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July 19, 1995

Ms. Juliet Shin
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health
Environmental Protection Division
1131 Harbor Bay Parkway, #250
Alameda, California 94502-6577

SUBJECT: Preliminary Site Assessment (PSA) Report
Alameda Federal Center
620 Central Avenue, Alameda, California
STID 4655

Dear Ms. Shin:

Please find enclosed the PSA Report for the above-referenced project. This report has been prepared by Cape Environmental Management Inc (CEMI) on behalf of the General Services Administration (GSA) to assess lateral and vertical extent and severity of observed soil and ground water contamination due to underground storage tank releases.

CEMI and the GSA will await Department of Environmental Health review and comment of the PSA prior to commencing further assessment activitities, however contracting procedures for the removal of Tanks 3 and 4 are proceeding.

If you have further questions or require additional information, please contact us at (310) 532-4500.

Respectfully Submitted,

Larry M. Harlan
Project Geologist

Kenneth W. Pitchford
R.G. # 4135
C.E.G.# 1461
Senior Geologist

Attachment

cc: Richard Chiu/GSA Region 9
Project File

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Preliminary Site Assessment Report

Alameda Federal Center
620 Central Avenue
Alameda, California

CEMI Project No. 2403C.16

prepared for:

General Services Administration, Pacific Rim Region
525 Market Street
San Francisco, California 94105-2799

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prepared by:

Cape Environmental Management Inc
20280 South Vermont Avenue
Suite 250
Torrance, California 90502

July 1995

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Section 1
Introduction

On behalf of General Services Administration (GSA), Cape Environmental Management Inc (CEMI) has performed a Preliminary Site Assessment (PSA) of the Alameda Federal Center, located at 620 Central Avenue, Alameda, California. The purpose of the PSA is to investigate the extent of soil and ground water contamination, due to underground storage tank (UST) releases, observed during soil and groundwater testing activities.

1.1 Site Description

The site is located in the northwest portion of the City of Alameda, approximately 500 feet east of the San Francisco Bay shoreline, and is situated in a relatively flat tidal plain area which slopes gently towards the bay. The site covers an approximate area of 10 acres and maintains several building structures used for administrative office and storage functions. Figure 1 - Site Vicinity Map depicts the subject site vicinity. Figure 2 - Site Map depicts location and orientation of the subject site.

1.2 Previous Site Investigations

Previous site investigation information was obtained from a report titled Preliminary Report on Tank Removal, Site Investigation, Additional Investigation and Tank Closure Plans, dated May 1994 and prepared by TKS Consulting Ltd. It is reported that on January 27, 1994, a 1,000-gallon gasoline/waste oil UST (Tank 1) and a 5,000-gallon unleaded gasoline UST (Tank 2) were removed from the site.

In addition, during excavation activities to locate a reported 550-gallon diesel fuel UST, two (2) 10,000-gallon USTs were discovered (Tanks 3 and 4) in the northwest portion of the site. These two USTs were reported full of an extremely heavy black hydrocarbon with water, grease, and sandy sediment on the bottom. Laboratory analyses of the material contained in Tank 3 indicated the presence of diesel fuel, oil and grease, and concentrations of the metals chromium, nickel, lead, and zinc, at 22 milligrams per kilogram (mg/kg), 33 mg/kg, 10 mg/kg, and 47 mg/kg, respectively. Analysis of Tank 4 contents indicated the presence of diesel fuel, and concentrations of the metals chromium, nickel, and zinc at 17 mg/kg, 21 mg/kg, and 15 mg/kg, respectively, and ethylbenzene at 12 micrograms per kilogram (μg/kg) and total xylenes at 64 μg/kg. The tanks were decommissioned around 1950 and had been partially filled with sand and covered, leaving the fill ports open. Efforts to pump out the tank contents failed, due to the occurrence of rocks and a hardened clay material which plugged the vacuum hose.

Prior to the removal of Tanks 1 and 2, soil borings were advanced adjacent to each tank and soil samples were obtained for laboratory chemical analyses. Analysis of soil samples obtained from borings near Tank 1 identified concentrations up to 57 mg/kg total petroleum hydrocarbons as diesel (TPHd), up to 120 mg/kg oil and grease, 1.5 mg/kg total petroleum hydrocarbons as gasoline (TPHg), 20 μg/kg toluene, 11 μg/kg ethylbenzene, 75 μg/kg total xylenes, 7 μg/kg trichloroethene (TCE), and traces of several heavy metals. Soil samples

collected from borings near Tank 2 identified concentrations of 12 mg/kg fluoranthene and 26 mg/kg pyrene. Soil samples collected from borings near Tanks 3 and 4 identified concentrations of up to 5,100 mg/kg TPHd, oil and grease up to 19,000 mg/kg, 18 mg/kg fluoranthene, and 35 mg/kg pyrene.

Three of the soil borings were converted to monitoring wells (MW1, MW2 and MW3). MW1 is located near Tank 1; MW2 was installed near Tank 2 and was apparently damaged during construction and rendered unusable; and MW3 is located near Tanks 3 and 4. The wells were installed to a total depth of 14 feet below ground surface (bgs), with a screened interval from about 4 to 13 feet bgs, and are constructed of 2-inch nominal diameter PVC casing. Water samples collected from MW1 identified concentrations of 0.52 milligrams per liter (mg/L) total petroleum hydrocarbons as motor oil (TPHmo), 0.6 micrograms per liter (μg/L) benzene, 0.4 μg/L ethylbenzene, 3.0 μg/L trichloroethene (TCE), 1.0 μg/L tetrachloroethene (PCE), and 1.5 μg/L 1,2-dichloroethene (DCE). MW3 was not sampled, however free product was observed.

Three soil samples were obtained during the removal of Tanks 1 and 2. Laboratory analyses of a soil sample obtained from a depth of 7-feet at the west-side bottom of excavation at Tank 1 identified concentrations of 180 mg/kg oil and grease, 2.9 mg/kg TPHmo, and not detected for TPHd, TPHg, and BTEX. Analyses of a soil sample obtained from a depth of 11-feet at the middle-center of excavation at Tank 2 identified a concentration of 5.1 mg/kg TPHmo and not detected for TPHd, TPHg, and BTEX. The third soil sample was obtained along the product line from Tank 2 and contained TPHmo at a concentration of 3.1 mg/kg, and not detected for TPHd, TPHg, and BTEX.

Section 2
Project Description

This Section describes details of the field and laboratory activities conducted during this preliminary site assessment to include general drilling techniques, soil sampling, groundwater monitoring well installation, soil and water sample handling, and laboratory testing methodologies. Field work was conducted on May 16, 17, and 18, 1995. For convenience of report presentation the subject site has been divided into the following two areas: Tank 1 and 2 Area, and Tank 3 and 4 Area. Figure 3 - Tank 1 and 2 Area/Boring Location depicts the location and orientation of the former USTs and the location of soil borings and monitoring wells that were utilized for this PSA. Figure 4 - Tank 3 and 4 Area/Boring Location depicts the location and orientation of the two existing USTs and the location of soil borings and existing monitoring well that were utilized for this assessment.

2.1 Soil Investigation Methodology

A detailed subsurface investigation was performed, consisting of drilling activities for soil test borings, monitoring well installations, soil sampling, and laboratory analysis. For this study, seven (7) test borings were drilled at selected locations in order to collect soil samples, observe general subsurface hydrogeologic conditions, and install monitoring wells. One of the test borings (TB1-A) was an unsuccessful attempt to drill, having met drill refusal at approximately 4-feet depth. Test boring TB1 was successfully drilled to the target depth of 15-feet. Also, a damaged existing groundwater monitoring well (MW2) was replaced and designated MW2-R. Soil samples were obtained from the borings at approximate five-foot depth intervals, including samples at the soil/water interface and at any change in lithology. Following field screening, selected samples were laboratory tested for various organic constituents. Prior to commencement of field activities, a site health and safety plan was prepared detailing potential physical and chemical hazards, emergency response procedures, and other related topics.

2.1.1 Drilling and Sampling Methods

Drilling services were performed by West Hazmat Drilling Corporation of Newark, California (C57 license #554979). Prior to drilling activities, a drilling permit (Permit #95294) was obtained from the Alameda County Flood Control and Water Conservation District (Zone 7). The drilling permit is included as Appendix A.

Soil borings completed during the present investigation were advanced using a truck-mounted mobile B-57 drill rig with an 8-inch outside diameter continuous flight hollow-stem auger. Following soil sample collection the boreholes were either sealed with Type I-II Portland neat cement concrete from total depth to surface or were completed as monitoring wells.

Drilling spoils generated from the test borings are temporarily stored on-site in DOT-approved 55-gallon sealed steel drums. Soil sample chemical test results will be used to evaluate the appropriate disposal method(s) for the spoils material. Following transport and disposal of the drilling spoils, manifests will be forwarded to the Alameda County

Department of Environmental Health - Environmental Protection Division.

Soil samples were collected in 2.5-inch diameter brass sample sleeves contained in an 18 inch-long California-modified split-spoon drive sampler advanced below the lead auger by repeated blows of a 140-pound drop hammer. Samples were generally collected at five (5), ten (10), and fifteen (15) foot depth intervals for logging and initial screening. Logging included visual, tactile and olfactory observations of soil physical characteristics and were described according to the Unified Soil Classification System and other appropriate descriptors. Geologic logs of all soil test borings are provided in Appendix B -Soil Boring Logs/Well Construction Details. Also indicated on the boring logs are the drilling method utilized at each test boring location, total depth of each boring, monitoring well construction details, and other relevant information.

Appropriate decontamination procedures were followed for all soil collection and handling activities to assure sample representativeness and avoid sample contamination and formation cross-contamination. Specifically, all drill augers were cleaned using a high-pressure steam cleaner prior to contacting the formation, and all drive sampler components were thoroughly decontaminated by brushing and agitation in Alconox laboratory detergent solution followed by triple-rinsing in clear tap water obtained from an on-site drinking water source.

All soil samples were screened by ambient temperature headspace (ATH) methods for indications of hydrocarbon contamination, and results of the headspace readings were recorded on the boring logs. The ATH method involves placing approximately 5 cubic inches of soil into a sealed polyethylene bag and allowing the soil temperature to equilibrate for approximately 15 minutes under ambient air temperature conditions. At that time, the probe of a portable organic vapor meter (OVM) or photo-ionization detector (PID), calibrated with 100 ppm isobutylene, was inserted into the bag headspace and the reading recorded. Samples of material exhibiting an OVM response, and other potential indications of contamination were selected for laboratory analysis.

2.1.2 Sample Preparation and Handling

Selected soil samples were sealed with Teflon sheets, capped, labelled, placed in a pre-cooled ice chest for preservation at 4° Celsius, and transferred under Chain-of-Custody documentation to a state-certified hazardous waste analytical laboratory. All holding times, sample preservation, and other applicable protocols were observed during sample preparation, handling, and transportation.

2.1.3 Laboratory Testing

Chemical analyses of the selected soil samples were performed by Curtis & Tompkins, Ltd., a California Department of Health Services-certified hazardous waste analytical laboratory located in Berkeley, California. Laboratory analyses consisted of the following U.S. EPA-approved procedures:

- Hydrocarbon Oil and Grease (O&G) using Test Method SMWW 5520;

- Total Extractable Petroleum Hydrocarbons (TEPH) using DHS/LUFT procedure EPA Test Method 8015-Modified (diesel fuel);

- Total Volatile Hydrocarbons (TVH) using DHS/LUFT procedure EPA Test Method 8015-Modified (gasoline);

- Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) using EPA Test Method 8020;

- Volatile Halocarbons (VH) for EPA Test Method 8010 Compounds using EPA Test Method 8240; and

- Polynuclear Aromatic Hydrocarbons (PNA) using EPA Test Method 8270.

A total of eighteen (18) soil samples were collected from the seven (7) test borings excavated for this investigation. Of these samples, thirteen (13) were selected for immediate laboratory analysis. Remaining soil samples were archived under refrigeration at the laboratory for a period of thirty (30) days for possible future analysis if necessary. Appendix F - Certified Laboratory Reports and Sample Chain-of-Custody Documentation indicates those individual samples selected for immediate laboratory analysis and those archived for possible future testing.

2.2 Groundwater Investigation Methodology

2.2.1 Monitoring Well Installations

Selected soil borings were converted to monitoring wells by installation of nominal 4-inch or 2-inch diameter schedule 40 PVC casing and screen. Screen slot was 0.020-inch mill-slot. The annulus of each well was filled with Monterey #3 graded and washed high-silica sand from total depth to approximately 1 foot above the upper screened section, upon which a one-foot seal of hydrated bentonite chips was placed followed by a Portland neat cement concrete surface monument with trafficable at-grade well cover. All wells are equipped with a locking well cap and completed in accordance with CEMIs standard operating procedures, California State Water Resources Control Board, Department of Water Resources and other applicable protocols.

Refer to Appendix B - Soil Boring Logs/Well Construction Details for monitoring well completion information. Figure 3 - Tank 1 and 2 Area/Boring Locations and Figure 4 - Tank 3 and 4 Area/Boring Locations depict the locations of all test borings (including monitoring well borings).

2.2.2 Well Development, Purging and Sampling

CEMI personnel supervised West Hazmat Drilling in the development of the groundwater monitoring wells. The purpose of well development is to consolidate the sand filter pack around the screened interval of the casing and to remove silty sediments from within the well water. Each well was initially purged with an 8-foot long by 4-inch diameter, stainless steel

bailer, of approximately 15-20 gallons. The wells were then surged with a vented surge block for approximately twenty five minutes and then re-purged of approximately twenty five gallons. The groundwater monitoring wells were allowed to equilibrate for approximately 40 to 60 minutes prior to sampling. Refer to Appendix C - Well Development Logs for additional information.

CEMI measured the depth to ground water and collected ground water samples from each of the monitoring wells. The depths to ground water and other development and sampling details for each well are provided in Appendix C and Appendix D. Water samples were collected with dedicated disposal 2-inch diameter PVC hand bailers and placed in 40 milliliter (ml) glass and 1 liter amber glass containers, labelled, preserved at 4° Celsius, and transferred under Chain-of- Custody documentation to a state-certified laboratory.

2.2.3 Sample Preparations and Handling

All groundwater samples, following collection, were secured in laboratory supplied vessels fitted with threaded Teflon-lined caps. Sample vessels were immediately placed in a pre-cooled ice chest and delivered to the analytical laboratory within approximately 24 hours after collection. Samples were submitted for a 5-day turn-around analytical testing schedule.

One quality control tip blank (Sample "MB") was included in the sampling protocol.

