger to discharge up to 15,000 gallons per day to the sanitary sewer system during the wet season); pumping is also allowed by the LGVSD during the dry season at up to 7,500 gallons per day (during the 1996 dry season, the discharger did not discharge any treated groundwater to the sanitary sewer system except a minimal amount as part of testing the upgraded automation system). The low permeability soil, the slurry wall, and the groundwater pumping system have effectively prevented pollution (both chlorinated solvents and heavy metals) from migrating off the site.

8. **Final Feasibility Study and Cleanup Plan:** The dischargers will be required to determine if the current interim remediation strategy of using the slurry wall and the groundwater pumping system to isolate and contain the site groundwater is the most feasible and appropriate option for this site. This evaluation may include evaluating whether groundwater pumping, in addition to the existing slurry wall, is necessary to contain the pollution.

9. **Risk Assessment:** A quantitative health risk assessment submitted by the dischargers indicated that the concentrations of solvents posed an acceptable level of cancer risk for this site. This risk assessment, dated November 22, 1996, indicated an excess cancer risk of 2.4×10^{-8} and a hazard index of 5.23×10^{-5} based on a preliminary development plan that has since been abandoned. This preliminary development plan consisted of on-grade commercial buildings. For comparison, the Board considers the following risks to be acceptable at remediation sites: a hazard index of 1.0 or less for non-carcinogens, and an excess risk of 10^{-4} or less for carcinogens.

When new development plans are identified for the site, the dischargers will be required to recalculate the health risks to incorporate the relevant specific factors associated with the proposed development. Solvent constituents are the only known carcinogens at the site. Concentrations of these constituents do not pose a significant threat to

public health or the environment. There are no domestic drinking water wells at the site or in the vicinity which could be affected by the pollution at the site. Institutional constraints are needed to limit exposure to the residual solvents and heavy metals contamination. Appropriate institutional constraints may include notifying prospective buyers, onsite workers and occupants, and construction workers of the residual contamination. It may also include a deed restriction that limits the type of development allowed at the site.

10. **Storm Drain Investigation:** In March 1997, the dischargers initiated a one-year quarterly observation and sampling program to evaluate if groundwater was infiltrating into the storm drainage system and being discharged into Gallinas Creek. The initial monitoring event in March 1997 consisted of visual observations of all on-site catch basins and storm drain outfalls, introduction of dye into selected catch basins, and lab analysis of water flowing out of the outfalls. Results to date indicates that groundwater containing chlorinated solvents are not being discharged into Gallinas Creek via the storm drainage system.

11. **Adjacent Sites:** Most of the known pollution is contained within the slurry wall. However, low soil and groundwater chemical concentrations of solvents have been measured in a small area just outside the slurry wall on the property north of the site. This outside pocket of pollution does not pose a significant threat to public health or the environment. No other properties are located adjacent to the site where groundwater or soil contamination or cleanup activities are known to have taken place.

12. **Basis for Cleanup Standards**

    a. **General:** State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives.

    State Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

    b. **Beneficial Uses:** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels. Groundwater underlying and adjacent to the site is saline with ion concentrations and ion ratios very similar to that of seawater. Local groundwater also contains high conductivity measurements (an average of over 17,000 mhos for groundwater samples taken from nine monitoring wells in March 1996) and high TDS measurements (between 4,340 and 45,600 mg/l for groundwater samples taken from 14 monitoring wells in 1982). Due to this salinity, high conductivity, and high TDS measurements, local groundwater is not suitable for agricultural, industrial or domestic supplies. Therefore, groundwater underlying and adjacent to the site does not qualify as a potential source of drinking water. At the present time, there is no known current use of groundwater underlying the site for agricultural, industrial or domestic supplies.

