CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 98-070

FINAL SITE CLEANUP REQUIREMENTS FOR:

UNITED TECHNOLOGIES CORPORATION,
(CHEMICAL SYSTEMS DIVISION - COYOTE CENTER)

OPERABLE UNIT 2

600 METCALF ROAD
SANTA CLARA COUNTY

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

1. **Site Location**: United Technologies Corporation (UTC), hereinafter also referred to as the discharger, owns and operates the Chemical Systems Division - Coyote Center in Santa Clara County as shown in Figure 1. The site is located in an unincorporated area of Santa Clara County approximately five miles south of San Jose and four miles east of U.S. Highway 101. The site is located in an area of rolling hills and relatively broad valleys. Operable Unit 2 (OU2) consists of the side valleys and an area called the Panhandle. Operable Unit 1 (OU1) consists of the two main valleys within the developed portion of the site called Shingle Valley and Mixer Valley. The creeks that flow through the site ultimately discharge into Anderson Reservoir, a drinking water reservoir.

   Land usage in surrounding the UTC site is zoned mostly for agricultural use. Ranch lands are located to the north, east, and southeast of the site. To the northwest and west are two regional parks and some open public land. The nearest residences are a few ranch houses or other dwellings located within 3,000 feet to the north, northeast, and southeast of the site boundaries.

2. **Site History**: UTC began on-site operation in 1959 and occupies 5,200 acres including over 200 stations used for laboratories, research, testing, manufacturing, storage, maintenance, and administration. The discharger develops, manufactures, and tests space and missile propulsion systems. Solid rocket motors are filled with propellants designed to cause a controlled oxidation reaction which releases large amounts of energy and gas. Solid rocket propellants are typically synthetic rubber with reactive materials suspended in the rubber matrix. Nonexplosive hazardous materials used in the operations include epoxies, paints, and insulating materials. Chlorinated and non-chlorinated degreasing

agents were also used to dissolve polymers from hardware. Degreasers included trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA). Historically, spent solvents were collected for evaporation in on-site surface impoundments or shipped off-site for recycling or disposal.

Three major chemical handling areas are located in OU2: the Research and Advanced Technology area (R&AT), the Motor Test Area (MTA), and the Motor Assembly Area/Component Test Area (MAA/CTA). These areas are located in the upland and tributary valleys west of OU1. A fourth area of OU2, referred to as the Open Burning Facility (OBF), is located in the panhandle east of OU1. The OBF was utilized to thermally treat waste propellants and explosives generated onsite. Wastes are ignited within the burn units, which are constructed of earthen berms. The OBF is a RCRA-regulated treatment facility.

3. **Named Discharger:** United Technologies Corporation-Chemical Systems Division is the named discharger based on chemical use and activities, based on soil and groundwater investigation, and because they are the current property owner.

   If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on 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**: OU2 of the site was subject to the following orders: Site Cleanup Requirements, Order No. 95-193, adopted September 14, 1995. OU1 of the site is subject to the following orders: Site Cleanup Requirements, Order No. 94-064, adopted May 18, 1994, and amended May 24, 1995, September 13, 1995, and May 21, 1997.

   Currently the Department of Toxics Substances Control is providing oversight of closure activities of RCRA permitted facilities in the OBF. DTSC concerns are primarily with potential human exposure to soils impacted with PCBs and metals. To address DTSC concerns, UTC recently conducted additional soil sampling and excavation within the OBF. Based on results of the sampling and excavation, RCRA closure requirements for the OBF facilities will be met, and no further sampling, cleanup, or post closure monitoring of the OBF facilities under RCRA will be required. Final closure of the RCRA permitted facilities is scheduled for mid-1998.

5. **Study Area**: The UTC site has been divided into seven investigative areas as shown in Figure 1 and as follows:

   - Upper Shingle Valley & Research and Advanced Technology Area
   - Middle Shingle Valley
   - Lower Shingle Valley
   - Mixer Valley

- Panhandle
- Motor Test Area
- Motor Assembly Area and Component Test Area

The site has been divided into two Operable Units (OUs) as shown in the following table and Figure 2. Investigation in OU1 which consists of Shingle Valley and Mixer Valley is essentially complete and final site cleanup requirements was adopted for OU1 in May of 1994. OU2 investigations have been more recently completed; this order addresses OU2.

6. **Creeks:** Local creeks provide a potential conduit to carry VOCs, perchlorates, and other contaminants from the site toward Anderson Reservoir. There are indications that groundwater and surface water are in contact, and therefore contaminants are detected in surface waters. Preventing or minimizing contaminants in surface waters is a high priority, in order to prevent the spread of contaminants and protect this existing beneficial use. In addition, excessive concentrations of VOCs in creeks could cause acute or chronic toxicity to aquatic life. It is appropriate to prohibit detectable concentrations of contaminants in surface waters at or beyond the property boundary, in order to assure protection of the existing beneficial use downstream. It is appropriate to allow low concentrations of contaminants in on-site surface waters, provided that these concentrations do not exceed groundwater cleanup standards and are protective of freshwater aquatic life.

7. **Site Hydrogeology:** The R& AT and MTA facilities are located adjacent to valleys and seasonal creeks which are tributary to Shingle Valley and Shingle Creek (located in OU1). The creeks flow only during the winter months. The R&AT and MTA areas are located on either alluvial soils or directly on Santa Clara Formation. The alluvium consists of lenses and layers of clay, silt, sand and gravel. The maximum thickness of the alluvium is approximately 50 feet. The Santa Clara Formation is the bedrock material underlying the alluvium; it consists of discontinuous fluvial deposits ranging from clays to sandy gravels, and dips to the northeast. Groundwater at the R&AT and MTA area is encountered at various depths ranging from approximately 14 to 42 feet in alluvium and Santa Clara Formation, and generally flows to the northeast, following the surface drainage pattern.

The MAA/CTA area is located in the hills upland of Shingle Valley and Shingle Creek. Soils underlying the MAA/CTA consist predominantly of Santa Clara Formation soils. Groundwater in the area is generally encountered at depths between 25 and 70 feet. Because of the complexity of the Santa Clara Formation, it is difficult to determine groundwater flow pathways in the MAA/CTA area. Based on available data, it appears that the groundwater flow is reflected by the northwesterly/southeasterly orientation of surface drainages and the northwesterly/southeasterly orientation of the pollution plumes and tributary valleys.

The OBF is located on a north-south trending ridge which slopes gently to the north. Surface drainage is toward both the northwest and east. Overlying the Santa Clara Formation is a colluvial surface cap varying from 1 to 5 feet thick, and alluvium in isolated locations and along the two small drainages that trend north and west of the OBF. Groundwater flow within the Santa Clara Formation is extremely variable because of the lateral discontinuity of Santa Clara Formation deposits, and because of escarpments associated with the Calaveras fault.