2.2.4 Laboratory Testing

Chemical analysis of the six (6) groundwater samples (MW-1 through MW-6) were identical, i.e. the following suite of parameters:

- Hydrocarbon Oil and Grease (O&G) using Test Method SMWW 5520;
- Total Extractable Petroleum Hydrocarbons (TEPH) using DHS/LUFT procedure EPA Test Method 8015-Modified (diesel fuel);
- Total Volatile Hydrocarbons (TVH) using DHS/LUFT procedure EPA Test Method 8015-Modified (gasoline);
- Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) using EPA Test Method 8020;
- Volatile Halocarbons (VH) for EPA Test Method 8010 Compounds using EPA Test Method 8240; and
- Polynuclear Aromatic Hydrocarbons (PNA) using EPA Test Method 8270.

This is the same analytical suite utilized in all project soil samples.

Section 3
Hydrogeologic Conditions

The following description of surficial and shallow hydrogeologic conditions was derived from direct observation of drill spoils and soil samples collected from the several soil test borings and monitoring well borings drilled for the present investigation. Surficial material at all drilling locations consisted of improved engineered pavement, i.e. 4-inch rolled asphaltic concrete and bare grade foundation gravel.

Exploratory drilling was conducted in two site areas: the Tank 1 and 2 Area located in the southern portion of the site, and the Tank 3 and 4 Area located in a north-eastern portion of the project site. Subsurface geologic or soil conditions are generally similar in both areas, consisting of sandy materials containing varying proportions of silty and clayey fines and what appear to be pelecypod shell fragments. An additional common factor noted in all test borings is the occurrence of shallow unconfined groundwater having a static water level ranging from about four to five feet below ground surface. Minor differences in hydrogeologic conditions observed between the two site areas are described below.

Subsurface soil in the Tank 1 and 2 Area appear to consist of an upper artificial fill or regraded native beach or tidal flat sand of well or poorly graded sediments which generally fines downward to silty or clayey sand at approximately 8 foot depth. Trace to abundant pelecypod shell fragments were noted from 5 feet to about 15 feet depths in the various borings at this area. Heaving sand was observed during the installation of MW-4, TW/MW-5, and MW-6 at depths from 13 feet to about 15 feet. No sheen or stain was noted in soil samples collected in this area, however, a faint possible decayed hydrocarbon odor was noted at about 10 feet depth in boring MW-6 located between the former USTs.

Soils in Tank Area 3 and 4, as noted in samples from test borings TB-1, TB-2, and TB-3, are grossly similar to those encountered in Tank Area 1 and 2, but differ principally in having a generally coarser average grain texture with notably fewer fines. Also, the presence of imported non-native materials is inferred by the presence of coarse granules and trace wood fragments and other debris. These features were not noted in Tank Area 1 and 2.

Groundwater flow in the shallow unconfined aquifer system observed is inferred to be in a general south-southwest direction toward San Francisco Bay. Additional discussion of this feature is provided in Section 5 - Groundwater Investigation Results (Groundwater Gradient Determination). Groundwater recharge to the shallow aquifer system is believed to originate as infiltration and percolation of local precipitation and urban runoff. Observed soil texture (i.e. sands) is inferred by physical appearance to be highly transmissive to water in vertical and lateral directions. Finer materials observed at depth in a number of the test borings suggests possible perching or semi-perched shallow groundwater in the immediate site area. Any connections of the upper or shallow unconfined groundwater system to possible underlying groundwater(s) cannot be discerned from the results of the present investigation.

Section 4
Soil Investigation Results

This section describes the results of the present investigation with respect to identified contaminant concentrations and distribution in soils at the two site areas investigated. Each site area (Tank 1 and 2 Area, Tank 3 and 4 Area) is discussed separately below.

4.1 Tank 1 and 2 Area

Summaries of laboratory chemical test results for soil samples are provided on Tables 1 and 2. As indicated on the tables, only soil samples from boring MW-4 and MW-6 in Tank 1 and 2 Area were tested. The analytical results from these samples indicate the presence of modest concentrations of oil and grease (O&G) and total extractable petroleum hydrocarbons (TEPH) ranging from a few milligrams per kilogram (mg/kg) to 290 mg/kg depending on the location and depth of these samples. In general, O&G and TEPH concentrations exhibited an increase with depth and concentrations maximized at about 10 to 15 feet depths, corresponding roughly to the former UST invert elevation in this area. TVH, BTEX, and VH were not detected in soil samples from this area.

Polynuclear Aromatic (PNA) compound concentrations were detected at various levels ranging from less than 500 to over 3,000 micrograms per kilogram (μg/kg), depending on the specific PNA compound and location and depth of sample. The vertical distribution of PNAs appears to mimic the observational distribution of O&G and TEPH, i.e. increasing concentration with depth. At both the MW-4 and MW-6 locations, PNAs were detected only in the 10-foot samples, and were not detected in the shallow and deep samples from these borings. PNA compounds exhibiting the highest concentrations were various pyrenes, chrysene, and fluoranthenes.

4.2 Tank 3 and 4 Area

A summary of laboratory test results for soil samples collected in this area are tabulated on Table 1 and 2. Samples from various depths at all three test borings in this site area were analyzed for the same suite of parameters as samples collected in the Tank 1 and 2 Area, i.e. O&G, TEPH, TVH, BTEX, VH, and PNAs. Among these analyses tested, only O&G, TEPH, and PNAs were detected. This same array of constituents were detected in the two Tank 1 and 2 Area borings, and at the similar concentrations and proportions. For example, O&G, TEPH, and PNAs were most highly concentrated at about 10 feet depth, and most constituents exhibit a generally increasing concentration with depth when viewing this area in a general perspective. PNA compounds were detected in roughly equivalent concentrations in both UST areas. In addition, various pyrenes, chrysene, and fluoranthene constitute the most abundant PNAs at both UST locations.

In the Tank 3 and 4 Area, for all analytes detected there is an apparent trend for increasing contaminant concentrations in a south to north direction. This trend is accompanied by a northward increase in thickness of probable imported artificial fill material, exemplified by

unusually large gravel or cobbles, notable soil and presence of wood fragments and woody debris.

Section 5
Groundwater Investigation Results

This section describes the results of the present investigation with respect to identified groundwater contamination and groundwater flow direction. The results for Tank 1 and 2 Area and Tank 3 and 4 Area are described individually below.

5.1 Tank 1 and 2 Area

In this area, groundwater samples were obtained from pre-existing well MW1, replacement well MW2-R, new monitoring wells MW-4 and MW-6, and new test well TW/MW-5. Well locations are shown on Figure 3 - Tank 1 and 2 Area/Boring Locations. Groundwater samples from wells MW2-R, MW-4, and MW-6 exhibited no detectable concentrations of O&G, TEPH, TVH, BTEX, VH or PNAs. Samples from wells MW-1 and TW/MW-5, were the only water samples in the Tank 1 and 2 Area to exhibit any tested analytes. MW-1 samples contained elevated levels of TEPH and detected levels of benzene and several VH compounds. Well TW/MW-5 samples also contained elevated TEPH, trace levels of one VH compound (chloroform), and trace levels of several PNA compounds. A summary of groundwater chemical test results is provided on Tables 3 and 4.

Two principal findings are revealed by groundwater testing in Tank 1 and 2 Area: 1) groundwater contamination possibly originating from the former USTs appears limited to Tank No. 1 (former 1,000-gallon gasoline/waste oil UST), and 2) groundwater contamination probably unrelated to either of the former USTs is present in Parking Lot 1 east of the former UST locations.

The first finding (groundwater contamination related only to former UST No. 1) is evident from the observation that well MW-6, located immediately downgradient of former UST No. 2, is uncontaminated with respect to all tested parameters while well MW-1, located immediately south of former UST No. 1, contains 5,500 μg/l TEPH and 1.1 μg/l benzene. The shape, size, annotation, and configuration of the groundwater contaminant plume inferred to originate from former UST No. 1 is not known at this time.

The second principal finding, the presence of groundwater contamination well east of the former UST locations, is exhibited by the discovery of 680 μg/l TEPH, 1.0 μg/l chloroform, and trace levels of several PNA compounds from water samples obtained from well TW/MW-5. The origin of these contaminants, and prime geometry, is not known at this time.

5.2 Tank 3 and 4 Area

Groundwater samples were collected at only one location in this area of investigation, namely pre-existing monitoring well MW-3. This well is the only formal groundwater monitoring point presently located in the immediate area. Samples from well MW3 were tested for the same suite of analytical parameters as all other groundwater samples in this investigation; i.e. O&G, TEPH, TVH, BTEX, VH, and PNAs. Of those constituents, only TEPH was

detected, at a modest concentration of 92 μg/l. Because the well is located immediately down gradient of existing USTs 3 and 4, the presumption is made that the detected contaminant has a probable source at the tank(s). This suggestion is supported by the similarity of TEPH to diesel fuel, the former contents of USTs 3 and 4.

Also, a very thin petroleum film was detected within the static water column of well MW-3 having a thickness (measured using an ORS Interface Probe) of 0.005 foot. This was measured while the well was at rest prior to well purging and sampling.

The shape, size configuration, and orientation of the groundwater contaminant plume is not known at this time, but is presumed to correspond with the south-trending flow direction existing at the Tank 1 and 2 Area of investigation. Also, the area of soil contamination is known from test boring sample tests to extend at least so far north as the TB-3 locations north of the existing USTs. Therefore, some form of groundwater contamination, related or unrelated to USTs 3 and 4, may be expected in the area upgradiant and north of the USTs. A further suggestion of potential groundwater contamination in the area north of USTs 3 and 4 Areas was the observation of oily material on the drill rods during drilling and sampling of TB-3.

5.3 Groundwater Gradient Determination

A relative elevation and location survey was conducted on May 18, 1995 encompassing the Tank 1 and 2 and Tank 3 and 4 Areas. The survey was performed by Ron Archer, Civil Engineer, Inc., a California-Registered Professional Engineer (civil), using engineer's level and stadia rod methods. Survey data is included as Appendix E. Survey graphics used in determining groundwater gradient are provided on Figure 5 - Groundwater Gradient Map and monitoring well reference point locations are tabulated on Table 5 - Static Water Level (SWL) Measurements. All elevations determined for this study are reduced to mean sea level datum. Survey locations are relative to established permanent site landmarkers (i.e, building corners, street curbs, etc.).

Groundwater gradient at Tank 1 and 2 Area was detected by concurrent sounding of all five monitoring points after the elevations at each well reference points were determined. Depth to static groundwater from each reference point was then reduced to mean sea level elevations and a graphic 3-point solution method used to establish groundwater gradient and direction. The result of the determination is groundwater gradient = 0.0025 ft/ft (13 ft/mile) with a flow direction compass bearing of 198° (SSW).

These calculations represent the configuration of the shallow groundwater surface at the time of sounding. It is expected that seasonal, annual, and opportunistic fluctuation in water level and corresponding alterations of the current groundwater flow regime (gradient and direction) may occur in response to local precipitation, landscape irrigation, urban runoff, tidal influences and other factors. It is not possible at this time to estimate these possible effects. Continued periodic monitoring (sounding) of site wells will yield information regarding the relation stability or variation of local groundwater air conditions.

Section 6.0
Conclusions and Recommendations

This Section presents a summary of conclusions and recommendations derived from activities of the current site assessment. Conclusions are first presented generally, with respect to both tank areas, then presented as specific findings related to each unique tank area. This Section concludes with recommendations for further action.

6.1 Conclusions

General

- The presence of PNAs (pyrene and fluoranthene) identified in site soils during previous site assessment work has been confirmed, as described below in Tank 1 and 2 Area and Tank 3 and 4 Area discussions.

- PNA compounds identified in previous site assessment work and in the present investigation are generally consistent with a diesel fuel or heating oil source.

- All soil test results from both tank areas were negative for TVH, BTEX, and VH.

- All groundwater test results for both tank areas were negative for TVH and O&G.

Tank 1 and 2 Area

- Existing monitoring well MW-2 was observed as damaged beyond repair, therefore it was replaced and given the designation of MW2-R. The previously existing 2-inch diameter well was overdrilled, removed and a new 4-inch diameter PVC cased well was installed, developed, purged, sampled and rendered useable.

- Soil samples from the MW-4 and MW-6 borings contained modest levels of O&G, TEPH, and PNAs only. No other tested analytes were detected at these locations. Potential sources of these substances in the MW-4 and MW-6 borings are unknown. No soil samples from the MW2-R or TW/MW-5 borings were tested.

- Ground water gradient in this area was determined at 0.0025 ft/ft (13 ft/mile) with a flow direction compass bearing of 198° (SSW).

- Groundwater samples from wells MW2-R, MW-4, and MW-6 contained no detectable concentrations of any of the tested parameters (O&G, TEPH, TVH, BTEX, and PNAs). These three wells are located upgradient, cross-gradient, and down-gradient of former Tank 2, respectively. The results indicate no groundwater contamination originating at the former Tank 2 location, and no apparent motor fuel contamination of groundwater in the area immediately west of former Tank 2 (well MW-4).

- MW-1 groundwater samples contained TEPH, benzene, and the volatile halocarbons

(DCE, TCE, PCE). Benzene and TCE levels exceed current MCLs. The presence of these compounds is consistent with diesel fuel, gasoline, and chlorinated solvents or degreasers, possibly originating at former Tank 1.

- TW/MW-5 groundwater samples contained TEPH, and trace concentrations of chloroform and several PNA compounds. TEPH and PNAs are consistent with a diesel fuel source, but no UST or other point of release was identified in the vicinity of TW/MW-5. This well is designated "TW" (test well) due to initial temporary installation for water level measurements. During field activities it was determined prudent to convert this well into a permanent installation for future ground water gradient measurements, however proper development has not been completed. Laboratory test results of water samples collected from this well are therefore not conclusive.

Tank 3 and 4 Area

- Soil in this area appears to be largely artificial fill, as evidenced by wood fragments and other foreign or non-native material observed in drill spoils and drive samples.

- Results of laboratory analyses for all soil samples from the three test borings drilled in this area for the present investigation were not detected for TVH, VH, and BTEX.

- A strong south-to-north directional trend in increasing soil contaminant levels was noted from TB-1 to TB-2 to TB-3. This trend is particularly notable with respect to PNAs; pyrene was detected at very low concentration at TB-1, not detected at TB-2 and present in the form of several chemical species at relatively high concentrations at TB-3.

- The lateral and vertical distribution of soil contamination in this area will influence the sequence, area, and depth of soil excavation related to UST and contaminated soil removal: TB-1 area is "clean" except for possible trace pyrene at 10 feet depth; TB-2 area contains moderate to trace O&G and TEPH at 10 feet depth; TB-3 area contains trace to modest O&G and TEPH and elevated levels of various PNA compounds to 15 feet depth.

- An interface probe was used to measure reported free product at MW-3. Results of this measurement indicated a product thickness of 0.005 feet.

- Groundwater samples from well MW3 contained minor concentrations of TEPH; all other tested analytes were not detected. This result is consistent with a diesel fuel or heating oil source, possibly one or both of the existing fuel USTs. MW3 is located immediately down-gradient of Tank 3 (based on the southward groundwater flow direction determined at Tank 1 and 2 Area).