The existing and potential beneficial uses of adjacent Gallinas Creek and San Pablo Bay include:

Commercial and Sport Fishing
Estuarine Habitat
Industrial Service Supply
Fish Migration
Navigation
Preservation of Rare and Endangered Species
Contact and Noncontact Water Recreation
Shellfish Harvesting
Fish Spawning
Wildlife Habitat

c. **Basis for Groundwater Cleanup Standards:** The groundwater cleanup standards between the slurry wall and Gallinas Creek for the site are based on applicable water quality objectives in the Basin Plan for surface waters with salinities greater than 5 parts per thousand (for the heavy metals) and on best available technology economically achievable/best professional judgement (BATEA/BPJ) for the chlorinated solvents. Cleanup to this level will result in acceptable residual risk to humans and to the environment.

d. **Basis for Soil Cleanup Standards:** The soil cleanup standards between the slurry wall and Gallinas Creek for VOCs and SVOCs for the site are 1 mg/kg total VOCs and 10 mg/kg total SVOCs. Cleanup to these levels are based on soil cleanup levels in the Basin Plan and are intended to prevent leaching of contaminants to groundwater and will result in an acceptable residual risk to humans and to the environment. The metals soil cleanup standards between the slurry wall and Gallinas Creek for the site should be based on whether heavy metals concentrations in the groundwater exceed groundwater cleanup standards.

e. The dischargers will be required to submit a risk management plan to avoid excessive risk to water quality, human health, and the environment (including reasonable mitigation for any significant adverse impacts), and

f. The dischargers will conduct monitoring adequate to document that water quality objectives are met outside the slurry wall area and that risks within the slurry wall remain acceptable.

13. **Basis for 13304 Order:** The dischargers have caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

14. **Cost Recovery:** Pursuant to California Water Code Section 13304, 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 discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.

15. **CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.

16. **Notification:** The Board has notified the dischargers and all 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 an opportunity to submit their written comments.

17. **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers (or their agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

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

2. Further significant migration of wastes or hazardous substances 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 wastes or hazardous substances are prohibited.

B. INTERIM REMEDIAL MEASURES AND CLEANUP STANDARDS

1. **Implement Interim Remedial Measures:** The discharger shall continue to implement the interim remedial measures described in finding 7.

2. **Groundwater Cleanup Standards:** The following groundwater cleanup standards shall be met in all wells located between the slurry wall and Gallinas Creek:

Constituent	Cleanup Standard (ug/l)	Basis
Volatile Organic Compounds (per constituent, as identified by EPA Method 8240, EPA Methods 8010 and 8020, or equivalent)	5.0	BATEA/BPJ
Chromium (VI) (the dischargers may at their option meet this limit as total chromium)	50.0	Basin Plan
Copper	4.9	BPJ (Basin Plan and Board conducted technical studies)
Lead	5.6	Basin Plan
Nickel	7.1	Basin Plan

3. **Soil Cleanup Standards:** Soil cleanup standards of 1 mg/kg for total VOCs and 10 mg/kg for SVOCs shall be met in site soils between the slurry wall and Gallinas Creek. The cleanup standard for polluted soils attributable to the dischargers shall be background concentrations for metals in site soils between the slurry wall and Gallinas Creek.

   Alternate soil cleanup standards may be proposed by the dischargers based on site specific data. If higher levels of pollutant to be left in soils are proposed, the dischargers must demonstrate that the aforementioned cleanup standards are not feasible, that the alternate levels will not threaten the quality of waters of the State, and that human health and the environment are protected. Final cleanup standards for soils must be acceptable to the Executive Officer.

C. TASKS

1. **PROPOSED INTERIM RISK MANAGEMENT PLAN AND INSTITUTIONAL CONSTRAINTS**

COMPLIANCE DATE: April 15, 1998

Submit a technical report with an Interim Risk Management Plan that is acceptable to the Executive Officer documenting procedures to be used by the dischargers to prevent or minimize human and ecological exposure to residual soil and groundwater contamination including dermal exposure to heavy metals. Such procedures shall include considering an appropriate

deed restriction which includes, but is not limited to, notifying future owners, onsite workers and occupants, and construction workers of the subsurface contamination.