8. **Remedial Investigation:** Results of remedial investigations are included in the following reports:

- Source Identification and Characterization Reports Part I Revised, May 1991
- Source Identification and Characterization Report Part II, June 1990
- RCRA Facility Investigation/Corrective Measure Study, June 1991
- RCRA Facility Investigation/Corrective Measure Study Addendum, June 1993
- Human and Environmental Health Evaluation, Parts I & II dated November and December 1992
- Side Valley Groundwater Characterization Report: Process Development Complex and Research and Advanced Technology Area, November 1994
- Hydrogeologic Assessment For Design of Groundwater Remediation System at the Open Burning Facility, March 1992
- Open Burning Facility Soils Investigation and Corrective Measure Study, June 1992
- Open Burning Facility Interim Soil Remediation Status Report (Panhandle), May 1993
- Evaluation and Workplan for Improvement of the Groundwater Extraction System at the Open Burning Facility (Panhandle), July 1994
- Motor Test Area Soil and Groundwater Characterization and Remedial Action Workplan, November 1995
- Soil Remedial Status Report for 1994/1995, March 1996
- Remedial Investigation for MAA/CTA, February 1997
- Motor Assembly/Component Test Area Soil and Groundwater Characterization Report and Remedial Action Workplan, February 1997
- Soil and Groundwater Characterization Summary and Effectiveness Evaluation of the Improved Groundwater Extraction System at the Open Burn Facility, April 1996
- Proposed Final Remedial Actions and Cleanup Standards for OU2, December 1997.

Remedial investigation in OU2 is described for each area as follows:

Research and Advanced Technology Area: A discharge was identified in the area of a building sump at Station 1710. Perchlorate has been detected in soil at concentrations up to 690 ppb. However, VOC concentrations in soil were less than 1 ppm, and no perchlorate was detected in groundwater. Although VOCs (primarily TCE and DCA) have been detected in groundwater at up to 50 ppb, concentrations since 1992 are

generally below MCLs. Monitoring wells in the R&AT area are screened in both alluvium and Santa Clara Formation.

Motor Test Area: Solvent handling areas at stations 1311, 1312, and 1314 has been identified as the source of pollution in the MTA area. Although soil impacts were relatively minor (less than 1 ppm VOCs and of 2.3 ppm Freon 113 in soil), groundwater has been impacted with high levels of contamination. Maximum groundwater concentrations include 2,300 ppb TCE, 29,000 Freon 111, and 8,300 ppb Freon 113. Perchlorate was detected at levels up to 130 ppb. The groundwater pollution plume migrates along alluvium northeastward toward the Shingle Valley (OU1) groundwater plume. Concentrations attenuate rapidly with distance from the source area. Monitoring wells were installed in both alluvium and within the Santa Clara Formation

Motor Assembly Area/Component Test Area: Sources of pollution at the MAA/CTA were determined to be chemical storage and handling areas at Station 1863/1865, Station 1860, and Station 1810/1830. The most significant soil impacts are at Station 1860. Soil at Station 1860 was impacted with up to 56 mg/kg of acetone and up to 14 ppm of methylene chloride. TCE, DCE, TCA, and DCA were detected at levels of less than 1 ppm in soil throughout the MAA/CTA area. No perchlorates have been detected in soil in the area.

Groundwater monitoring wells were installed within the Santa Clara Formation in the MAA/CTA area. High levels of groundwater pollution were detected at the three source areas. In groundwater, TCE has been detected at a maximum concentration of 43,000 μg/l, Freon 11 at a maximum concentration of 330,000 μg/l, Freon 113 at a maximum concentration of 8,500 μg/l, and TCA at a maximum concentration of 590 μg/l. No perchlorates were detected in MAA/CTA area groundwater. Groundwater pollution at each of the three source areas appears to follow local surface drainage toward Shingle Valley VOC plume in OU1.

Open Burn Facility: Based on the result of soil and groundwater investigation within the OBF, several sources of soil and groundwater pollution have been identified. These include several open burn units (OBUs), and areas designated as the Areas 1, 3, and 7, the "Debris Area", and the "Magnetic Anomaly Area".

Soil in OBUs 3 and 5 were impacted with levels of up to 1,300 ppm VOCs, including TCE, TCA, acetone, xylenes, and chlorobenzene. The most significantly impacted soils were found in OBU-3 and OBU-5. Low levels of PCBs were also detected in the OBUs. Areas 1, 3, and 7 contained metals and polybutadiene acrylic acid (PBAN), and VOCs and SVOCs, including non-aroclor PCBs. Low levels of VOCs were also detected at the Debris Area and the Magnetic Anomaly Area.

Groundwater impacts at the OBF are significant. TCE was detected in groundwater at a maximum of 260,000 μg/l, TCA at a maximum of 14,000 μg/l. Carbon tetrachloride, DCE, chloroform and tetrahydrofuran were detected in groundwater at lower concentrations. Perchlorate was detected in the majority of groundwater monitoring wells sampled; the highest perchlorate concentration detected in groundwater was 48,000 ppb. No PCBs were detected in groundwater.

Additional groundwater investigation may be necessary to better define the extent of perchlorate in OBF groundwater.

9. **Interim Remedial Measures**: Following is a summary of Interim Remedial Measures in OU2:

Research and & Advanced Technology Area: UTC initiated groundwater extraction and treatment at the Station 1710. No other interim measures have been implemented in the R&AT area, because of low concentrations of chemicals in groundwater and because no source was found in soil.

Motor Test Area: UTC operated one groundwater extraction well near the MTA source area from 1995 to 1997. Because the groundwater flow in the source area is generally low (pumping rates of less than 0.5 gpm), and the extraction has not been operational for an extended period, additional evaluation is necessary to determine whether the extraction well is sufficient to remediate groundwater. The system is currently shut down because perchlorates were detected in discharge water. Despite lack of active remediation in the area, the MTA plume appears to be stable.

Motor Assembly Area/Component Test Area: UTC operates a soil vapor extraction system consisting of 16 venting wells and a GAC unit at Station 1860 to remediate acetone and methylene chloride pollution. The vapor extraction system is cycled so that soil vapor concentrations can equilibrate. UTC also began operating groundwater extraction wells at Stations 1860 and 1810/1830 in 1997. Because groundwater flow in the source area is generally low and the extraction wells have not been operational for an extended period, additional evaluation is necessary to determine whether the wells are sufficient to remediate groundwater. No groundwater extraction has been implemented at Station 1863/1865 because groundwater can be extracted at wells at less than 0.1 gallons per minute. In addition, based on hydrogeologic and monitoring data, the plume at Station 1863/1865 is likely stable, and any chemicals which may migrate will likely be captured by groundwater extraction systems in Shingle Valley (OU1).

Open Burn Facility: UTC excavated and removed most polluted soils in the Panhandle prior to 1995. Areas excavated include OBU-1 and 2, Areas 1,3, and 7, the Debris Area, and the Magnetic Anomaly area. A portion of impacted soil at the OBU-3 was also removed from the site; the remainder of the impacted soils in OBU-3 and OBU-5 are

currently being cleaned up utilizing a soil vapor extraction system, consisting of a number of horizontal and vertical well vents.

Groundwater in the OBF is currently being cleaned up utilizing 13 extraction wells. Extracted groundwater is pumped to a treatment system in Operable Unit 1 for treatment prior to introduction to UTC's treated groundwater reuse system. Based on UTC's evaluation of the performance of the groundwater extraction system in 1996, and subsequent groundwater monitoring, the groundwater extraction system appears to be reducing chemical concentrations and preventing migration of the VOC plume.

10. **Adjacent sites:** No sources have been identified in the area which have impacted the UTC site. The surrounding area is undeveloped. The most significant area which may potentially be impacted by releases at the UTC site is Anderson Reservoir, which is hydrologically connected to the site by Shingle and Las Animas Creeks. Anderson Reservoir is located approximately 200 to 500 feet south of the UTC site, depending on the volume of water stored in the reservoir.