- Transmissivity or water-bearing capacity of site soils is believed to be favorable for the purposes of dewatering the tank and/or contaminated soils excavation(s). Additional field testing or office research will be required in order to provide an

accurate estimate of dewatering flow rate.

6.2 Recommendations

- Rehabilitate or recondition well TW/MW-5 to improve the validity of future groundwater sample test results from that location. From our field observations, this might best be accomplished by jetting-surging-bailing methods.

- Include all currently-existing on-site monitoring wells (including reconditioned TW/MW-5) in an initial program of groundwater sounding and sampling. This initial program will generally duplicate the analytical testing methods used during the current PSA. If current groundwater analytical test results are confirmed during this initial program, then CEMI recommends deleting wells MW2-R, MW-4, and TW/MW-5 from additional laboratory testing. These wells should remain in a scheduled groundwater sounding program to assist in future groundwater gradient measurements. Monitoring wells MW-1 and MW-6 should be sampled and laboratory tested as part of a groundwater monitoring program. MW-3 will be destroyed during excavation activities to remove Tanks 3 and 4, therefore MW-3 is not to be included in the recommended groundwater monitoring program.

- Prepare a formal written and agency-approved Groundwater Monitoring Program to guide future well sounding, sampling, and reporting activities.

- Remove Tanks 3 and 4, and concurrently excavate contaminated in-place soil relating to the UST removal. An assessment of impacted soil should be conducted and documented during the excavation activities. CEMI recommends interim groundwater remedial activities to include water treatment during excavation and shoring placement dewatering activities. Water treatment may include utilizing an oil/water separator unit during dewatering activities and permits must be obtained from the East Bay Municipal Utilities District (MUD) for the discharge of treated groundwater into the sanitary sewer system.

- Evaluate subsequent groundwater gradient measurements to determine possible installation of an additional monitoring well down-gradient of MW-1 and assess the extent of groundwater impacts related to releases at Tank 1.

Tables

Table 1
Summary of Analytical Results
Petroleum and Volatile Compounds (Soil)

Sample ID (Depth in feet)	Date Sampled	O&G (mg/Kg)	TEPH (mg/Kg)	TVH (mg/Kg)	B (µg/Kg)	T (µg/Kg)	E (µg/Kg)	X (µg/Kg)	VH (µg/Kg)
TW/MW4-5'	5/17/95	ND	3.3	ND	ND	ND	ND	ND	ND
TW/MW4-10'	5/17/95	ND	19 (2.0)	ND	ND	ND	ND	ND	ND
TW/MW4-15'	5/17/95	290	3.2	ND	ND	ND	ND	ND	ND
MW6-4'	5/18/95	90	ND	ND	ND	ND	ND	ND	ND
MW6-10'	5/18/95	98	25 (5.0)	ND	ND	ND	ND	ND	ND
MW6-13'	5/18/95	ND	ND	ND	ND	ND	ND	ND	ND
TB1-10'	5/18/95	ND	ND	ND	ND	ND	ND	ND	ND
TB1-15'	5/18/95	ND	ND	ND	ND	ND	ND	ND	ND
TB2-10'	5/18/95	520	3.2	ND	ND	ND	ND	ND	ND
TB2-15'	5/18/95	ND	ND	ND	ND	ND	ND	ND	ND
TB3-5'	5/18/95	140	9.3 (5.0)	ND	ND	ND	ND	ND	ND
TB3-10'	5/18/95	150	42 (5.0)	ND	ND	ND	ND	ND	ND
TB3-15'	5/18/95	120	10	ND	ND	ND	ND	ND	ND

NOTES:

mg/Kg- Milligrams per kilogram
µg/Kg- Micrograms per kilogram
ND- Not detected at or above Method Detection Limit (MDL).
O&G- Hydrocarbon oil and grease using test method SMWW 5520 with MDL of 50 mg/Kg.
TEPH- Total extractable petroleum hydrocarbons as diesel fuel using California Department of Health Services (DOHS) Method with MDL of 1.0 mg/Kg. Number in parenthesis following reported concentration represents raised MDL.
TVH- Total volatile hydrocarbons as gasoline using California DOHS Method with a MDL of 1.0 mg/Kg.
BTEX- Benzene, toluene, ethyl benzene and total xylenes using EPA Test Method 8020 with MDL of 5.0 µg/Kg.
VH- Volatile halocarbons for EPA Test Method 8010 compounds using EPA Test Method 8240 with compound MDLs ranging from 5.0 µg/Kg to 20.0 µg/Kg.

Table 2
Summary of Analytical Results
Polynuclear Aromatic Hydrocarbons (Soil)

Sample ID (Depth in feet)	Date Sampled	PNA (µg/L)
TW/MW4-5'	5/17/95	ND
TW/MW4-10'	5/17/95	450 Phenanthrene 1,400 Fluoranthene 3,400 Pyrene (3,300) 740 Benzo (a) anthracene 1,000 Chrysene 1,000 Benzo (b) fluoranthene 660 Benzo (k) fluoranthene 1,400 Benzo (a) pyrene 770 Indeno (1,2,2-cd) pyrene 980 Benzo (g,h,i) perylene
TW/MW4-15'	5/17/95	ND
MW6-4'	5/18/95	ND
MW6-10'	5/18/95	*240 Phenanthrene 490 Fluoranthene 1,100 Pyrene 450 Benzo (a) anthracene 390 Chrysene 660 Benzo (b)fluoranthene 540 Benzo (k) fluoranthene 830 Benzo (a) pyrene 370 Indeno (1,2,3-cd) pyrene 460 Benzo (g,h,i) perylene
MW6-13	5/18/95	ND
TB1-10'	5/18/95	*230 Pyrene
TB1-15'	5/18/95	ND
TB2-10'	5/18/95	ND
TB2-15'	5/18/95	ND

NOTES: Results indicate concentrations of compounds detected at or above Method Detection Limit (MDL) of 330 µg/L. Number in parenthesis following compound indicate raised MDL. Undetected compounds are not listed.

PNA- Polynuclear aromatic hydrocarbons using EPA Test Method 8270.

µg/L- Micrograms per liter.

ND- Not detected at or above MDL.

* Concentration of compound detected using instrument detection limit (IDL) of 50 µg/L.

Table 2 (cont.)
Summary of Analytical Results
Polynuclear Aromatic Hydrocarbons (Soil)

Sample ID (Depth in feet)	Date Sampled	PNA (µg/L)
TB3-5'	5/18/95	ND
TB3-10'	5/18/95	420 Phenanthrene 1,100 Fluoranthene 2,600 Pyrene 660 Benzo (a) anthracene 780 Chrysene 680 Benzo (b) fluoranthene 710 Benzo (k) fluoranthene 930 Benzo (a) pyrene 340 Indeno (1,2,3-cd) pyrene 410 Benzo (g,h,i) perylene
TB3-15'	5/18/95	*260 Phenanthrene 900 Fluoranthene 1,500 Pyrene 410 Benzo (a) anthracene 500 Chrysene 370 Benzo (b) fluoranthene 370 Benzo (k) fluoranthene 590 Benzo (a) pyrene *270 Indigo (1,2,3-cd) pyrene 330 Benzo (g,h,i) perylene

NOTES: Results indicate concentration of compound detected at or above Method Detection Limit (MDL) of 330 µg/L. Undetected compounds are not listed.

PNA- Polynuclear aromatic hydrocarbons using EPA Test Method 8270.
µg/L- Micrograms per liter.
* Concentration of compound detected using instrument detection limit (IDL) of 50 µg/L.

Table 3
Summary of Analytical Results
Petroleum Compounds (Water)

Sample ID	Date Sampled	O&G (mg/L)	TEPH (µg/L)	TVH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW-1	5/18/95	ND	5,500	ND	1.1	ND	0.9	1.6
MW2-R	5/18/95	ND	ND	ND	ND	ND	ND	ND
MW-3	5/18/95	ND	92	ND	ND	ND	ND	ND
MW-4	5/17/95	ND	ND	ND	ND	ND	ND	ND
TW/MW-5	5/17/95	ND	680	ND	ND	ND	ND	ND
MW-6	5/18/95	ND	ND	ND	ND	ND	ND	ND

NOTES:

mg/L- Milligrams per liter.
µg/L- Micrograms per liter.
ND- Not detected at or above Method Detection Limit (MDL).
O&G- Hydrocarbon oil and grease using Test Method SMWW 5520 with MDL of 5 to 7 mg/L. Number in parenthesis following reported concentration represents raised MDL.
TEPH- Total extractable petroleum hydrocarbon using California Department of Health Services (DOHS) Method with MDL of 50 µg/L.
TVH- Total volatile hydrocarbons as gasoline using California DOHS Method with MDL of 50 µg/L.
BTEX- Benzene, toluene, ethyl benzene and total xylenes using EPA Test Method 8020 with MDL of 0.5 µg/L.

Table 4
Summary of Analytical Results
Volatile Halocarbons and Polynuclear Aromatic Hydrocarbons (Water)

Sample ID	Date Sampled	VH (µg/L)	PNA (µg/L)
MW-1	5/18/95	3.0 cis-1,2-Dichloroethene (1.0) 3.0 trans-1,2-Dichloroethene (1.0) 7.0 Trichloroethene (1.0) 1.0 Tetrachloroethene (1.0)	ND
MW2-R	5/18/95	ND	ND
MW-3	5/18/95	ND	ND
MW-4	5/18/95	ND	ND
TW/MW-5	5/17/95	1.0 Chloroform (1.0)	*7.5 Napthalene *8.5 Fluoranthene 14 Pyrene *5.5 Chrysene *6.2 Benzo (a) pyrene
MW-6	5/18/95	ND	ND

NOTES: Results indicate concentration of compound detected and corresponding method detection limit (MDL) in parenthesis following respective compound.

µg/L- Micrograms per liter.
ND- Compounds not detected at or above MDL.
VH- Volatile halocarbons for EPA Test Method 8010 compounds using EPA Test Method 8240 with compound MDL's ranging from 1.0 µg/L to 20 µg/L.
PNA- Polynuclear aromatic hydrocarbons using EPA Test Method 8270 with MDL of 10 µg/L.
* Reported compound concentrations below MDL were detected using instrument detection limit (IDL) ranging from 1 to 5 µg/L.

MCLs

Benzo (a) pyrene – 0.2 ppb

PQLs

Table 5
Static Water Level (SWL) Measurements

Location	Date	Time	SWL	Casing Elevation	Water Elevation
MW-1	5/18/95	1813	4.20	8.19	3.99
MW2-R	5/18/95	1822	4.14	8.27	4.13
MW-3	5/16/95	1415	4.72	9.00	4.28
MW-4	5/18/95	1810	4.52	8.53	4.01
TW/MW-5	5/18/95	1819	4.27	8.37	4.10
MW-6	5/18/95	1808	4.55	8.61	4.06

NOTES:

SWL in feet below top of well casing.
Elevations in feet above mean sea level.

Figures

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20280 S Vermont Ave.
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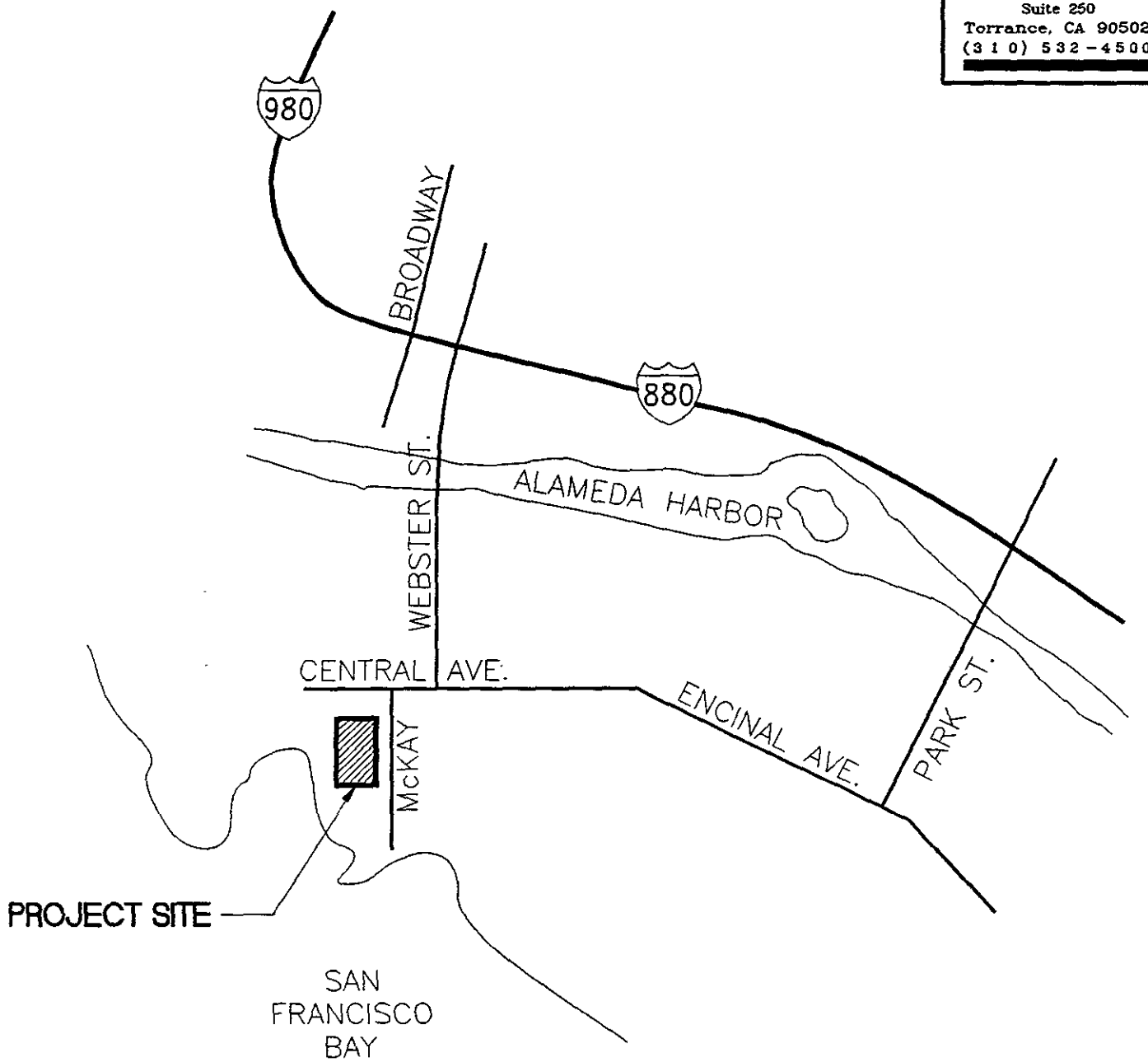
Torrance, CA 90502
(3 1 0) 5 3 2 - 4 5 0 0



VICINITY MAP

NOT TO SCALE

PROJECT
NORTH

SHEET TITLE: FIGURE 1 – SITE VICINITY MAP	CHECKED BY: L HARLAN	PROJECT NUMBER: 2403C 16	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J.GONZALES	DATE: MAR 31, '95	SHEET: 1 OF 1