2. **IMPLEMENTATION OF INSTITUTIONAL CONSTRAINTS**

COMPLIANCE DATE: 60 days after Executive Officer approval of the Task C.1. technical report

Submit a technical report acceptable to the Executive Officer documenting that the proposed institutional constraints have been implemented.

3. **PROPOSED CURTAILMENT**

COMPLIANCE DATE: 60 days prior to proposed curtailment of any remediation

Submit a technical report that is acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes system closure (e.g. well abandonment), system suspension (e.g. cease extraction but wells retained), and/or significant system modification (e.g. major reduction in extraction rates). The report should include the rationale for curtailment. Proposals for final closure should demonstrate that cleanup standards have been met, contaminant concentrations are stable, and contaminant migration potential is minimal.

4. **IMPLEMENTATION OF CURTAILMENT**

COMPLIANCE DATE: 60 days after Executive Officer approval of curtailment of any remediation proposed in Task C.3.

Submit a technical report acceptable to the Executive Officer documenting completion of the tasks identified in Task C.3.

5. **PROPOSED FINAL REMEDIAL ACTIONS AND CLEANUP STANDARDS**

COMPLIANCE DATE: January 30, 2000

Submit a technical report acceptable to the Executive Officer containing:

a. Results of any further remedial investigation and/or monitoring
b. Evaluation of the installed interim remedial actions
c. Feasibility study evaluating alternative final remedial actions
d. Updated risk assessment for current and future (if known) exposures
e. Recommended final remedial actions and cleanup standards
f. Updated (final) risk management plan
g. Implementation tasks and time schedule, if applicable

The technical report should consider at least evaluating whether groundwater pumping is necessary to contain the site groundwater. Item c should also include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through c should consider the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code Section 25356.1(c), and State Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Items a through e should consider the preliminary cleanup standards for soil and groundwater identified in finding 12.

6. **IMPLEMENTATION OF FINAL REMEDIAL ACTIONS**

COMPLIANCE DATE: 60 days after Executive Officer approval of the Task C.5. technical report

Submit a technical report acceptable to the Executive Officer documenting that the proposed final remedial actions have been implemented.

7. **FIVE-YEAR STATUS REPORT**

COMPLIANCE DATE: January 30, 2005

Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the approved cleanup plan. The report should include:

a. Summary of effectiveness in controlling contamination migration and protecting human health and the environment
b. Comparison of contaminant concentration trends between the slurry wall and Gallinas Creek with cleanup standards
c. Cost effectiveness data (e.g. cost per pound of contaminant removed), if applicable
d. Summary of additional investigations (including results) and significant modifications to remediation systems
e. Additional remedial actions proposed to meet cleanup standards (if applicable) including time schedule
f. Evaluation of the approved risk management plan

8. **ADDITIONAL RISK ASSESSMENT(S)**

COMPLIANCE DATE: 60 days after requested by the Executive Officer

Submit a technical report acceptable to the Executive Officer documenting the results of a quantitative health risk assessment based on new development plans which are identified and approved for the site. The results may indicate that a deed restriction is needed for the site.

9. **EVALUATION OF NEW HEALTH OR ECOLOGICAL CRITERIA**

COMPLIANCE DATE: 90 days after requested by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating the effect on the approved cleanup plan of revising one or more cleanup

standards in response to revision of drinking water standards, maximum contaminant levels, other health-based criteria, or ecological criteria.

10. **EVALUATION OF THE STORM DRAINAGE SYSTEM**

COMPLIANCE DATE: October 30, 1997 and January 30, 1998

Submit technical reports documenting whether the storm drainage system serves as a conduit for the migration of polluted groundwater outside the slurry wall. The last technical report shall contain conclusions as a result of this storm drainage system evaluation. If the storm drainage system is serving as a conduit for the migration of polluted groundwater outside the slurry wall, the dischargers shall submit their proposal(s) to prevent further migration of polluted groundwater.