11. **Feasibility Study**: In the discharger's report titled "Proposed Final Remedial Actions and Cleanup Standards for Operable Unit 2" (dated December 1997), a list of possible alternatives for remediating the groundwater and soil at the UTC site was developed and evaluated. Evaluation of remedial measures reflect EPA guidance for Remedial Investigations, Feasibility Studies, and Remedial Actions. They include technical, environmental, human health, and institutional factors. Technical factors include performance (reduction of mobility, toxicity, and volume), reliability, implementability, and safety. Environmental factors include short and long term beneficial and adverse effects on environmentally sensitive areas, and measures to mitigate adverse effects. Human health factors include short and long term effectiveness in mitigating potential exposure and protection of human health. Institutional factors involve institutional needs for implementation of the alternative. In addition to these factors, a cost estimate was prepared for each alternative. This estimate includes direct and indirect capital cost and operation and maintenance (O&M) costs. Final detailed analyses are presented in the "RCRA Facility Investigation/Corrective Measures Study" and the "OBF Soils Investigation and Corrective Measures Study" reports prepared by the discharger.

The objectives for soil remediation are to reduce the concentrations of vadose-zone soils to below the cleanup goals and to prevent further impacts to groundwater. The objectives for groundwater remediation are to stop migration of the leading edges of the plumes, minimize migration of the high mass of contamination at source areas, and to remediate groundwater within the plumes to below the groundwater cleanup goals.

Remedial actions considered for contaminants remaining in soil include no action, soil vapor extraction, soil leaching, biodegradation, excavation and offsite disposal, high temperature incineration, low temperature thermal stripping, and onsite soil washing.

Newer technologies were also evaluated, including phytoremediation, in-site soil flushing, and enhanced soil vapor extraction. Remedial actions considered for groundwater include no action, subsurface barriers, gradient control, and groundwater extraction. New groundwater remedial technologies were also evaluated, including in-well air stripping, reactive wells, reactive barriers, and oxygen-reducing zones.

12. **Cleanup Plan:** The discharger's report titled "Proposed Final Remedial Actions and Cleanup Standards for Operable Unit 2" (dated December 1997) provides for a final cleanup plan in Operable Unit 2. The final remedial actions are as follows:

Groundwater and surface water: Continuation of the existing groundwater extraction and treatment systems in order to prevent vertical or lateral migration of contaminants, to prevent seepage of contaminated groundwater into creeks, and to restore groundwater quality.

Soil: Continuation of the existing soil vapor extraction systems in order to prevent leaching of chemicals from the soil to the underlying groundwater, and to prevent volatilization to the atmosphere. All identified sources will be treated to achieve soil cleanup standards. A source is defined as soils containing one or more chemicals at concentrations above the cleanup standards established for those chemicals.

General: Institutional controls consisting of site security, worker notification, and a deed restriction or an equivalent mechanism approved by the Executive Officer prohibiting the use of the untreated shallow groundwater in Operable Unit 2 for drinking water. The institutional constraints will also act as a control with respect to exposure to soils and alert utility workers of potential health and safety concerns.

Alternate remedial measures: The performance of the current soil and groundwater remedial actions will be re-evaluated and if necessary, modifications to the remedial measures will be proposed and implemented.

13. **Risk Assessment:** In its report, "Proposed Final Remedial actions and Cleanup Standards" (December 1997), UTC provided a risk assessment for current (industrial) cleanup exposures to chemicals of concern, including VOCs and SVOCs. The report also evaluated risk from potential residential exposure to current site conditions, which reflects more health-protective criteria. For industrial receptors, the pathway for exposure to carcinogenic and potentially carcinogenic chemicals is inhalation of vapors and dermal contact with soil. For residential receptors, ingestion of groundwater is the primary pathway for exposure. A less significant pathway is inhalation of dust. Exposure to TCE represented the greatest cancer risk. Although the current estimated potential increased health risks to industrial receptors did not exceed the EPA guidelines, the current risks to potential residential receptors was excessive. Utilizing chemical concentrations proposed

for soil and groundwater cleanup standards, the estimated carcinogenic post cleanup risks are below acceptable levels.

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 cancer risk of 10^-4 or less for carcinogens.

Due to excessive risk that will be present at the site pending full remediation, institutional constraints are appropriate to limit on-site exposure to acceptable levels. Institutional constraints include a deed restriction that notifies future owners of subsurface contamination and prohibits the use of shallow groundwater beneath the site as a source of drinking water until cleanup standards are met.

14. **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 exceedence 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. **Basin Plan:** 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 CAR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

The existing and potential beneficial uses of Anderson Reservoir, located 200 to 500 feet south of the discharger's property, include:

a. Municipal Supply
b. Ground water recharge
c. Non - contact water recreation
d. Warm and cold water habitat
e. Wildlife habitat
f. Fish spawning

Anderson Reservoir ultimately discharges to Coyote Creek, which flows northwest to South San Francisco Bay. The existing and potential beneficial uses of Coyote Creek and tributaries include:

a. Water contact and non-contact recreation
b. Warm and cold fresh water habitat
c. Preservation of rare and endangered species
d. Wildlife habitat
e. Fish migration and spawning
f. Groundwater recharge

The existing and potential beneficial uses of the groundwater underlying and adjacent to the discharger's facilities include:

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

c. **Basis for Groundwater Cleanup Standards**: The groundwater cleanup standards for the site are based on applicable water quality objectives and are the more stringent of EPA and California primary maximum contaminated levels (MCLs) Cleanup to this level will result in acceptable residual risk to humans.

d. **Basis for Soil Cleanup Standards**: The soil cleanup standards for the site are 1 mg/kg total high risk VOCs (class A and B), 5 mg/kg low risk VOCs (class C and D), and 10 mg/kg total SVOCs. Cleanup to this level is intended to prevent leaching of contaminants to groundwater and will result in acceptable residual risk to humans.

15. **Future Cleanup Standards:** The goal of this remedial action is to restore the beneficial uses of groundwater underlying and adjacent to the site. Results from other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this site may not be possible. If full restoration of beneficial uses is not technologically nor economically achievable within a reasonable period of time, then the discharger may request modification to the cleanup standards or establishment of a non-attainment area, a

limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information indicates that cleanup standards can be surpassed, the Board may decide if further cleanup actions should be taken.

16. **Perchlorate Impacts:** Perchlorates have been detected in the majority of groundwater monitoring wells in the area of the OBF, as well as in OBF soils. Although the OBF groundwater extraction system appears to capture perchlorate impacted groundwater, the cleanup strategy for perchlorates in soil and groundwater cannot be determined at this time because toxicity values for perchlorate have not yet been established.

    Toxicological studies funded by industry and U.S. Air Force of perchlorate are currently underway. The studies, due for completion in late 1998, will provide data necessary for the EPA to establish toxicity values. Upon establishment of toxicity values, UTC will need to perform a risk assessment of perchlorate, evaluate the adequacy of perchlorate characterization and remediation, and propose cleanup modifications as appropriate.