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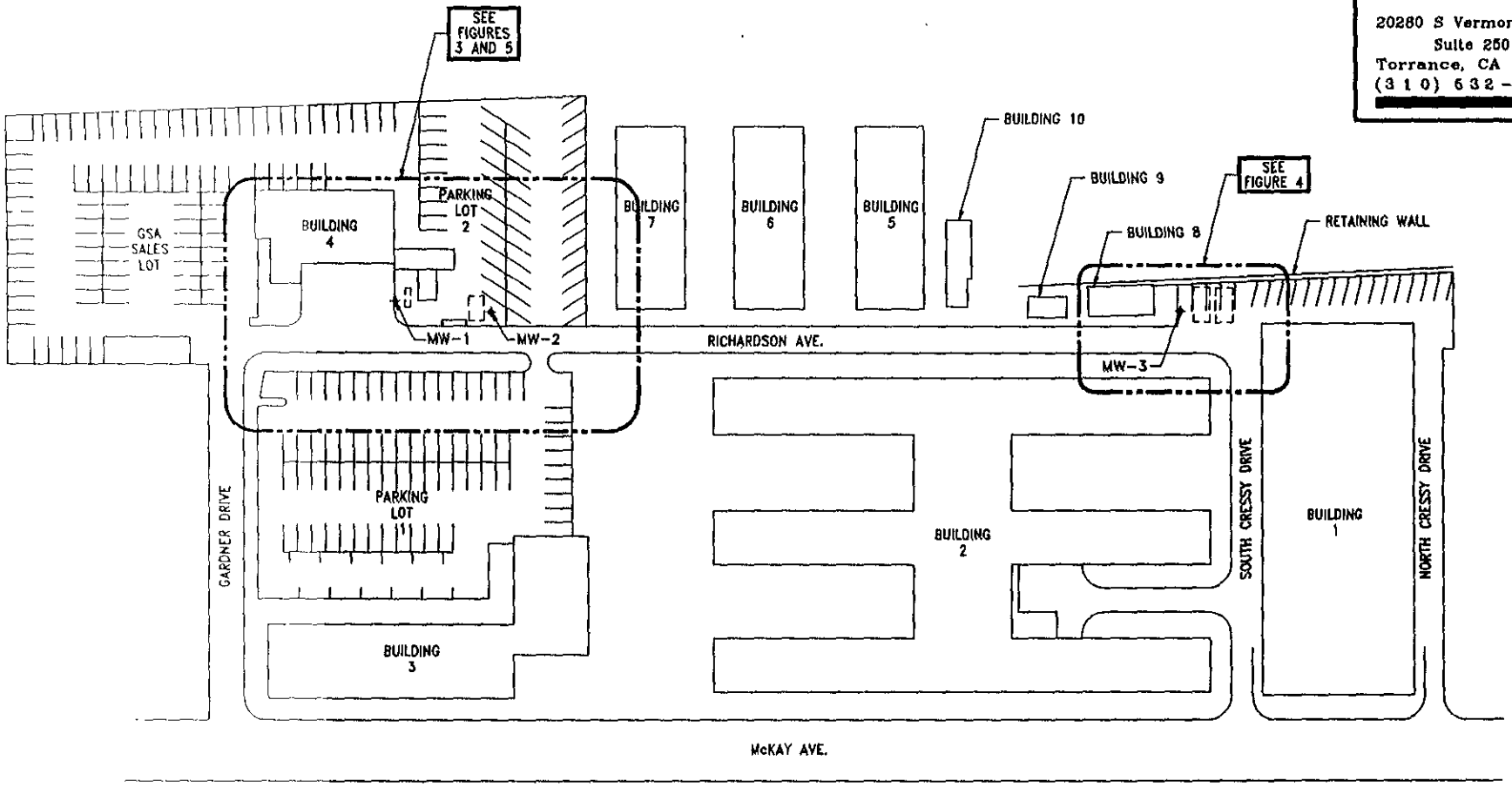

LEGEND

MW EXISTING MONITORING WELL

GRAPHIC SCALE

0 10' 50 100 150'

PROJECT NORTH

SHEET TITLE: FIGURE 2 - SITE PLAN		CHECKED BY: L. HARLAN	PROJECT NUMBER: 2403C.16
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUN. 20, '95	SHEET: 1 OF 1

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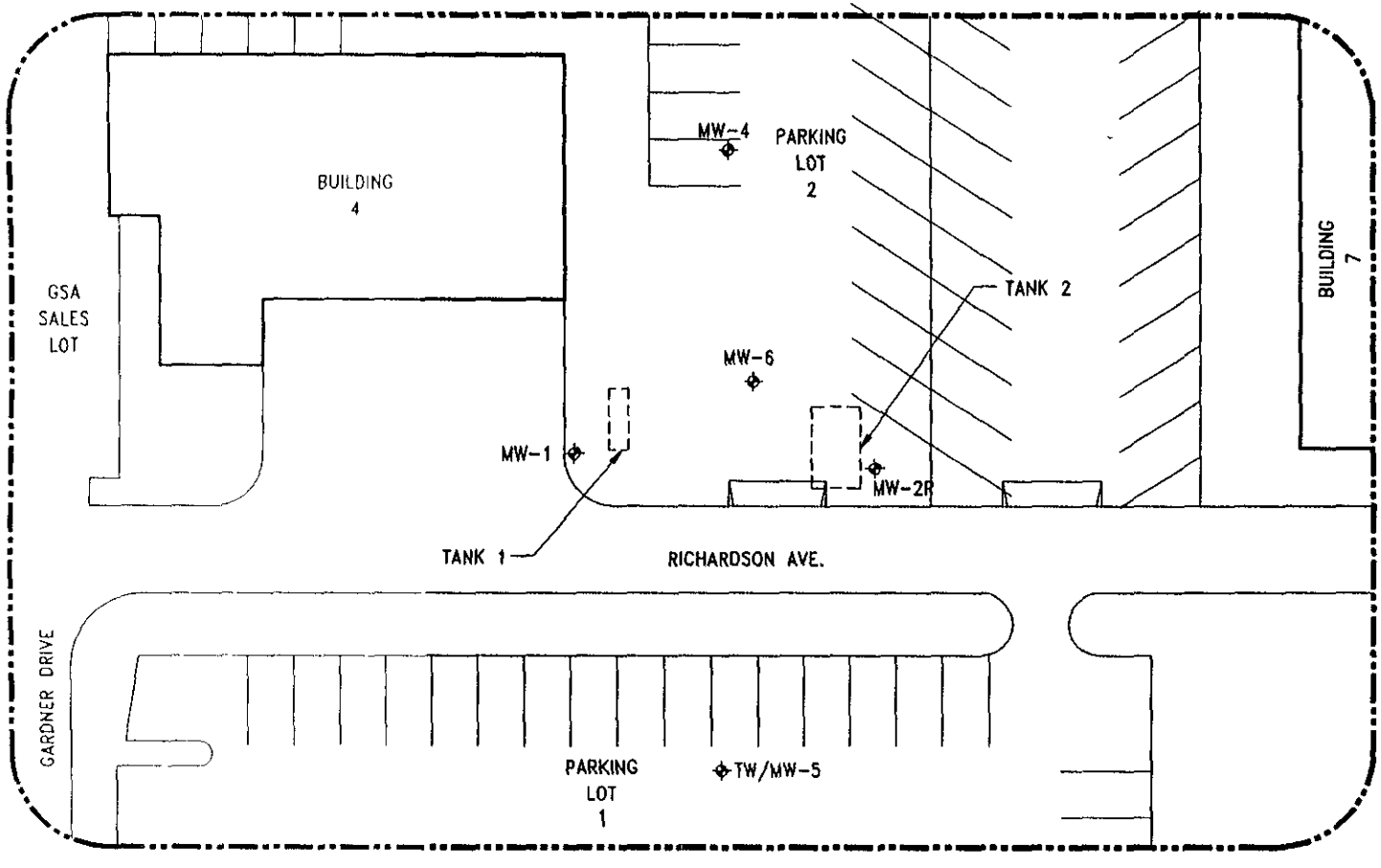

LEGEND

MW — EXISTING MONITORING WELL

APPROX. LOCATION OF REMOVED UST's

GRAPHIC SCALE

PROJECT NORTH

SHEET TITLE: FIGURE 3 – TANK 1 & 2 AREA / BORING LOCATIONS	CHECKED BY: L. HARLAN	PROJECT NUMBER: 2403C.16	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUN. 20, '95	SHEET: 1 OF 1

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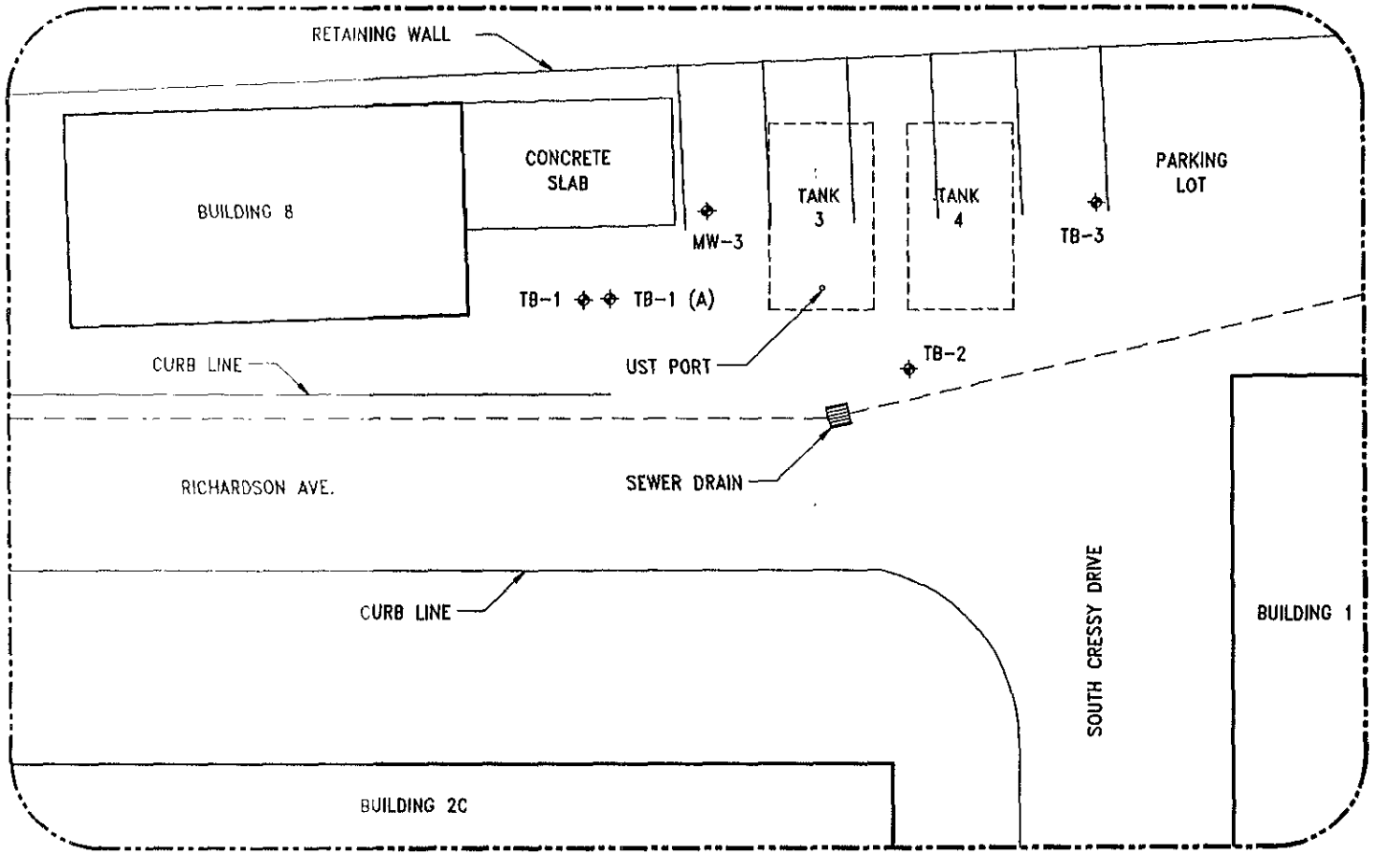

LEGEND

MW	EXISTING MONITORING WELL
TB	TEST BORING LOCATION
-----	APPROX. LOCATION OF EXISTING UST's
— —	SEWER PIPE

NOT TO SCALE

PROJECT NORTH

SHEET TITLE: FIGURE 4 - TANK 3 & 4 AREA / BORING LOCATIONS	CHECKED BY: L. HARLAN	PROJECT NUMBER: 2403C.16	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUN. 20, '95	SHEET: 1 OF 1

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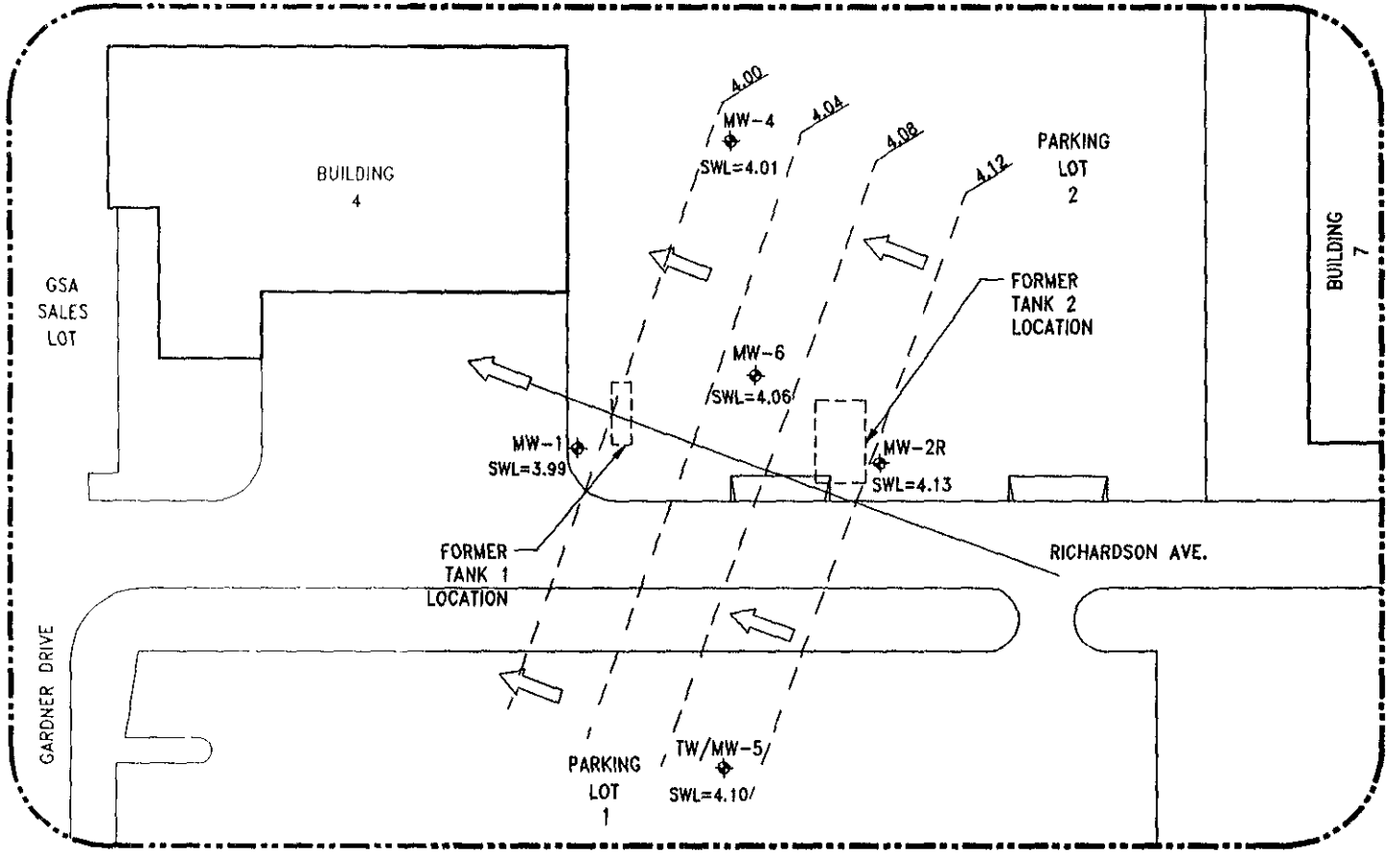