11. **EVALUATION OF NEW TECHNICAL INFORMATION**

COMPLIANCE DATE: 90 days after requested by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating new technical information which bears on the approved cleanup plan and cleanup standards for this site. In the case of a new cleanup technology, the report should evaluate the technology using the same criteria used in the feasibility study. Such technical reports will not be requested unless the Executive Officer determines that the new information is reasonably likely to warrant a revision in the approved cleanup plan or cleanup standards.

12. **Delayed Compliance:** If the dischargers are delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the dischargers shall promptly notify the Executive Officer and the Board may consider revision to this Order.

D. **PROVISIONS**

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).

2. **Good Operation and Maintenance (O & M):** 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.

3. **Cost Recovery:** The dischargers shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the 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. 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 the procedures established in that program. Any disputes raised by the dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the dischargers shall permit the Board or its authorized representative:

   a. Entry upon premises in which any pollution source exists, 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 requirements of this Order.

   c. Inspection of any monitoring or remediation facilities installed 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 dischargers.

5. **Self-Monitoring Program:** The dischargers shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.

6. **Contractor/Consultant Qualifications:** All technical 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.

7. **Lab Qualifications:** 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 (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).

8. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies/persons:

   a. City of San Rafael Fire Department
   b. Marin County Health Department
   c. The site owners or their designated representative(s)

   The Executive Officer may modify this distribution list as needed.

9. **Reporting of Changed Owner or Operator:** The dischargers shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.

10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the dischargers shall report such discharge to the Regional Board by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

11. **Secondarily-Responsible Dischargers:** Within 60 days after being notified by the Executive Officer that other named primary dischargers have failed to comply with this Order, the Laura Ann Lieberman Arthur Avenue Trust, the Nancy Lee Kaplan Arthur Avenue Trust, the Charles E. Frank Arthur Avenue Trust, the Zollie S. Frank Marital Trust, and Elaine S. Frank as property owners shall then be responsible for complying with this Order.

12. **Rescission of Existing Order:** This Order supercedes and rescinds Order No. 84-75.

13. **Periodic Site Cleanup Requirement Review:** The Board will review this Order periodically and may revise it when appropriate.

I, Loretta K. Barsamian, 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 September 17, 1997.

Loretta K. Barsamian
Executive Officer

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FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