17. **Water Reclamation**: Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

    UTC reclaims the extracted groundwater which is the result of groundwater remediation throughout the site. The VOC contaminated groundwater through the site is treated at several treatment units located in Shingle and Mixer Valleys. These are treatment systems 2402, 2403 and 2405 in Shingle Valley, and treatment system 2404 in Mixer Valley. Each treatment unit consists of an air stripper and carbon adsorption units with the exception of 2405 which uses carbon only. Station 0535 in Mixer Valley and 1710 in the Research and Advanced Technology Area also have carbon adsorption units. Treated water from 2402, 2403, 2404, 2405 and 1710 is discharged in to the treated water reuse system. Treated water from 0535 system is discharged to the 2404 treatment system.

    Treated groundwater from the remediation systems at the site is stored in ponds 2140 and 2130.

    Pond 2140 (near station 0026) is located in Upper Shingle Valley. The pond is bordered by ridge slopes to the northeast and Shingle Creek is located about 150 to 200 feet to the southwest. The pond is rectangular in shape and it is 135 feet long by 70 feet wide with a maximum depth of 8 feet. It has a storage capacity of 333,000 gallons.

    The pond is underlain by Quaternary alluvial deposits of unconsolidated clays, silt, sands and gravels. The average permeability of the underlying soils beneath the pond is approximately 10^{-5} cm/sec. If seepage occurs this would create a mound and in so doing would have a beneficial impact by directing the chemical plume in Upper Shingle Valley

towards the center of the valley where the groundwater extraction wells are located. Groundwater in the vicinity of the pond and soils in the pond do not appear to be contaminated.

Pond 2130 (near station 0730) is located in Lower Mixer Valley. This pond is bordered on the west by a ridge, on the south by an embankment and Manufacturing Road, and on the east by another ridge behind which is Las Animas Road. The pond has a capacity of approximately 19 million gallons. This pond is located eastward of a groundwater contaminant plume which is in Lower Mixer Valley.

The lithology of the soils underlying pond 2130 consists predominantly of low to high plasticity organic clays. The seepage from this pond is expected to be minimal. Groundwater downgradient of this pond and soils in the pond do not appear to be contaminated with VOCs.

Onsite, treated groundwater is used for dust control, landscape irrigation and pasture irrigation all over the site, and for dust control, landscape irrigation and fire control at the County parks. Originally, treated groundwater was also used for dust control and soil compaction at a construction site known as Silver Creek Country Club.

California Water Code Section 13512 declares it is the intention of the Legislature that the State undertakes all possible steps to encourage development of water reclamation facilities so that reclaimed water may be made available to help meet the growing water demands of the State.

The effluent from reclamation activities should meet drinking water standards at a minimum or meet standards achieved by best readily available technology.

18. **Basis for 13304 Order:** The discharger has caused or permitted 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.

19. **Cost Recovery:** Pursuant to California Water Code Section 13304, the discharger is 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.

20. **CEQA:** 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 California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.

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

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

IT IS HEREBY ORDERED, pursuant to Sections 13304 and 13523 of the California Water Code that the discharger (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. **PROHIBITIONS**

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

2. Further significant migration of pollutants through surface or 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.

4. The discharge of contaminated groundwater into creeks and surface water is prohibited. Specifically, no detectable concentrations of contaminants shall be allowed in surface waters or underflow at or beyond the property boundary, and no concentrations of contaminants in excess of cleanup standards shall be allowed in on-site surface waters. Further, phenol concentrations in on-site surface waters shall not exceed 2,560 ppb, in order to protect freshwater aquatic habitat.

B. **CLEANUP PLAN AND STANDARDS**

1. **Implement Cleanup Plan**: The discharger shall implement the cleanup plan described in finding 12.

2. **Groundwater Cleanup Standards**: The groundwater cleanup standards specified in Table 1 shall be met in all wells identified in the Self-Monitoring Program:

3. **Soil Cleanup Standards**: The soil cleanup standards specified in Table 2 below shall be met in all source areas:

C. TASKS

1. SOIL EXCAVATION REPORT

COMPLETION DATE: August 30, 1998

Document in a technical report the completion of the necessary tasks required and approved by DTSC to address chemicals of concern detected at the OBF. This report should include the results of chemical analyses of appropriate samples from the excavation(s) and source areas. For off-site soil disposal submit the pertinent information for the disposal site (i.e. name, address and EPA identification).

2. INSTITUTIONAL CONSTRAINTS

a. PROPOSED INSTITUTIONAL CONSTRAINTS

COMPLETION DATE: October 30, 1998

Submit a technical report acceptable to the Executive Officer documenting procedures to be implemented by the discharger, including a deed restriction prepared and filed by United Technologies Corporation prohibiting the use of the untreated shallow groundwater in Operable Unit 2 as a source of drinking water. The Executive Officer may approve an alternative mechanism if it accomplishes the same function as a deed restriction. The report shall also describe the procedures to be used to ensure worker safety and maintain site security. Constraints shall remain in effect until groundwater cleanup standards have been achieved.

b. IMPLEMENTATION OF INSTITUTIONAL CONSTRAINTS

COMPLETION DATE: 60 Days After Board's Approval of Task 2a.

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

3. EVALUATE REMEDIAL INVESTIGATION AND CLEANUP OF PERCHLORATES

a. REVIEW OF PERCHLORATE TOXICITY STUDIES AND WORKPLAN FOR ADDITIONAL PERCHLORATE INVESTIGATION AND CLEANUP

COMPLETION DATE: 60 days after Executive Officer notifies the discharger to proceed with this task

Submit a workplan acceptable to the Executive Officer which proposes additional investigation at the site necesary to define the extent of significant perchlorate contamination in soil and groundwater. The additional soil and groundwater investigation should be based upon a review and summary of recent toxicological studies for perchlorate, existing soil and groundwater sampling data, and proposed perchlorate cleanup levels. The workplan should also include a proposed schedule for implementation of perchlorate investigation, evaluation of the perchlorate cleanup effeciveness, and implementation of additinal perchlorate remedial measures.

b. **REPORT DOCUMENTING IMPLEMENTATION OF ADDITIONAL PERCHLORATE INVESTIGATION**

COMPLETION DATE: According to Schedule in Task 3.a. approved by the Executive Officer

Submit a technical report acceptable to the Executive Officer which documents installation of additional groundwater monitoring wells in OU2 necessary to better define the extent of perchlorate and provides the results of the investigation.

c. **EVALUATE EFFECTIVENESS OF HYDRAULIC CONTAINMENT AND CLEANUP OF PERCHLORATES**

COMPLETION DATE: According to Schedule in Task 3.a. Approved by the Executive Officer

Submit a technical report acceptable to the Executive Officer which evaluates remedial options for perchlorate in soil and evaluates the effectiveness of the hydraulic containment system at remediating perchlorates in groundwater. Such an evaluation shall include, but not be limited to, an estimation of the capture zone of the extraction wells, pump rates for extraction wells, establishment of the cones of depression by field measurements; presentation of historical chemical monitoring data, discussion of significant increases or decreases and unusual trends in chemical concentrations, and the most recent plume maps with chemical concentrations indicated; groundwater and surface water elevation data. A map at an appropriate scale shall be included in the report that superimposes the capture zone on the contaminant plume for all affected areas.