LEGEND

MW	EXISTING MONITORING WELL
	APPROX. LOCATION OF REMOVED UST's
	GROUNDWATER GRADIENT
SWL	STATIC WATER LEVEL ELEVATIONS IN FEET ABOVE MEAN LEVEL
	EQUIPOTENTIAL ELEVATION CONTOUR

GRAPHIC SCALE

PROJECT NORTH

SHEET TITLE: FIGURE 5 - GROUNDWATER GRADIENT MAP TANK 1 & 2 AREA		CHECKED BY: L. HARLAN		PROJECT NUMBER: 2403C.16
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUN. 20, '95	SHEET: 1 OF 1	

Appendix A

Drilling Permit/Application - Zone 7 Water Agency

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588-5127 • PHONE (510) 484-2600 FAX (510) 462-3914

May 12, 1995

CAPE Environmental Management Inc.
RECEIVED
MAY 15 1995

Cape Environmental Management, Inc.
20280 South Vermont Avenue
Torrence, CA 90502

Gentlemen:

Enclosed is drilling permit 95294 for the destruction of well 2S/4W 11M80 at 620 Central Avenue in Alameda for General Services Administration.

Please note that permit condition A-2 requires that a well destruction report be submitted after completion of the work. The report should include a description of methods and materials used to destroy the well, location sketch, date of destruction and permit number.

If you have any questions, please contact Wyman Hong at extension 235 or me at extension 233.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer III

WH:djf
encls.

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Alameda Federal Center
620 Central Avenue
Alameda, Ca.

FOR OFFICE USE

PERMIT NUMBER 95294
LOCATION NUMBER 2S/4W 11M80

CLIENT
Name General Services Administration Attn: Richard Chiu
Address 525 Market St. Voice 415 744 5806
City San Francisco Zip 94105

APPLICANT Larry Harlan
Name Cape Environmental Management Inc (CEMI) Fax 310 532 6022
Address 20280 S. Vermont Ave Suite 250 Voice 310 532 4500
City Torrance CA Zip 90502

TYPE OF PROJECT (see Attached text.)
Well Construction
Cathodic Protection ___
Water Supply ___
Monitoring ___
Geotechnical Investigation
General ___
Contamination ___
Well Destruction X (if located)

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 # 554979

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum Depth 15 ft.
Casing Diameter 4 in. Number 1
Surface Seal Depth ___ ft.

GEOTECHNICAL PROJECTS
Number of Borings 1 Maximum Depth ___ ft.
Hole Diameter ___ in.

ESTIMATED STARTING DATE May 17 1995
ESTIMATED COMPLETION DATE May 18, 1995

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Larry M. Harlan Date May 8, 1995

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 10 May
Wyman Hong

9199

May 11, 1995

ZONE 7
WATER RESOURCES ENGINEERING
DRILLING ORDINANCE

GENERAL SERVICES ADMINISTRATION
620 CENTRAL AVENUE
ALAMEDA
WELL 2S/4W 11M80
PERMIT 95294

Destruction Requirements:

1. Drill out the well so that the casing, seal and gravel pack are removed to the bottom of the well.

2. Using a tremie pipe, fill the hole to 2 feet below the lower of finished grade or original ground with neat cement.

3. After the seal has set, backfill the remaining hole with compacted material.

These destruction requirements as proposed by Larry Harlan of Cape Environmental meet or exceed the Zone 7 minimum requirements.

Appendix B

Boring Logs/Well Construction Details

BORING LOG MW2-R

SEE FIGURE 3

Location Sketch

Date MAY 17, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D., 10" REAM in. Drive Weight N.A. Drop N.A. in.

Surface Elevation N.A. (msl) Top of Casing Elevation 8.27 (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Depth (Feet)	Well Construction: Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)
1-15	BLANK; FILTER; SCREEN	PCC; BP	NO SAMPLES COLLECTED		N.A.	N.A.	N.A.	N.A.

SOIL/GEOLOGIC DESCRIPTION

NOTES:
1. TD=15 FT.
2. THIS BORING DRILLED THROUGH EXISTING MW-2 WELL, TO DESTROY AND REPLACE.
3. 8" DIA. INITIAL PILOT HOLE, 10" DIA. REAM.
4. CASING OBSTRUCTION @ - 3.5 FT. = ~ 10 DEGREE BEND IN ORIGINAL WELL PVC (2" DIA.) BLANK @ JOINT THREAD.
5. MW2-R REPLACEMENT WELL COMPLETION DETAILS IN COLUMN (LEFT) THIS LOG.
6. SWL=4.72 FT. (T.O.C.) 5/16/95 @ 15:00 HRS.
7. WELL CASING=4" NOMINAL DIA. SCH. 40 PVC.
8. WELL SCREEN=4" NOMINAL DIA. SCH. 40 PVC 0.020" MILL SLOT.
9. FILTER PACK=MONTEREY No.3 WASHED, GRADED HIGH-SILICA SAND.
10. HYDRATED BENTONITE PELLET SURFACE SEAL ("BAROID" 3/8" DIA.)
11. PORTLAND CEMENT CONCRETE MONUMENT WITH TRAFFICABLE AT-GRADE COVER.
12. WELL PRE-DEVELOPED BY VENTED SURGE BLOCK AND BAILER.
13. WELL CONSTRUCTION :
    CASING=4" NOMINAL DIA. SCH. 40 PVC
    SCREEN=0.020" MILL SLOT.
    FILTER=MONTEREY No.3 WASHED, GRADED HIGH-SILICA SAND.
    SURFACE SEAL=HYDRATED BENTONITE PELLETS.
    SURFACE MONUMENT=TRAFFICABLE AT-GRADE COVER IN TYPE I-II NEAT PORTLAND CEMENT CONCRETE.

LEGEND

TD	TOTAL DEPTH
FT	FEET
SCH	SCHEDULE
PCC	TYPE I-II NEAT PORTLAND CEMENT CONCRETE
BP	HYDRATED BENTONITE PELLET SEAL
N A	NOT APPLICABLE

2403C-16\BORE-LOG\MW-LOG2R DWG

NOTE This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

BORING LOG MW-4

SEE FIGURE 3

Location Sketch

Date MAY 17, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D. in. Drive Weight 140# Drop 30 in.

Surface Elevation N.A. (msl) Top of Casing Elevation 8.53 (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Depth (Feet)	Well Construction: Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)	SOIL/GEOLOGIC DESCRIPTION
1	BLANK	PCC					AC		6" ROLLED ASPHALTIC CONCRETE SURFACE
2		BP					SP		MEDIUM GRAY-BROWN POORLY GRADED FINE SAND WITH TRACE SILT, MEDIUM SAND AND ROOTS, SHELL FRAGMENTS. @ 5 FT. DAMP TO WET OR SATURATED. NO STAIN OR ODOR.
3									
4			TW/MW 4-4		76			3.4	
5					76				
6					8				
7		FILTER							
8		SCREEN							
9									
10			TW/MW 4-10		8		SM	7.6	MEDIUM GRAY FINE SILTY SAND WITH SHELL FRAGMENTS AND TRACE CLAY. LOOSE. SATURATED. NO SHEEN, STAIN OR ODOR.
11					14				
12					30				
13									
14								11.3	
15	HS		TW/MW 4-15		20		SW SC		MOTTLED MEDIUM GRAY TO MEDIUM BROWN SILTY-CLAYEY FINE SAND. DAMP. MODERATELY COHESIVE. NO STAIN OR ODOR.
16					30				
					50				

NOTES:
1. TD=16.5 FT.
2. SWL=4.53 FT. (5/18/95 @ 07:50 HRS.).
3. WELL CONSTRUCTION:
   CASING=NOMINAL 4" DIA. SCH. 40 PVC.
   SCREEN=0.020" MILL SLOT.
   FILTER=MONTEREY No.3 WASHED, GRADED HIGH-SILICA SAND.
   SURFACE SEAL=HYDRATED BENTONITE PELLETS.
   SURFACE MONUMENT=TRAFFICABLE AT-GRADE COVER IN TYPE I-II NEAT PORTLAND CEMENT CONCRETE.

LEGEND

TD	TOTAL DEPTH
FT	FEET
SWL	STATIC WATER LEVEL
SCH	SCHEDULE
PCC	TYPE I-II NEAT PORTLAND CEMENT CONCRETE
BP	HYDRATED BENTONITE PELLET SEAL
N.A.	NOT APPLICABLE
HS	HEAVING SAND

2403C-16\BORE-LOG\MW-LOG4.DWG

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

BORING LOG TW/MW-5

SEE FIGURE 3

Location Sketch

Date MAY 17, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D. in. Drive Weight 140# Drop 30 in.

Surface Elevation N.A. (msl) Top of Casing Elevation 8.37 (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Depth (Feet)	Well Construction: Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)	SOIL/GEOLOGIC DESCRIPTION
1	BLANK	PCC					AC		6" ROLLED ASPHALTIC CONCRETE SURFACE
2	BLANK	BP					SM		MOTTLED MEDIUM BROWN TO MEDIUM GRAY FINE TO MEDIUM SILTY SAND WITH SOME COARSE SAND AND FINE GRAVEL. DAMP TO MOIST. LOOSE. NO STAIN OR ODOR.
3	BLANK	BP					SM	0.0	MOTTLED MEDIUM BROWN TO MEDIUM GRAY FINE TO MEDIUM SILTY SAND WITH SOME COARSE SAND AND FINE GRAVEL. DAMP TO MOIST. LOOSE. NO STAIN OR ODOR.
4	BLANK	BP	TW/MW 5-4'		4		SM	0.0	MOTTLED MEDIUM BROWN TO MEDIUM GRAY FINE TO MEDIUM SILTY SAND WITH SOME COARSE SAND AND FINE GRAVEL. DAMP TO MOIST. LOOSE. NO STAIN OR ODOR.
5	BLANK	BP	TW/MW 5-4'		5		SP	0.0	MEDIUM GRAY POORLY GRADED MEDIUM SAND WITH ABUNDANT SHELL FRAGMENTS (REWORKED BEACH SAND) WET TO SATURATED. LOOSE. NO SHEEN, STAIN OR ODOR.
6	BLANK	BP	TW/MW 5-4'		6		SP	0.0	MEDIUM GRAY POORLY GRADED MEDIUM SAND WITH ABUNDANT SHELL FRAGMENTS (REWORKED BEACH SAND) WET TO SATURATED. LOOSE. NO SHEEN, STAIN OR ODOR.
7	BLANK	FILTER					SP	0.0	MEDIUM GRAY POORLY GRADED MEDIUM SAND WITH ABUNDANT SHELL FRAGMENTS (REWORKED BEACH SAND) WET TO SATURATED. LOOSE. NO SHEEN, STAIN OR ODOR.
8	BLANK	FILTER					SP	0.0	MEDIUM GRAY POORLY GRADED MEDIUM SAND WITH ABUNDANT SHELL FRAGMENTS (REWORKED BEACH SAND) WET TO SATURATED. LOOSE. NO SHEEN, STAIN OR ODOR.
9	BLANK	SCREEN					SP	0.0	MEDIUM GRAY POORLY GRADED MEDIUM SAND WITH ABUNDANT SHELL FRAGMENTS (REWORKED BEACH SAND) WET TO SATURATED. LOOSE. NO SHEEN, STAIN OR ODOR.
10	BLANK	SCREEN	TW/MW 5-10'		7		SP	1.6	SAME AS ABOVE. BUT LESS SHELL FRAGMENTS. SOME THIN (~3"-6" THICK PLASTIC CLAY LAYERS IN 10 TO 12 FT. DEPTH INTERVAL).
11	BLANK	SCREEN	TW/MW 5-10'		30		SP	1.6	SAME AS ABOVE. BUT LESS SHELL FRAGMENTS. SOME THIN (~3"-6" THICK PLASTIC CLAY LAYERS IN 10 TO 12 FT. DEPTH INTERVAL).
12	BLANK	SCREEN	TW/MW 5-10'		33		SP	1.6	SAME AS ABOVE. BUT LESS SHELL FRAGMENTS. SOME THIN (~3"-6" THICK PLASTIC CLAY LAYERS IN 10 TO 12 FT. DEPTH INTERVAL).
13	BLANK	SCREEN	TW/MW 5-13'		18		SP	6.6	SAME AS ABOVE.
14	HS	SCREEN	TW/MW 5-13'		30		SP	6.6	SAME AS ABOVE.
15					40				

NOTES:
1. TD=14.5 FT.
2. SWL=4.27 FT. (5/18/95 @ 07:50 HRS.).
3. CASING SILTED WITH ENTRAINED FORMATION SEDIMENT @ - 8.0 FT. ; WILL REQUIRE JETTING/DEVELOPMENT TO CLEAR.
4. WELL CONSTRUCTION :
   CASING=NOMINAL 2" DIA. SCH. 40 PVC.
   SCREEN=0.020" MILL SLOT.
   FILTER=MONTEREY No.3 WASHED, GRADED HIGH-SILICA SAND.
   SURFACE SEAL=HYDRATED BENTONITE PELLETS.
5. NO DEVELOPMENT RECORD OR WELL SAMPLING LOG HAS BEEN PREPARED. A WATER SAMPLE WAS COLLECTED BY HAND BAILER FOR LAB ANALYSIS. SEE PROJECT FILE FOR DETAILS.