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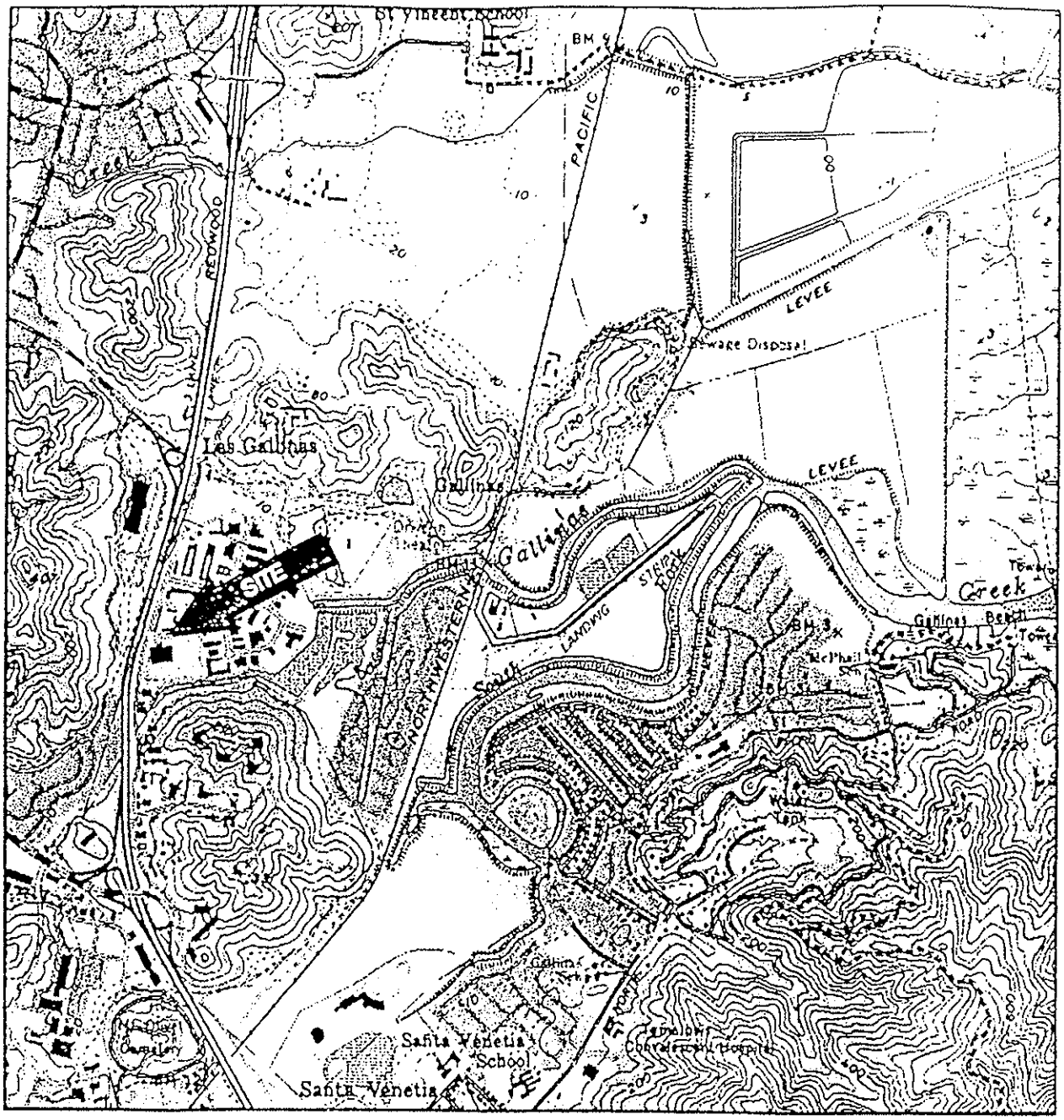
Attachments: Site Maps
Self-Monitoring Program