In the event that the existing groundwater extraction system is not adequately containing the plumes, based on the criteria established in Finding 14 and

elsewhere in this Order, the technical report should contain the design for an expanded groundwater treatment and extraction system for the alluvial/shallow zone aquifer. This document shall include, but need not be limited to modeling and/or rationale for any proposed extraction well location, a map of the well configuration, an estimate of the capture zone that can be established by the wells, the rate of pumping that will be required, re-capture for periods when pumps are off, and how the performance of the system will be evaluated. The document should include information on the time required for equipment acquisition, estimated time for system construction, and projected date of implementation.

The Executive Officer may modify the completion date of Task 4c if the discharger demonstrates to the satisfaction of the Executive Officer that additional time is necessary to complete the design due to delays outside the reasonable control of the discharger.

If the discharger determines that expanding the groundwater extraction system is not the most effective approach, then upon approval of the Executive Officer, the discharger may propose an alternate remedial measure.

d. **IMPLEMENTATION OF REMEDIAL MEASURES FOR PERCHLORATE**

COMPLETION DATE: According to Schedule in Task 3.a. Approved by the Executive Officer

Submit a technical report acceptable to the Executive Officer which documents the completion of the tasks identified in the technical report submitted for Task 3.a.

4. **FIVE YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION**

COMPLETION DATE: July 15, 2003

Submit a technical report acceptable to the Executive Officer which includes a summary of the results of any additional investigation; an evaluation of the effectiveness of installed final cleanup measures and cleanup costs for the prior 5-year period; additional recommended measures to achieve final cleanup levels, if necessary; and the tasks and time schedule necessary to implement any additional final cleanup measures.. This report shall also describe the reuse of extracted groundwater and evaluate and document the cleanup of contaminated groundwater. If cleanup standards in this Order have not been achieved on-site and are not expected to be achieved through continued groundwater extraction and/or soil remediation, this report shall also contain an evaluation addressing whether it is technically practicable to achieve the cleanup standards, and if so, a proposal for

procedures to do so. This report shall also include cumulative water level and analytical data for the five year period.

5. SOIL VAPOR EXTRACTION CURTAILMENT

a. SOIL VAPOR EXTRACTION CURTAILMENT PROPOSAL

COMPLETION DATE: 90 Days Prior To Proposed Curtailment of Any Soil Vapor Extraction Well

Submit a technical report and implementation schedule acceptable to the Executive Officer containing a proposal for curtailing operation from any soil vapor extraction well(s) or piping and the criteria used to justify each curtailment. This report shall include a proposal indicating the locations of borings and sampling interval to determine concentrations of VOCs remaining in soil. The proposal may include the temporary termination of vapor extraction well operation for an extended period of time to study the effects on chemical migration prior to well destruction.

If the discharger claims that it is not practicable to achieve soil cleanup standards through continued soil vapor extraction in all or any portion of the soil plume area and that significant quantities of chemicals are not being removed through soil vapor extraction, the discharger shall evaluate the reductions in chemical concentrations and the alternative soil cleanup standards that can be practically achieved. The report shall evaluate alternative means of achieving soil cleanup standards and whether conditions for waiving these standards are met (e.g., that meeting the soil cleanup standards is technically impracticable from an engineering perspective) and that the alternative soil cleanup standards proposed will be protective of human health and the environment.

b. COMPLETION OF SOIL VAPOR EXTRACTION CURTAILMENT

COMPLETION DATE: According to Schedule in Task 6a Approved by the Executive Officer

Document in a technical report the completion of the necessary tasks identified in Task 15. This report should include the results of chemical analyses of appropriate verification samples from the source areas, and copies of well destruction completion notices.

6. GROUNDWATER EXTRACTION CURTAILMENT

a. PROPOSAL TO CURTAIL GROUNDWATER EXTRACTION

COMPLETION DATE: 90 Days Prior To Proposed Extraction Well Pumping Curtailment

Submit a technical report and implementation schedule acceptable to the Executive Officer containing a proposal for curtailing pumping from groundwater extraction well(s) and the criteria used to justify such curtailment. Curtailment of groundwater extraction may include, but is not limited to: final shutdown of the system, phased approach to shutdown, pulsed pumping, or a significant change in pumping rates. The report shall include the rationale for curtailment or modifying the system. This report shall also include data to show that cleanup standards for chemicals of concern have been achieved and have stabilized or are stabilizing, and that the potential for contaminant levels rising above cleanup standards is minimal. This report shall also include an evaluation of the potential for contaminants to migrate into the creeks surface or subsurface flow, and downwards to the Santa Clara Formation aquifers.

All system modifications to the extraction and treatment systems are subject to approval by the Executive Officer. This requirement may be waved by the Executive Officer if deemed appropriate.

If the discharger claims that it is not technically feasible to achieve cleanup standards, the report shall evaluate the alternative standards that can be achieved, and demonstrate that the alternative cleanup standards proposed will be protective of human health and the environment.

b. **COMPLETION OF EXTRACTION WELL CURTAILMENT**

COMPLETION DATE: According to Schedule in Task 7a Approved by the Executive Officer

Submit a technical report acceptable to the Executive Officer documenting completion of the necessary tasks identified in the technical report submitted for Task 7.

7. EVALUATION OF NEW HEALTH CRITERIA

COMPLETION DATE: 180 Days After Request Made by the 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 as listed in Tables 1 and 2 change as a result of promulgation of revised drinking water standards, maximum contaminant levels or action levels or other health based criteria.

8. **EVALUATION OF NEW TECHNICAL INFORMATION**

COMPLETION DATE: 180 Days After Request Made by the Executive Officer

Submit a technical report acceptable to the Executive Officer which contains 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 Board determines that such new information indicates a reasonable possibility that the Order may need to be changed under the criteria described in Tables 1 and 2.

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

D. **WATER RECLAMATION SPECIFICATIONS**

1. **Limits:** Reclaimed water as applied shall meet the following limits:

CONSTITUENT	INSTANTANEOUS MAX. LIMIT (ppb)	ANALYTICAL METHOD
Volatile Organic Compounds		U.S. EPA Method 8240, 8010, 8020, or equivalent
Vinyl Chloride	0.5	
Benzene	0.5	
All others, per constituent	5.0	
Semi Volatile Organic Compounds		U.S. EPA Method 8270, 8080, or equivalent
PCBs	0.5	
All others, per constituent	5.0	
Total Petroleum Hydrocarbons	50.0	U.S. EPA Method or equivalent

Perchlorate	TBD*	U.S. EPA Method 300.0 or equivalent

* to be determined

2. **Runoff Control:** No reclaimed water shall be allowed to escape from the authorized use areas by airborne spray, nor by surface flow except in minor amounts associated with good irrigation practice, nor from conveyance facilities.

3. **Application Limitations:** No treated groundwater shall be applied to areas of reuse during rainfall , or when soils are saturated to a point where runoff is likely to occur.

4. **Public Contact:** Adequate measures shall be taken to minimize public contact with the reclaimed water, and to inform the public by placing legible conspicuous warning signs with proper wording at adequate intervals around the use and storage areas.

5. **Cross Connection:** There shall be no cross-connection between potable water supply and any piping containing treated groundwater.

6. **Freeboard:** The storage ponds shall be operated to have a minimum of 2 feet of freeboard to prevent overflows.