LEGEND

TD	TOTAL DEPTH
FT	FEET
SWL	STATIC WATER LEVEL
SCH	SCHEDULE
PCC	TYPE I/II NEAT PORTLAND CEMENT CONCRETE
BP	HYDRATED BENTONITE PELLET SEAL
N.A.	NOT APPLICABLE
HS	HEAVING SAND

2403C-16\BORE-LOG\TW-LOG5.DWG

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

BORING LOG MW-6

SEE FIGURE 3

Location Sketch

Date MAY 18, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D. in. Drive Weight 140# Drop 30 in.

Surface Elevation N.A. (msl) Top of Casing Elevation 8.61 (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Depth (Feet)	Well Construction: Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)	SOIL/GEOLOGIC DESCRIPTION
0							AC		4" ROLLED ASPHALTIC CONCRETE SURFACE
1-5	BLANK	PCC BP	MW-6-4'		6 10 7		SP	68.2	MEDIUM GRAY-BROWN POORLY GRADED MEDIUM SAND WITH TRACE SHELL FRAGMENTS. DAMP TO WET. LOOSE. NO SHEEN, STAIN OR ODOR.
6-9	FILTER SCREEN						SM SC	95	MEDIUM TO DARK GRAY SILTY-CLAYEY FINE TO MEDIUM SAND WITH SOME SHELL FRAGMENTS. WET TO SATURATED. LOOSE. TO SLIGHTLY PLASTIC. VERY DARK GRAY TO BLACK SOIL MATERIAL @ 11 TO 12 FT. INTERVAL, WITH POSSIBLE FAINT DECAYED HC ODOR.
10-12			MW-6-10'		14 16 14				
13-14	HS		MW-6-13'		17 25 20		SP	128	MOTTLED MEDIUM BROWN-GRAY SAND WITH TRACE SILT. NO SHELL FRAGMENTS. WET. LOOSE. NO STAIN. POSSIBLE VERY FAINT DECAYED HC ODOR.

NOTES:
1. TD=14.5 FT.
2. SWL=
3. VERY SLOW WATER LEVEL RECOVERY NOTED DURING DEVELOPMENT.
4. WELL CONSTRUCTION:
   CASING=NOMINAL 4" DIA. SCH. 40 PVC.
   SCREEN=0.020" MILL SLOTTED.
   FILTER=MONTEREY No.3 WASHED, GRADED HIGH-SILICA SAND.
   SURFACE SEAL=HYDRATED BENTONITE PELLETS.
   SURFACE MONUMENT=TRAFFICABLE AT-GRADE COVER IN TYPE I-II NEAT PORTLAND CEMENT CONCRETE.

LEGEND

TD	TOTAL DEPTH
FT	FEET
SWL	STATIC WATER LEVEL
SCH	SCHEDULE
PCC	TYPE I-II NEAT PORTLAND CEMENT CONCRETE
BP	HYDRATED BENTONITE PELLET SEAL
HC	HYDROCARBON
N A	NOT APPLICABLE
HS	HEAVING SAND

2403C-16\BORE-LOG\MW-LOG6.DWG

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

BORING LOG TB-1

SEE FIGURE 4

Location Sketch

Date MAY 18, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D. in. Drive Weight 140# Drop 30 in.

Surface Elevation N.A. (msl) Top of Casing Elevation N.A. (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Elevation (Feet)	Depth (Feet)	Well Construction: Backfill Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)	SOIL/GEOLOGIC DESCRIPTION
								AC		4" ROLLED ASPHALTIC CONCRETE SURFACE
	1-5		PCC	TB-1-5'		5 3 6		SW	N.A.	DARK BROWN WELL GRADED FINE TO MEDIUM SAND WITH SOME COARSE SAND, FINE GRAVEL AND TRACE SILT AND CLAY. VERY MOIST TO WET. LOOSE. NO STAIN OR ODOR.
	10			TB-1-10'		17 11 7		SP	74.2	MEDIUM GRAY POORLY GRADED MEDIUM SAND WITH TRACE SILT AND CLAY AND ABUNDANT SHELL FRAGMENTS. SATURATED. LOOSE. NO SHEEN, STAIN OR ODOR.
	14-16		BP	TB-1-15'		30 40 50			46	SAME AS ABOVE, BUT COLOR TRANSITION AT APPROX. 14 TO 15 FT. TO MEDIUM BROWN COLOR AND LESS ABUNDANT SHELL FRAGMENTS. LOOSE. NO SHEEN, STAIN OR ODOR.

NOTES:
1. TD=16.5 FT.
2. ORIGINAL TB-1 DRILL ATTEMPT RESULTED IN DRILL REFUSAL @ 4 FT. (POSSIBLE LARGE ROCK OR BURIED PIPE).
3. RELOCATED TO PRESENT LOCATION 3 FT. WEST OF ORIGINAL ATTEMPT.
4. ORIGINAL ATTEMPT BORING BACKFILLED WITH PORTLAND CEMENT CONCRETE TO GRADE.
5. SOIL SAMPLE TB-1-5 RECOVERY 30% i.e. NO MATERIAL AVAILABLE FOR ATH/PID VAPOR TEST.
6. FREE GROUNDWATER FIRST ENCOUNTERED ~ 5 FT. BELOW GRADE.

LEGEND

TD	TOTAL DEPTH
FT	FEET
PCC	TYPE I-II NEAT PORTLAND CEMENT CONCRETE
BP	HYDRATED BENTONITE PELLET SEAL
N.A.	NOT APPLICABLE

2403C-16\BORE-LOG\TB-LOG1.DWG

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

BORING LOG TB-2

SEE FIGURE 4

Location Sketch

Date MAY 18, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D. in. Drive Weight 140# Drop 30 in.

Surface Elevation N.A. (msl) Top of Casing Elevation N.A. (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Elevation (Feet)	Depth (Feet)	Well Construction: Backfill Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)	SOIL/GEOLOGIC DESCRIPTION
								AC		4" ROLLED ASPHALTIC CONCRETE SURFACE
	1-9		PCC					SW		DARK BROWN WELL GRADED MEDIUM TO COARSE SAND WITH SOME GRAVEL TO ~ 1" DIA. AND TRACE TO MINOR FINES. DAMP TO WET BELOW 5 FT. DEPTH. LOOSE. NO STAIN, POSSIBLE FAINT HC ODOR.
	5			TB-2-5'		10 14 21			N.A.	ZONE OF COARSE GRAVEL OR LARGER MATERIAL @ ~ 5 TO 8 FT. DEPTH INTERVAL.
	10			TB-2-10'		6 4 3			37.7	SAME AS ABOVE.
	15			TB-2-15'		28 35 45		SM	36.4	MEDIUM GRAY FINE SILTY SAND WITH MINOR MEDIUM SAND AND TRACE CLAY. SATURATED. LOOSE. NO STAIN OR ODOR.

NOTES:
1. TD=16.5 FT.
2. SOIL SAMPLE RECOVERY 20% IN TB-1-5, THEREFORE INADEQUATE MATERIAL VOLUME FOR HEADSPACE VAPOR FIELD TEST WITH PID.
3. FREE GROUNDWATER FIRST ENCOUNTERED ~ 5 FT. BELOW GRADE.

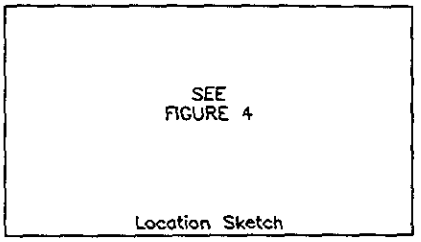
LEGEND
TD TOTAL DEPTH
FT FEET
PCC TYPE I-II NEAT PORTLAND CEMENT CONCRETE
HC HYDROCARBON
N A NOT APPLICABLE

2403C-16\BORE-LOG\TB-LOG2.DWG

NOTE This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

BORING LOG TB-3



Date MAY 18, 1995 Sheet 1 OF 1

Project GSA - ALAMEDA FEDERAL CENTER Project No. 2403C.16

Drilling Co. WEST HAZMAT Type of Rig MOBILE B-57 HSA

Hole Diameter 8" O.D. in. Drive Weight 140# Drop 30 in.

Surface Elevation N.A. (msl) Top of Casing Elevation N.A. (msl)

Logged by: KEN PITCHFORD, CEG

Approved by: KEN PITCHFORD, CEG

Elevation (Feet)	Depth (Feet)	Well Construction: Backfill Detail	Well Construction: Remarks	Samples: ID	Samples: Interval	Blows Per 6" Interval	Graphic Log	USCS	OVA/PID (PPM)	SOIL/GEOLOGIC DESCRIPTION
								AC		4" ROLLED ASPHALTIC CONCRETE SURFACE
	1-4							SW		DARK BROWN WELL GRADED MEDIUM TO COARSE SAND WITH MINOR GRAVEL TO APPROX. 1" DIA. AND TRACE FINES. DAMP TO WET @ APPROX. 5 FT. DEPTH. LOOSE. FINER ZONES SLIGHTLY PLASTIC, MODERATELY COHESIVE. NO STAIN OR ODOR.
	5			TB-3-5'		5 9 15			35.3	
	6-9									SPORADIC WOOD FRAGMENTS TO 2" DIA.
	10			TB-3-10'		6 8 20			33.6	SAME AS ABOVE, BUT ENTIRELY SATURATED, LOOSE, AND WITH MORE ABUNDANT GRAVEL (TO 1/2" DIA.). WOOD FRAGMENTS IN SAMPLE TB-3-10.
	11-14									
	15			TB-3-15'		22 56 50		SP	16.4	MEDIUM BROWN POORLY GRADED MEDIUM FINE SAND WITH LITTLE OR NO FINES AND NO SHELL FRAGMENTS. SATURATED. LOOSE. NO STAIN OR ODOR.
	16-30									

PCC

NOTES:
1. TD=16.5 FT.
2. FREE GROUNDWATER FIRST ENCOUNTERED ~ 5 FT. BELOW GRADE.
3. OILY BLEBS AND PETROLEUM HC SHEEN OBSERVED ON DRILL RODS AND AUGERS WHEN RETRACTED. DEPTH OF ORIGIN OF THIS MATERIAL UNCERTAIN.

LEGEND
TD TOTAL DEPTH
FT FEET
PCC TYPE I-II NEAT PORTLAND CEMENT CONCRETE
HC HYDROCARBON
N A NOT APPLICABLE

2403C-16\BORE-LOG\TB-LOG3.DWG

NOTE This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

CAPE ENVIRONMENTAL MANAGEMENT INC.

Appendix C

Well Development Logs

Well Development Log

Date 5/17/95 → 5/18/95 Sample Location MW-2R

Project Name GSA - ALAMEDA FED. CTR. Project No. _____

Weather Conditions CALM, CLEAR, ~70°F.

Observations/Comments _____

Development Completed By WEST HAZMAT DRILLING

QUALITY CONTROL

Development Method VENTED SURGE BLOCK AND PVC WIRELINE BAILER

Method to Measure Water Level ORS HC INTERFACE PROBE ELECTRIC CONTACT SOUNDER.

Development Lines: new cleaned _____

Method of Cleaning _____

Comments WELL SCREEN APPROX. 40 MINUTES AFTER DEVELOPING - SEE WELL SCREENING LOG

DEVELOPMENT DATA

Water Level (below MP) Start 4.14 FT End 4.14 FT

STANDING WATER VOLUME: ~13 GAL. (Assume 10-in ø borehole, 4in. ø casing, filter: 0.20 ft)

Measuring Point (MP) _____

Time	Pump Rate (gpm)	Discharge (gallons)	Color	Odor	Turbidity
5/17 1800	~3 GPM.	20	MEDIUM GRAY	NONE	OCCULT
1836	"	40	FAINT GRAY	"	TRANSPARENT
5/18 0810		50	"		NEAR CLEAR

NOTE: * SUSPENDED DEVELOPMENT TEMPORARILY ON 5/17 TO ALLOW WATER LEVEL TO RECOVER. RESUMED DEVELOPMENT 5/18/95 IN AM

* FIELD PERSONNEL (CEMI) = LARRY HARLOW / KARL PITCHFORD

Total Discharge 50 GAL. Casing Volumes ~4.0

Method of Disposal of Development Water TEMPORARY ON-SITE DRUM STORAGE.

Well Development Log

Date 5/12/95 Sample Location MW-4

Project Name GSA - ALAMEDA FED CENTER Project No. —

Weather Conditions CLEAR, BREEZE, ~70°F

Observations/Comments

Development Completed By WEST HAZMAT DRILLING

QUALITY CONTROL

Development Method VENTED SURGE BLOCK AND PVC NIBELINE BAILER.

Method to Measure Water Level ORS HYDROCARBON INTERFACE PROBE / ELECTRIC CONTACT SOUNDER.

Development Lines: new cleaned

Method of Cleaning

Comments WELL SAMPLED APPROX 60 MIN AFTER DEVELOPING (SEE WELL SAMPLING RECORD)

DEVELOPMENT DATA

Water Level (below MP) Start 4.53 FT. End 4.53 FT.

CASING/FILTER VOLUME: 12 GALLONS (Assume 4-in Ø casing, 10-in Ø hole, 0.20 filter porosity)

Measuring Point (MP) NORTH SIDE OF INNER CASING (MARKED "▲")

Time	Pump Rate (gpm)	Discharge (gallons)	Color	Odor	Turbidity
1700	~3 GPM	20	DARK GRAY	NONE	OCCULT
1730	"	40	LIGHT GRAY	"	TRANSLUCENT
1745	"	50	FAINT GRAY	"	CLEARING

NOTE: ENTRAINED AND SUSPENDED SEDIMENT SUBSTANTIALLY REDUCED AFTER 20 GALLONS EXTRACTED.

FIELD PERSONNEL (CAPE): LADDY HARLON, KEN PITCHFORD.

Total Discharge 50 GAL Casing Volumes ~4.2 @ 50 GAL.

Method of Disposal of Development Water TEMPORARY ON-SITE STORAGE / DOT DRUM.

Sheet 1 of 1

Well Development Log

Date 5/18/95 Sample Location MW-6

Project Name GSA - ALAMEDA FED. CENTER Project No. _____

Weather Conditions OVERCAST, COOL, ~ 70°F

Observations/Comments _____

Development Completed By WEST HAZMAT DRILLING

QUALITY CONTROL

Development Method VENTED SURGE BLOCK AND PVC WIRELINE BAILER.