SCALE 1:24 000

1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETER

CONTOUR INTERVAL 40 FEET

QUADRANGLE LOCATION

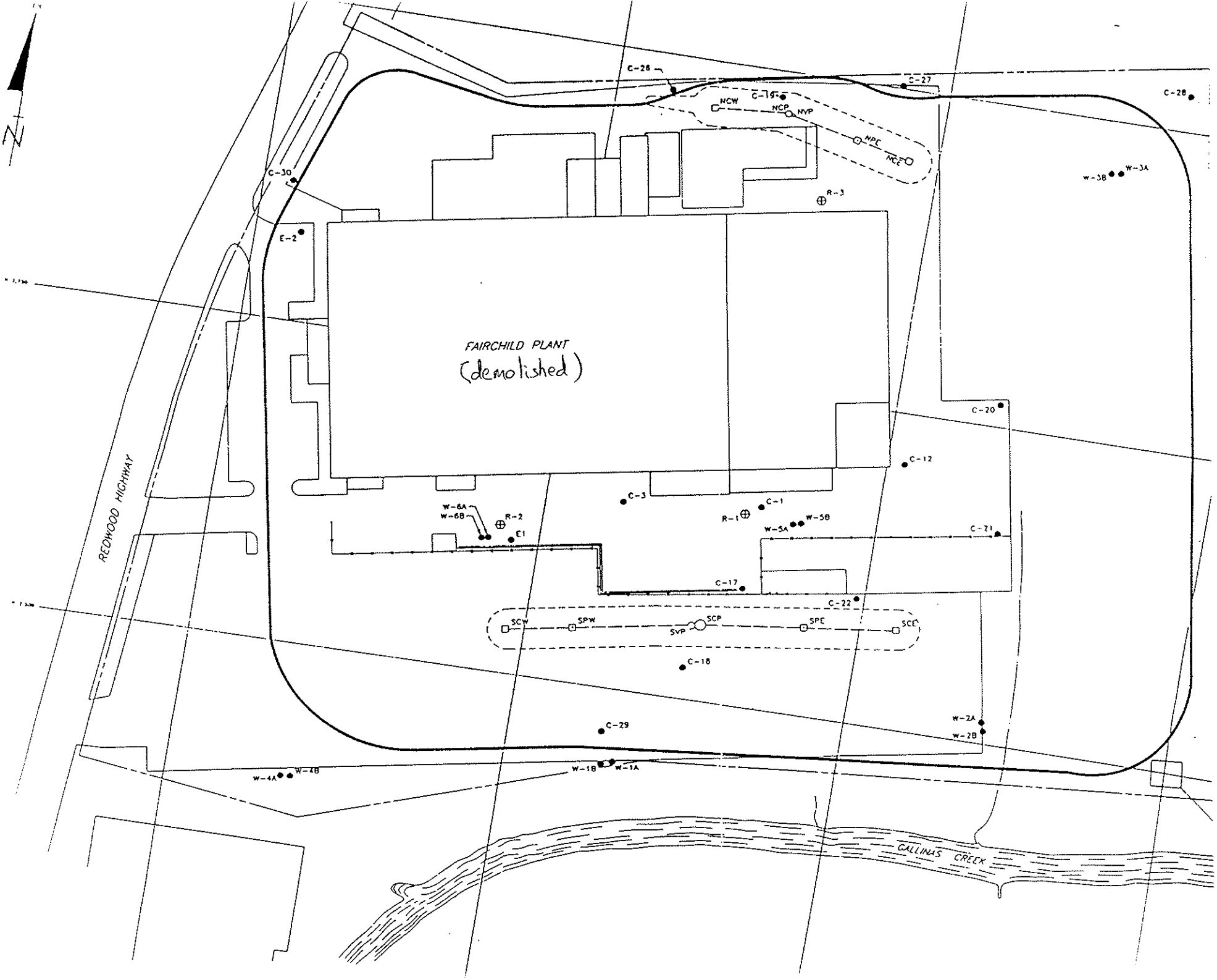
Reference: U.S.G.S. 7.5-minute Quadrangle Novato, California, 1954 photorevised 1980.

GERAGHTY & MILLER, INC.
Environment and Infrastructure
a heidemij company

Project No. RC0353.000

SITE LOCATION MAP
Former Fairchild Manufacturing Facility
4300 Redwood Highway
San Rafael, California

FIGURE
1


N
FAIRCHILD PLANT
(demolished)
REDWOOD HIGHWAY
GALLINAS CREEK
C-26
C-27
C-28
C-19
NCW
NCP
NVP
NPE
NCE
C-30
E-2
R-3
W-3B
W-3A
C-20
C-12
C-3
C-1
R-1
W-5A
W-5B
C-21
W-6A
W-6B
R-2
E1
C-17
C-22
SCW
SPW
SVP
SCP
SPE
SCE
C-18
C-29
W-2A
W-2B
W-4A
W-4B
W-1B
W-1A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

FAIRCHILD SEMICONDUCTOR CORPORATION AND SCHLUMBERGER TECHNOLOGY CORPORATION AND THE LAURA ANN LIEBERMAN ARTHUR AVENUE TRUST, THE NANCY LEE KAPLAN ARTHUR AVENUE TRUST, THE CHARLES E. FRANK ARTHUR AVENUE TRUST, THE ZOLLIE S. FRANK MARITAL TRUST, AND ELAINE S. FRANK

for the property located at

4300 REDWOOD HIGHWAY
SAN RAFAEL
MARIN COUNTY

1. **Authority and Purpose:** The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. 97-115 (site cleanup requirements).