7. **Offsite Users-Form:** Offsite users shall fill out a Reclaimed Water Release Form when picking up the treated groundwater from UTC in a tanker truck. If the offsite user is receiving reclaimed water through a pipeline the offsite user shall fill out the Reclaimed Water Release Form once, and the Form shall be effective as long as they receive Reclaimed water.

8. **Offsite Users-Order:** A copy of this order must be provided to all offsite users, and all parties must have this order available at all times for inspection by the Regional Board staff, or State/County Health Departments.

9. **Violation Notification:** In the event that UTC is unable to comply with any of the specifications that apply to groundwater reclamation, UTC shall notify the Board by telephone within 24 hours of the incident and confirm it in writing within one week of the telephone notification.

10. **Change in Reclamation**: In accordance with Section 13260 of the California Water Code, UTC shall file a report with the Board of any material change or proposed change in the character, location or volume of the reclaimed water.

11. **No Consumption:** Treated groundwater shall not be used for public consumption.

12. **Vehicle Signs:** Vehicles used for carrying or spraying the reclaimed water shall be identified as such with legible signs.

E. PROVISIONS

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

2. **Good O&M:** The discharger shall operate and maintain in good working order, and operate efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order, including groundwater reclamation.

3. **Cost Recovery:** The discharger shall be liable, pursuant to California Waster 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 discharger 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 discharger 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 record 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 discharger.

5. **Self-Monitoring Program:** The discharger 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 registered California 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 or other methods approved by the Board. All laboratories shall maintain quality assurance/quality control records for Board review. The provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).

8. **Document Distribution:** A copy of all correspondence, reports, and documents pertaining to compliance with this Order shall be provided in full, to the following agencies:

    a. Santa Clara Valley Water District
    b. U.S. Environmental Protection Agency, Region IX

    The discharger shall provide a copy of cover letters, title pages, table of contents and the executive summaries of above compliance reports - except for the annual progress reports, workplans for groundwater remediation, and workplans for soil remediation which shall be submitted in full to the following agencies:

    a. Santa Clara County Department of Environmental Health
    b. California EPA/DTSC Site Mitigation Branch

    The Executive Officer may modify this distribution list as needed.

9. **Reporting of Changed Owner or Operator:** The discharger shall file a technical report on any changes in site occupancy and 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 and deposited where it is, or probably will be discharged in or on any waters of the State, the discharger shall report such discharge to this Board, by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 AM to 5:00 PM). A written report shall be filed with the Board within five (5) working days. The report shall

describe the nature of the quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, and persons/agencies notified.

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

11. **Rescission of Existing Order:** This Order rescinds Site Cleanup Requirements (Order No. 95-193) for this site.

12. **Periodic SCR Review:** The Board will review this Order periodically and may revise the requirements when necessary.

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 July 15, 1998.

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 ADMINSTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

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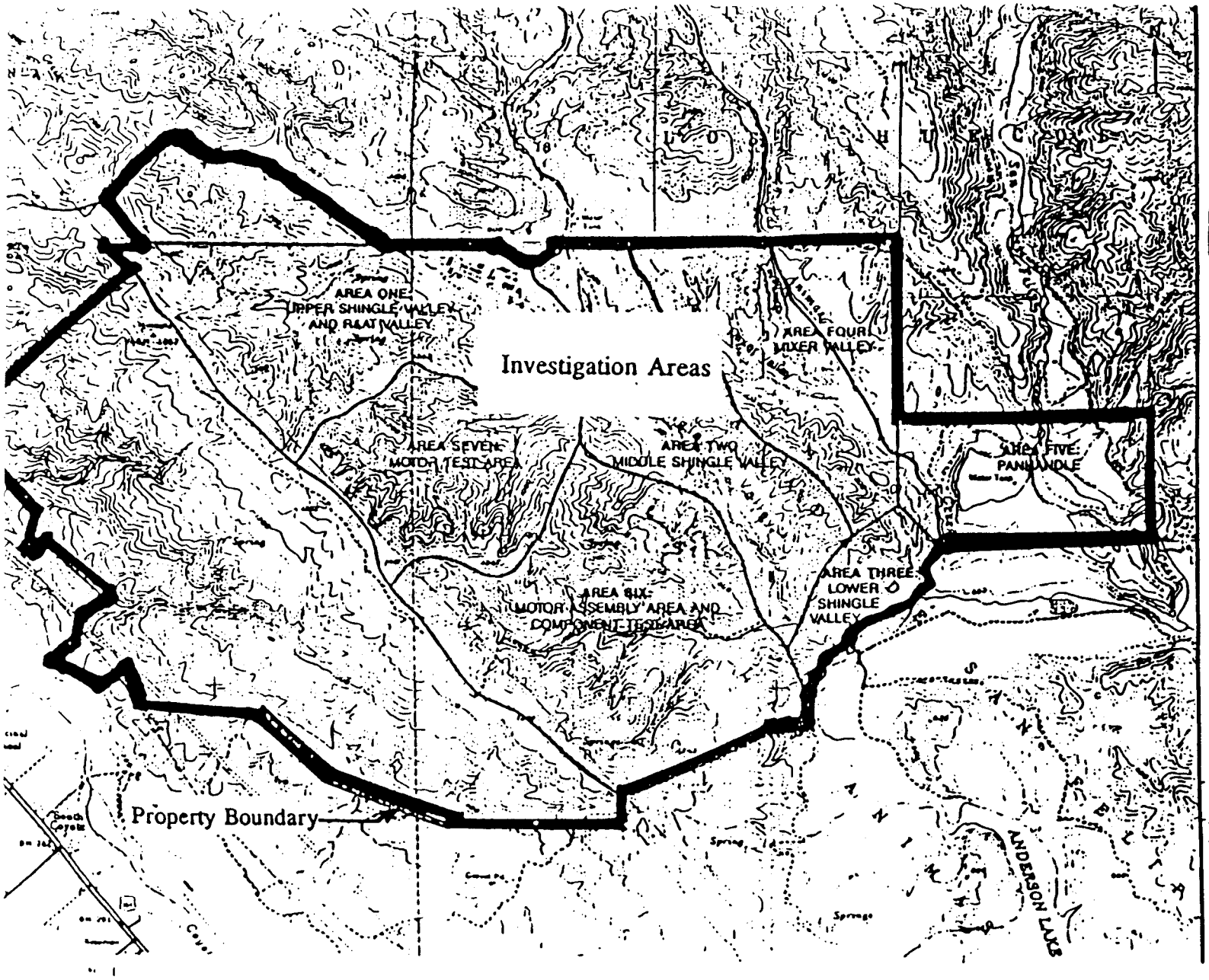
Attachments: Figures 1-3
Tables 1 and 2
Self-Monitoring Program