Method to Measure Water Level ORS UC INTERFACE PROBE ELECTRIC CONTACT SOUNDER

Development Lines: (new) cleaned _____

Method of Cleaning _____

Comments [illegible]

DEVELOPMENT DATA

Water Level (below MP) Start _____ End _____

STANDING WATER VOLUME: ~1C GALLONS Assume 4-in. Ø casing, 10-in. Ø borehole, 0.25 P filterpack porosity

Measuring Point (MP) NORTH SIDE OF INNER CASING

Time	Pump Rate (gpm)	Discharge (gallons)	Color	Odor	Turbidity
12:00	~2-3 GPM (est.)	15	MED. GRAY	NONE	CLOUDY
1230	"	30	FAINT GRAY	"	CLOUDY
1200	"	45	FAINT GRAY	"	SLIGHT [illegible]

Total Discharge 50 GALLONS Casing Volumes ~~4~~ 3.3

Method of Disposal of Development Water TEMPORARY ON-SITE DRUM STORAGE

Appendix D

Groundwater Monitor Well Sampling and Field Data Sheet

Groundwater Monitor Well
Sampling & Field Data Sheet

Location No. TANK 1-2
Sample No. MW-2R
Project/Client: GENERAL SERVICES ADMINISTRATION
Location: ALAMEDA FEDERAL CENTER
Job No. _____

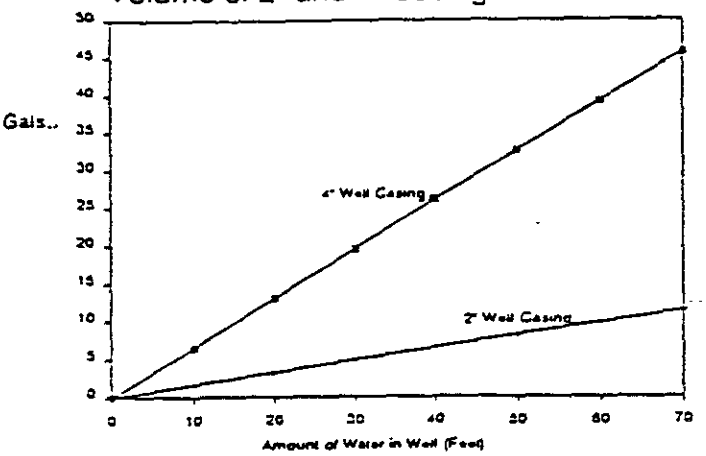
Date: 5/18/95 Time: 0810
Weather:
Conditions PARTLY CLOUDY TO CLEAR, CALM TO BREEZY
Air Temperature ~ 75° F.
Personnel LARRY HARLAN, KEN PITCHFORD

WELL INFORMATION

Casing, Dia.: 4-IN. Ø
( ) Stainless Steel
( ) Steel
(•) PVC
( ) Teflon
( ) Other
Water Level: 4.14 FT
Total Depth: 13.3 FT
Measuring Device
( ) M-Scope
(•) Other SOUNDER
Volume of Water in Casing 1.5 GAL.
Datum:
( ) Top of Surf. Casing
(•) Top of Well Casing
( ) Other _____

Intake, Diameter: 4-IN. Ø
( ) Stainless Steel
( ) Steel
(•) PVC
( ) Teflon
( ) Other
Well Conditions:
Well Clean to Bottom
(•) yes, ( ) no
Well in Good Condition
( ) yes, ( ) no
Surface Protection:
Clean (•) yes, ( ) no
Condition GOOD
Lock ( ) yes, (•) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

Method:
( ) Bladder Pump
( ) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other _____
Materials:
Pump/Bailer
( ) Teflon
(•) Stainless Steel
( ) PVC
( ) Other _____

Tubing/rope
( ) Teflon
(•) Polypropylene
( ) Nylon
(•) Other STEEL WIRE ROPE
Pumping Rate ~1-2 GPM (EST.)
Elapsed Time ~ 20 MIN.
Volume Pumped _____
Well Evacuated (•) yes, ( ) no
Number of Well Volumes Purged ~ 4.2

Purging Equipment
(•) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned

Time Series Data

Measurement	1	2	3	4
Well Volumes				
Water Temp.				
pH				
Other				

Sampling Data:

Method:
( ) Bladder Pump
(•) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other _____
Materials: Pump/Bailer
( ) Teflon
( ) Stainless Steel
(•) PVC
( ) Other _____
Materials: Tubing/rope
( ) Teflon
(•) Polypropylene
( ) Nylon
( ) Other _____
Sampling Equipment
(•) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
Metals Sample Field Filtered
( ) Yes
( ) No
Method N.A.

Physical & Chemical Data:

Appearance:
(•) Clear
( ) Turbid
( ) Color _____
( ) Immiscible Product
( ) Other _____
Filed Condition of Sample
Temp _____
pH _____
Other 4° C IN ICE CHEST

Certification: Kenneth D. Pitchford, C.E.G.
This sample was collected and handled in accordance with standard regulatory and corporate procedures

Groundwater Monitor Well
Sampling & Field Data Sheet

Location No. TANK 3-4 SITE
Sample No. MW-3
Project/Client: GENERAL SERVICES ADM'N.
Location: ALAMEDA FEDERAL CENTER
Job No.

Date: 2/12/95 Time: 1340 HRS.
Weather:
Conditions CLEAR, CALM, DRY
Air Temperature ~ 75°F
Personnel LARRY HARLAN KEN PITCHFORD

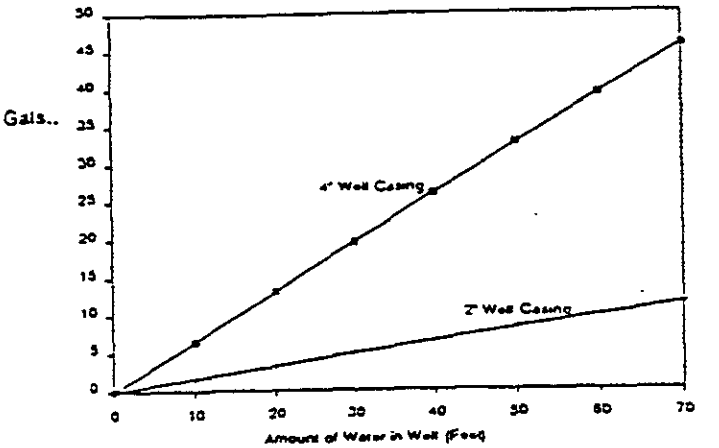
NOTE: WELL SILTED AT 12.5 FT, DUE TO POOR OR INCOMPLETE DEVELOPMENT (?).
• VERY SLOW RECOVERY, UNABLE TO PURGE 3 WELL VOLUMES
• HC SHEEN OBSERVED IN WATER SAMPLES.

WELL INFORMATION

Casing, Dia.: 2 - 4.2
( ) Stainless Steel
( ) Steel
(•) PVC
( ) Teflon
( ) Other
Water Level: 4.32
Total Depth: 15 FT SET
Measuring Device
( ) M-Scope
(•) Other TAPE MEASURE
Volume of Water in Casing ~ 2 GAL.
Datum:
( ) Top of Surf. Casing
( ) Top of Well Casing
( ) Other

Intake, Diameter: 2 - N.S.
( ) Stainless Steel
( ) Steel
(•) PVC
( ) Teflon
( ) Other
Well Conditions:
Well Clean to Bottom
( ) yes, ( ) no
Well in Good Condition
( ) yes, ( ) no
Surface Protection:
Clean ( ) yes, ( ) no
Condition SEAL
Lock (N) yes, ( ) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

Method:
( ) Bladder Pump
( ) Bailer
( ) Suomersible Pump
( ) Peristaltic Pump
( ) Other
Materials:
Pump/Bailer
( ) Teflon
(•) Stainless Steel
( ) PVC
( ) Other

Tubing/rope
( ) Teflon
( ) Polypropylene
( ) Nylon
(•) Other STEEL W/ TEFLON LINER
Pumping Rate ~ 1 GPM (EST.)
Elapsed Time ~ 1 HR
Volume Pumped
Well Evacuated (N) yes, ( ) no
Number of Well Volumes Purged

Purging Equipment
(•) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned

Time Series Data

Measurement	1	2	3	4
Well Volumes				
Water Temp.	65.4	65.1	64.8	64.5
pH	17.42	13.65	12.99	12.56
Other EC	648	624	670	860
				+EC

NOTE: •APPARENT pH METER MALFUNCTION.

Sampling Data:

Method:
( ) Bladder Pump
(N) Bailer
( ) Suomersible Pump
( ) Peristaltic Pump
( ) Other
Materials: Pump/Bailer
( ) Teflon
( ) Stainless Steel
(•) PVC
( ) Other
Materials: Tubing/rope
( ) Teflon
(N) Polypropylene
( ) Nylon
( ) Other
Sampling Equipment
(N) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
Metals Sample Field Filtered
( ) Yes
( ) No
• Method N.A.

Physical & Chemical Data:

Appearance:
( ) Clear
(•) Turbid - OCCULT
( ) Color BROWN
( ) Immiscible Product
( ) Other
Filed Condition of Sample
Temp
pH
Other 4°C IN ICE CHEST

Certification: Kenneth W. Pitchford, C.E.G.
This sample was collected and handled in accordance with standard regulatory and corporate proceedures

Groundwater Monitor Well
Sampling & Field Data Sheet

Location No. Tank 1-2 site
Sample No. MW- 4
Project/Client: General Serv. Adm. Admin.
Location: GSA - Alameda Federal Center
Job No. _____

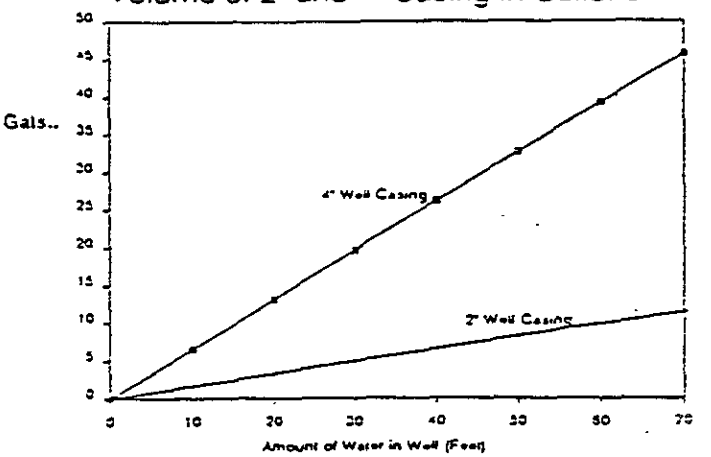
Date: 5/17/95 Time: 1900 hrs.
Weather:
Conditions Overcast, calm
Air Temperature ~ 70°F.
Personnel Larry Harlan, Ken Pitchford

WELL INFORMATION

Casing, Dia.: 4-in. nom.
( ) Stainless Steel
( ) Steel
(X) PVC (Sch. 40)
( ) Teflon
( ) Other
Water Level: - 4.54 ft.
Total Depth: 13 ft
Measuring Device
( ) M-Scope
(X) Other [illegible] probe
Volume of Water in Casing [illegible]
Datum:
( ) Top of Surf. Casing
(X) Top of Well Casing
( ) Other _____

Intake,
Diameter: 4-in. P
( ) Stainless Steel
( ) Steel
(X) PVC (Sch. 40)
( ) Teflon
( ) Other
Well Conditions:
Well Clean to Bottom
(X) yes, ( ) no
Well in Good Condition
(X) yes, ( ) no
Surface Protection:
Clean (X) yes, ( ) no
Condition [illegible]
Lock ( ) yes, (X) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

Method:
( ) Bladder Pump
(X) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other _____
Materials:
Pump/Bailer
( ) Teflon
(X) Stainless Steel
(X) PVC
( ) Other _____

Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
(X) Other Steel wire rope
Pumping Rate ~ 3 GPM (avg.)
Elapsed Time ~ 30 min.
Volume Pumped 50 gal.
Well Evacuated (X) yes, ( ) no
Number of Well Volumes Purged ~ 4.2

Purging Equipment
( ) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
(X) New PVC pipe, 2" ø

Time Series Data

Measurement	1	2	3	4
Well Volumes	4.2	4.2	4.2	
Water Temp.	64.8	64.1	66.9	
pH	5.05	4.79	4.79	
Other EC	6.66	6.41	7.02	

Sampling Data:

Method:
( ) Bladder Pump
(X) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other _____
Materials: Pump/Bailer
( ) Teflon
( ) Stainless Steel
(X) PVC
( ) Other _____
Materials: Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
( ) Other _____
Sampling Equipment
(X) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
Metals Sample Field Filtered
( ) Yes
( ) No
Method N.A.

Physical & Chemical Data:

Appearance:
( ) Clear
(X) Turbid
( ) Color faint gray
( ) Immiscible Product
( ) Other _____
Filed Condition of Sample
Temp _____
pH _____
Other 4°C in ice chest

Certification: Kenneth W. Pitchford, C.E.G.
This sample was collected and handled in accordance with standard regulatory and corporate procedures

Appendix E

Monitoring Well Survey Data

RON ARCHER

CIVIL ENGINEER INC.

CONSULTING • PLANNING • DESIGN • SURVEYING

4133 Mohr Ave., Suite E • Pleasanton, CA 94566
(510) 462-9372

MAY 18, 1995 JOB NO 2289

ELEVATIONS OF EXISTING MONITORING WELLS AT THE FEDERAL CENTER, LOCATED AT 620 CENTRAL AVENUE AT McKAY AVENUE, CITY OF ALAMEDA, ALAMEDA COUNTY, CALIFORNIA.

FOR: *CAPE ENVIRONMENTAL MANAGEMENT INC.*

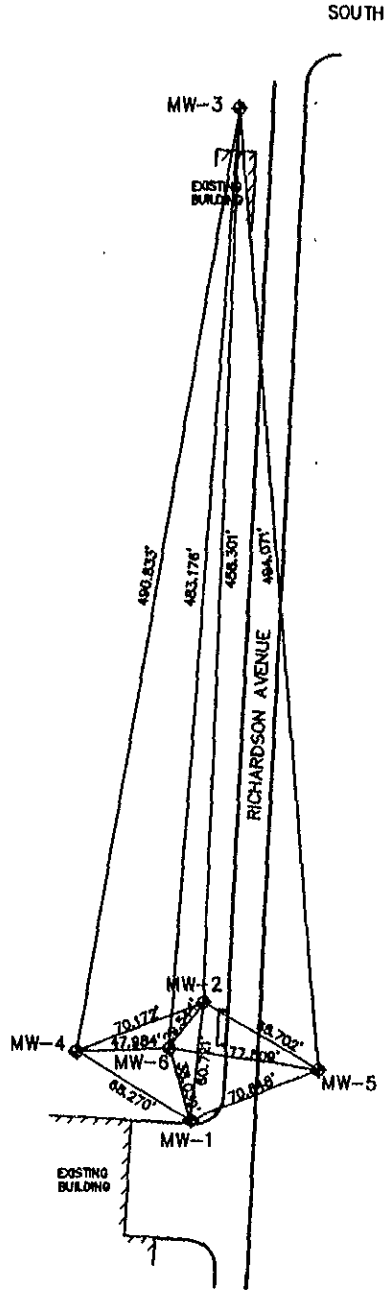
BENCHMARK:

A FOUND U.S.C & G.S. BRONZE DISK STAMPED CENT-SIXTH, 1947, SET IN A STANDARD CITY MONUMENT CASING, 12 INCHES BELOW THE SIDEWALK SURFACE AT THE NORTHWEST CORNER OF THE INTERSECTION OF 6TH STREET AND CENTRAL AVENUE. ELEVATION TAKEN AS 16.792 M.S.L.