2. **Monitoring:** The dischargers shall measure groundwater elevations semiannually in all monitoring wells, and shall collect and analyze representative samples of groundwater according to the following schedule:

   a. Selected monitoring/extraction/observation wells inside the slurry wall: once per year for chromium VI (the dischargers may at their option meet this limit as total chromium), total copper, total lead, total nickel and for solvents (EPA Method 8240, EPA Methods 8010 and 8020, or equivalent). These wells are W-2A, W-3A, C-29, and E-2.

   b. All monitoring/extraction/observation wells in the shallow zone outside the slurry wall: once per year for chromium VI (the dischargers may at their option meet this limit as total chromium), total copper, total lead, total nickel and twice per year for solvents (EPA Method 8240, EPA Methods 8010 and 8020, or equivalent). These wells are W-1A, W-4A, C-30, C-26, and C-27.

   c. Selected monitoring/extraction/observation wells in the deep zone inside and outside the slurry wall: once every two years for chromium VI (the dischargers may at their option meet this limit as total chromium), total copper, total lead, total nickel and for solvents (EPA Method 8240, EPA Methods 8010 and 8020, or equivalent). These wells are W-1B, W-2B, W-3B, and W-4B.

   d. All monitoring/extraction/observation wells: once in 1997 or 1998 for chromium VI (the dischargers may at their option meet this limit as total chromium), total copper, total lead, total nickel and for solvents (EPA Method 8240, EPA Methods 8010 and 8020, or equivalent). Wells sampled in accordance with Items 2a, 2b, and 2c need not be sampled again.

The dischargers shall sample any new monitoring or extraction wells semiannually and analyze groundwater samples for the same constituents as shown above. The dischargers may propose changes to the sampling schedule; any proposed changes are subject to Executive Officer approval.

3. **Monitoring Reports:** The dischargers shall submit semiannual monitoring reports to the Board no later than July 30 and January 31 of each year. The reports shall include:

   a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the dischargers' principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

   b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form. Historical groundwater elevations for previous years shall be included once every five years starting in the January 31, 1999 report.

   c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results for previous years shall be included once every five years starting in the January 31, 1999 report. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included (however, see record keeping - below).

   d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well/trench and for the site as whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g. soil vapor extraction), expressed in units of chemical mass per day and mass for the previous six months of operation. Historical mass removal results shall be included in the January 31st report.

   e. Status Report: The status report shall describe relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following reporting period.

4. **Observations:** The dischargers, as part of their storm drain evaluation program, shall on a quarterly basis:

   a. Measure water elevations in monitoring wells at the site.
   b. Observe the four outfalls. If water is observed to be flowing from any of the outfalls, collect a sample for analysis using EPA method 8010 + Freon 113 + cis-1,2-DCE (or equivalent method(s)).
   c. If water is flowing from an outfall or if an outfall is submerged,

make obsevations of the catch basins associated with that storm drain outfall to evaluate where the water starts to flow into the storm drain.

The above activities shall occur one week after a rainfall event, if applicable, and shall be performed at low tide. The dischargers shall monitor the storm drains once every quarter for four quarters. Extension of this observation program may be required by the Executive Officer.

5. **Observation Reports:** The dischargers shall submit quarterly monitoring reports to the Board no later than October 30, 1997 and January 30, 1998. The reports shall include water elevations in monitoring wells, visual observations of the outfalls and catch basins, and analytical results of outfall sampling, if applicable.

6. **Violation Reports:** If the dischargers violate requirements in the Site Cleanup Requirements, then the dischargers shall notify the Board office by telephone as soon as practicable once the dischargers has knowledge of the violation. Board staff may, depending on violation severity, require the dischargers to submit a separate technical report on the violation within five working days of telephone notification.

7. **Other Reports:** The dischargers shall notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.

8. **Record Keeping:** The dischargers or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Board upon request.

9. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the dischargers. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Loretta K. Barsamian, Executive Officer, hereby certify that this Self-Monitoring Program was adopted by the Board on September 17, 1997.

Loretta K. Barsamian
Executive Officer