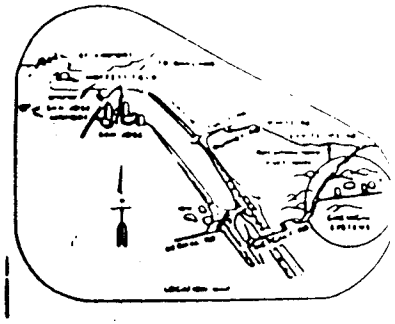


FIGURE 1
INVESTIGATION AREAS

Not to Scale

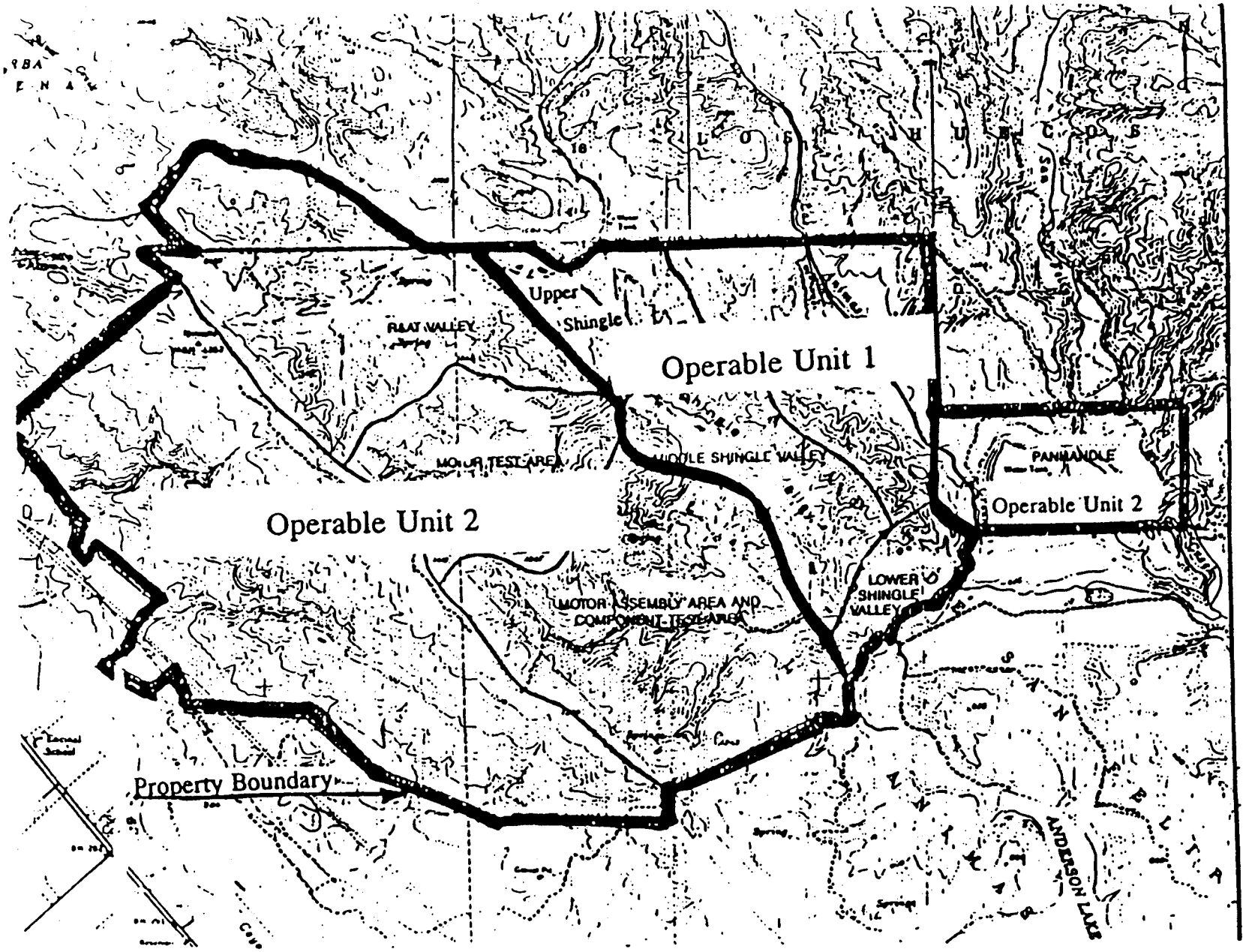


FIGURE 2
OPERABLE UNITS

Not to Scale

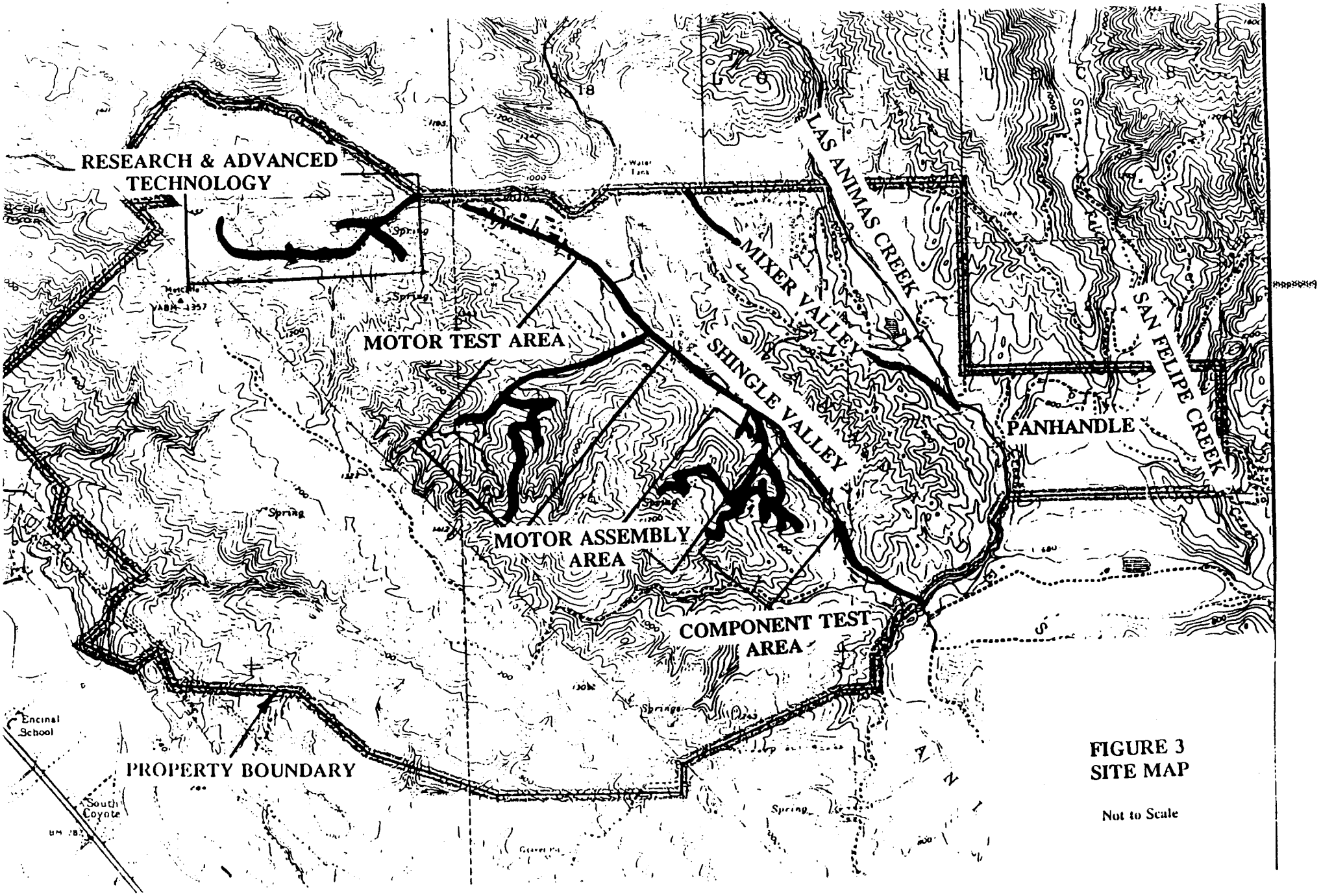


FIGURE 3
SITE MAP

Not to Scale

TABLE 1
GROUNDWATER CLEANUP STANDARDS (μg/l)

Chemical	Cleanup Standards	Weight of Evidence [1]	Basis
Acetone	3,500	D	DWEL[2]
2-Butanone (MEK)	1,750	D	DWEL
Benzene	1	A	CALIF. 1° [3] MCL
Chlorobenzene	30	D	CALIF. 1° MCL
Chloroform	100	B2	EPA 1° MCL
Carbon tetrachloride	0.5	B2	CALIF. 1° MCL
1,1-Dichloroethene (DCE)	6	C	CALIF. 1° MCL
1,1-Dichloroethane (DCA)	5	-	CALIF. 1° MCL
cis-1,2-Dichloroethene (DCE)	6	D	EPA 1° MCL
1,2-Dichloroethane	0.5	B2	CALIF. 1° MCL
Ethylbenzene	680	D	CALIF. 1° MCL
Freon 113	1,200	-	CALIF. 1° MCL
Freon 11	150	-	CALIF. 1° MCL
Methylene Chloride	5	B2	EPA 1° MCL
Phenol	21,000	D	DWEL
Perchloroethylene (PCE)	5	B2	EPA 1° MCL
Polychlorinated biphenyls (PCBs)	0.5	B2	EPA 1° MCL
Trichloroethylene (TCE)	5	B2	EPA 1° MCL
TPH-diesel	100		
within 75' of surface waters	200	-	*
more than 75' of surface waters	1,000	-	**
1,1,1-Trichloroethane (TCA)	200	D	EPA 1° MCL
Toluene	1,000	D	EPA 1° MCL
Vinyl chloride	0.5	A	CALIF. 1° MCL
Xylenes	1,750	D	CALIF. 1° MCL

Perchlorate	**TBD**	-	-

Notes to Table 1:

[1] Weight of Evidence, EPA's guidelines for carcinogen risk characterization.

Group A - Human Carcinogen
Group B - Probable Human Carcinogen
Group C - Possible Human Carcinogen
Group D - Not Classified as to Human Carcinogenicity
Group E - Evidence of Noncarcinoginicity for Humans

[2] Drinking water equivalent using reference dose (RFD), assuming adult mass of 70 kg and water intake of 2 liters a day.

DWEL (ppb) = RFD(μg/kg-day) x mass (kg)/Intake (l/day)= RFDx35

[3] Primary

* best professional judgement based on aquatic toxicity

** best professional judgement based on health risk

TBD to be determined

TABLE 2
SOIL CLEANUP STANDARDS mg/kg

Chemical	Cleanup Standards	Weight of Evidence[1]
Total class C or D VOCs	**5**	**C or D**
Total class A, B1, B2 VOCs	**1**	**A,B1 or B2**
PCBs	**3***	**B2**
TPH diesel	**1,000****	**-**
Perchlorate	**TBD**	**-**

Notes:

1 Weight of Evidence, EPA's guidelines for carcinogen risk characterization.

Group A - Human Carcinogen
Group B - Probable Human Carcinogen
Group C - Possible Human Carcinogen
Group D - Not Classified as to Human Carcinogenicity
Group E - Evidence of Noncarcinoginicity for Humans

* PCB cleanup level for soils deeper than 3 feet below ground surface after grading is 10 mg/kg.

** Based on best professional judgment based on site conditions and prior Board actions.

TBD To be determined

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

UNITED TECHNOLOGIES CORPORATION,
(CHEMICAL SYSTEMS DIVISION - COYOTE CENTER)

OPERABLE UNIT 2

for the property located at

600 METCALF ROAD
SAN JOSE
SANTA CLARA 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. 98-070 (site cleanup requirements).

2. **Monitoring**: The discharger shall measure groundwater elevations in monitoring wells and shall collect and analyze representative samples of groundwater, surface water and reclaimed water according to the Monitoring Program Plan acceptable to the Executive Officer and submitted annually on October 1.

3. **Quarterly Monitoring Reports**: The discharger shall submit quarterly monitoring reports to the Board according to the following schedule:

Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Period	Jan-March	April-June	July Sept	Oct-Dec
Due Date	May 21	August 21	November 21	February 21

Reports from other Self-Monitoring Programs required for OU1, Water Reclamation Requirements, and Waste Discharge Requirements may be combined with these quarterly reports. 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 discharger's 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. Groundwater elevation map should be prepared for the wet and dry seasons for each monitored water-bearing zone, and shall be submitted in the second and fourth quarterly reports, respectively. Historical groundwater elevations shall be included in the fourth quarterly report each year.

c. Groundwater Analyses: All new wells shall be sampled on a quarterly basis for the first year. The appropriate EPA methods, Ph, and turbidity tests shall be required for all new monitoring and extraction wells. Other tests shall be required for some wells, depending on the well location. Groundwater sampling data shall be presented in tabular form, and once a year an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate, and be presented in the fourth quarterly report. 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 shall be included in the fourth quarterly report each year. The report shall describe any significant increases in contaminant concentrations over historic concentrations, 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 and Treatment: The report shall include groundwater extraction results in tabular form, for each groundwater treatment system and for the site as a whole, expressed in gallons per week and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction and treatment systems expressed in units of chemical mass for the quarter. Historical mass removal results for groundwater extraction and treatment systems shall be included in the fourth quarterly report each year. Contaminant removal results for the SVE systems in units of chemical mass shall be reported annually in the fourth quarterly report. Vapor concentrations for startup at each new SVE site visited during the quarter shall be reported in that quarterly report. The report shall also include contaminant concentrations for influent and effluent flows at all the groundwater treatment systems at the site.

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

4. **Miscellaneous Requirements:**

a. For EPA Methods 8260 and 8270 an attempt will be made to identify any unidentified chromatographic peak that is larger than 10% of the nearest internal standard (up to 5 peaks for 8240 and 10 peaks for 8270). Based on how well the spectrum of the unidentified peak fits the National Bureau of Standards library compounds, the peak may be tentatively identified or it may be listed as unknown.

b. If an analysis identifies a significant increase (a chemical that has not previously been detected is confirmed above detection limits, or if the concentration of any chemical is at least one order of magnitude greater than detected in the previous sampling) in a pollutant concentration from a well or a creek sampling station, a second sample shall be taken within 45 after the results from the first sample are available.

c. Well depths shall be determined on an annual basis and compared to the depth of the well as constructed. If greater than twenty five percent of screen is covered, the discharger shall clear the screen by the next sampling.

d. If turbidity in a well does not stabilize to within 15% relative percent difference for two consecutive purges, the need to redevelop the well will be assessed. If stabilization does not occur after redevelopment, the acceptability of chemical results from turbid wells will be evaluated on an individual basis.

e. Chemical detection limits shall be lower than cleanup standards established in the Order, unless it is technically impractical to achieve detection limits lower than cleanup levels.

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

6. **Other Reports**: The discharger 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.

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

8. **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 discharger. 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, 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 July 15, 1998.

Loretta K. Barsamian
Executive Officer