MONITORING WELL DATA TABLE

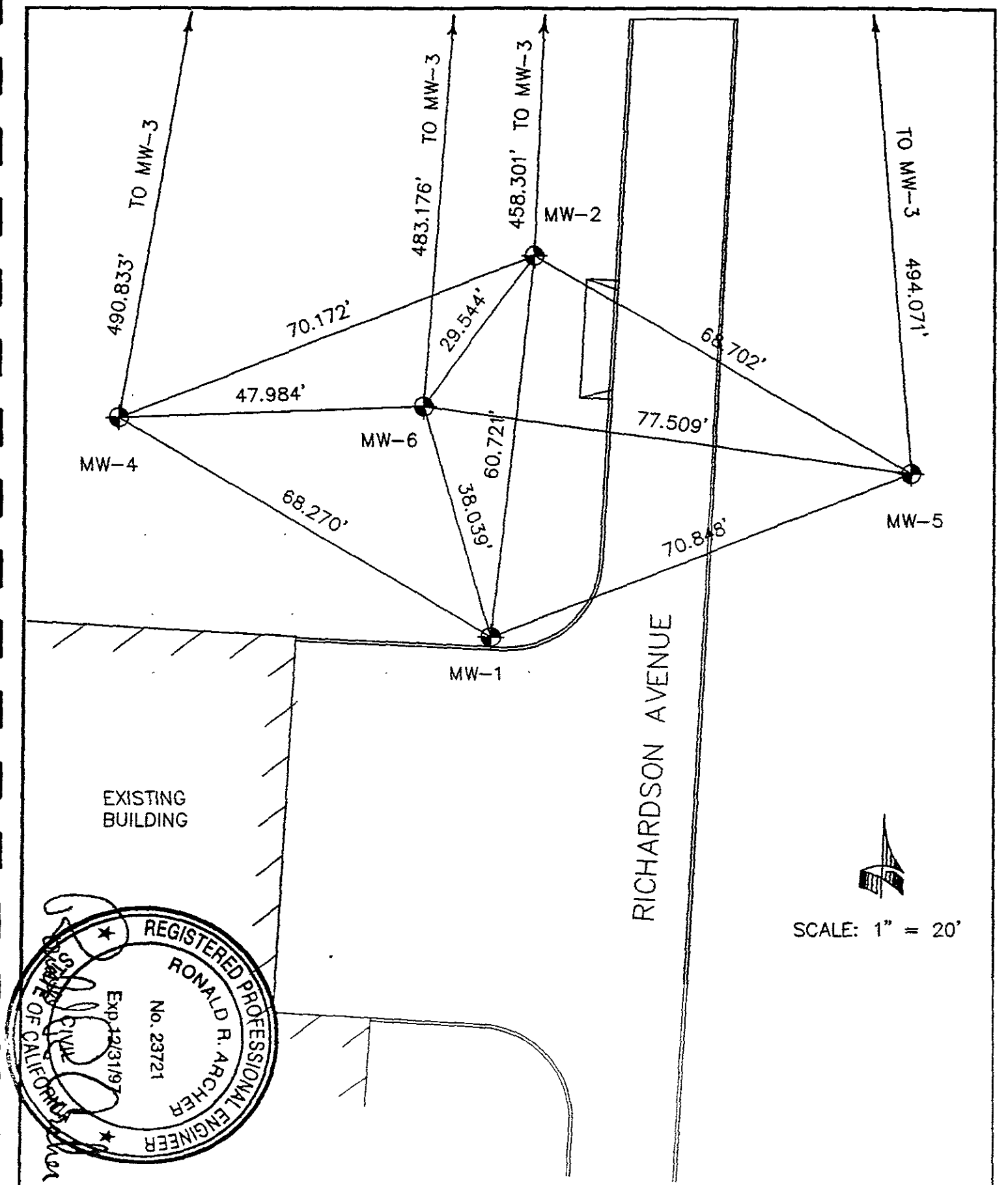
WELL DESIGNATION	TOP OF CASING ELEVATION	TOP OF BOX ELEVATION
MW-1	8.19	8.65
MW-2	8.27	8.73
MW-3	9.00	9.24
MW-4	8.53	8.73
MW-5	8.37	8.73
MW-6	8.61	8.75

SCALE: 1" = 100'

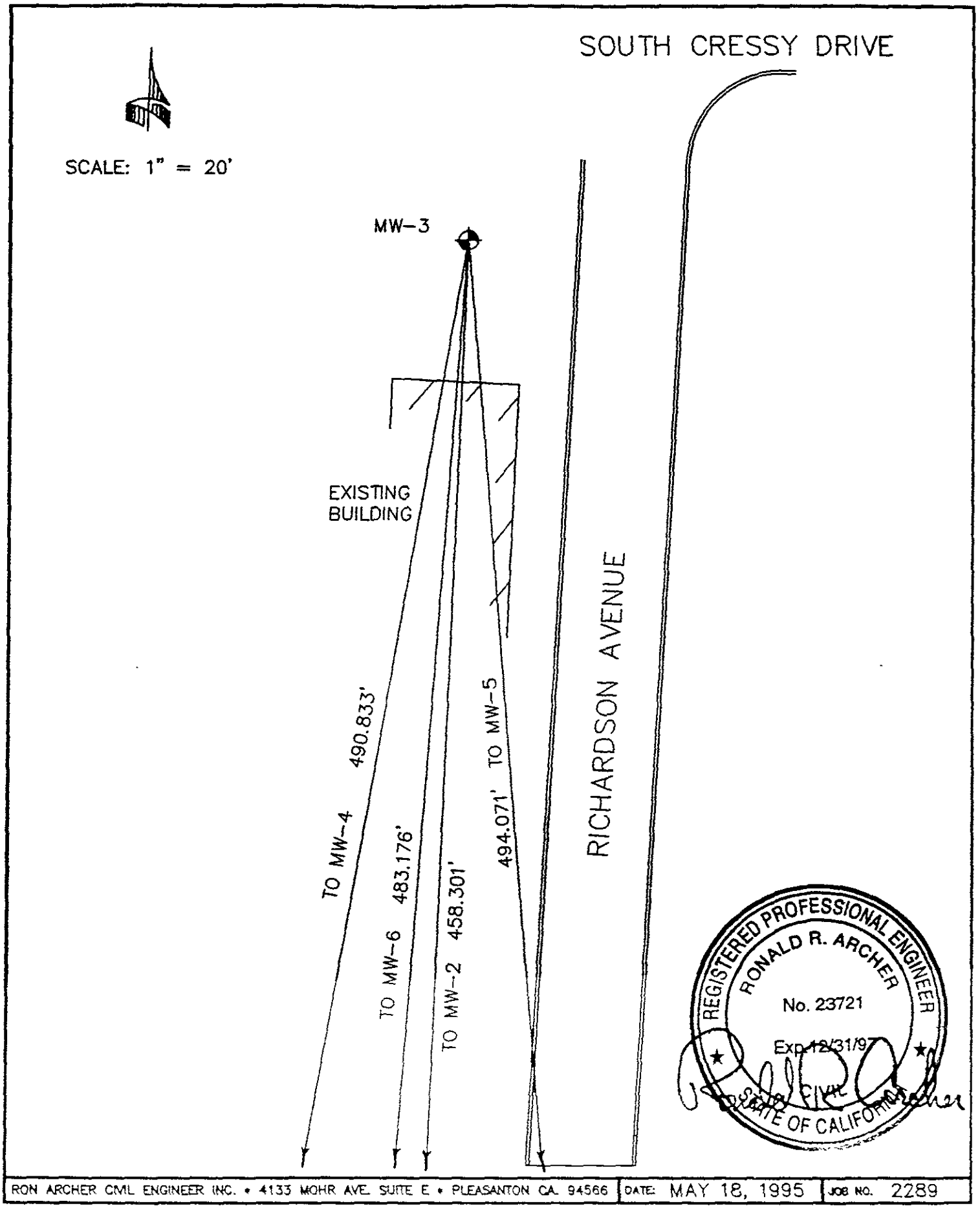


REGISTERED PROFESSIONAL ENGINEER
RONALD R. ARCHER
No. 23721
Exp. 12/31/97
CIVIL
STATE OF CALIFORNIA

RON ARCHER CIVIL ENGINEER INC. * 4133 MOHR AVE. SUITE E * PLEASANTON CA. 94566 | DATE: MAY 18, 1995 | JOB NO. 2289



RON ARCHER CIVIL ENGINEER INC. • 4133 MOHR AVE. SUITE E • PLEASANTON CA. 94566 | DATE: MAY 18, 1995 | JOB NO. 2289



RON ARCHER CIVIL ENGINEER INC. • 4133 MOHR AVE. SUITE E • PLEASANTON CA. 94566 | DATE: MAY 18, 1995 | JOB NO. 2289

Groundwater Monitor Well
Sampling & Field Data Sheet

Location No. TANK 1-2 S.S.
Sample No. MW-1
Project/Client: GENERAL SERVICES ADMIN.
Location: ALAMEDA FEDERAL CENTER
Job No.

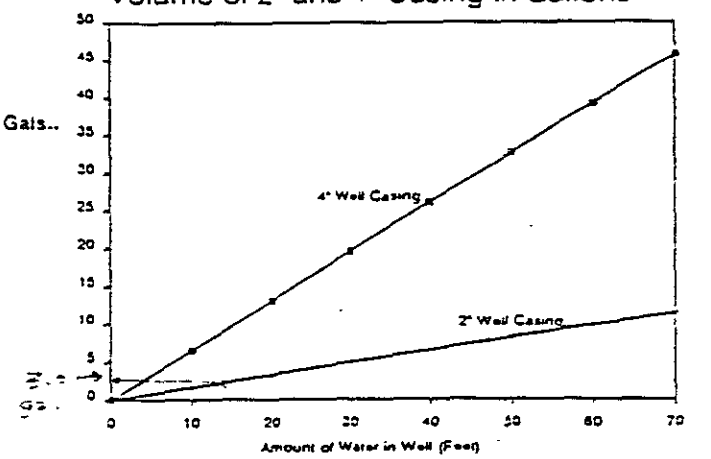
Date: 5/18/95 Time: 1240 HRS
Weather:
Conditions CLEAR, CALM, DRY
Air Temperature ~ 75°F
Personnel LARRY HORTON, KEN PITCHFORD

WELL INFORMATION

Casing, Dia.: 2-IN. Ø
( ) Stainless Steel
( ) Steel
(X) PVC
( ) Teflon
( ) Other
Water Level: 4.19
Total Depth: 15.0 FT.
Measuring Device
( ) M-Scope
(X) Other [illegible]
Volume of Water in Casing [illegible]
Datum:
( ) Top of Surf. Casing
(X) Top of Well Casing
( ) Other

Intake,
Diameter: 2-IN. Ø
( ) Stainless Steel
( ) Steel
(X) PVC
( ) Teflon
( ) Other
Well Conditions:
Well Clean to Bottom
(X) yes, ( ) no
Well in Good Condition
(X) yes, ( ) no
Surface Protection:
Clean (X) yes, ( ) no
Condition [illegible]
Lock ( ) yes, (X) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

Method:
( ) Bladder Pump
( ) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other
Materials:
Pump/Bailer
( ) Teflon
(X) Stainless Steel
(X) PVC
( ) Other

Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
(X) Other STEEL-LINE SCIENCE
Pumping Rate ~ 1 GPM (EST.)
Elapsed Time ~20 min.
Volume Pumped 9.0 GAL.
Well Evacuated (X) yes, ( )no
Number of Well Volumes Purged 3.0

Purging Equipment
( ) Dedicated
( ) Prepared Off-Site
(X) Field Cleaned

Time Series Data

Measurement	1	2	3	4
Well Volumes				
Water Temp.	68.5	68.5	68.2	68.6
pH	13.01	12.82	10.25	8.51
Other EC	716	664	605	572

Sampling Data:

Method:
( ) Bladder Pump
(X) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other
Materials: Pump/Bailer
( ) Teflon
( ) Stainless Steel
(X) PVC
( ) Other
Materials: Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
( ) Other
Sampling Equipment
(X) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
Metals Sample Field Filtered
( ) Yes
( ) No
Method N.A.

Physical & Chemical Data:

Appearance:
( ) Clear
(X) Turbid - SLIGHT
( ) Color PAINT BROWN
( ) Immiscible Product
( ) Other
Filed Condition of Sample
Temp
pH
Other 4°C IN ICE CHEST

Certification: Kenneth D. Pitchford, C.E.G.
This sample was collected and handled in accordance with standard regulatory and corporate procedures

Groundwater Monitor Well
Sampling & Field Data Sheet

Location No. T-2 TANK SITE
Sample No. MW-6
Project/Client: GENERAL SERVICES ADMIN.
Location: GSA - ALAMEDA GENERAL DEPOT
Job No. _____

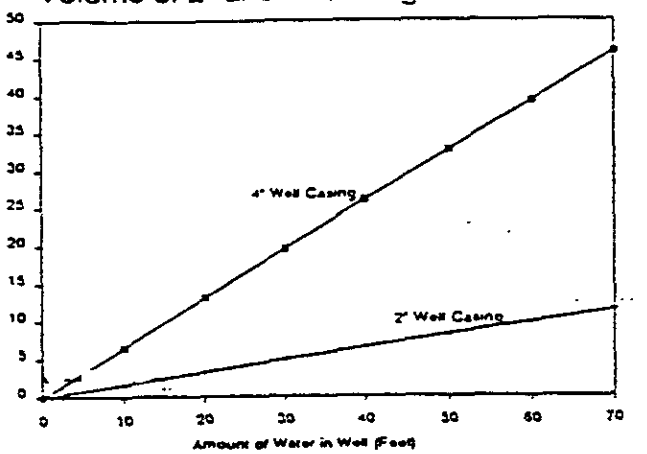
Date: 5/13/96 Time: 12:30 HRS.
Weather:
Conditions PARTLY CLOUDY, CALM
Air Temperature ~ 75 °F.
Personnel LARRY LARSEN KEN DITCHFORD

WELL INFORMATION

Casing, Dia.: 4 IN.
( ) Stainless Steel
( ) Steel
(+) PVC
( ) Teflon
( ) Other
Water Level: _____
Total Depth: 12 FT
Measuring Device
( ) M-Scope
(+) Other WATER LEVEL SOUNDER
Volume of Water in Casing 1.36 GAL.
Datum:
( ) Top of Surf. Casing
(+) Top of Well Casing
( ) Other _____

Intake, Diameter: 4 IN.
( ) Stainless Steel
( ) Steel
(+) PVC
( ) Teflon
( ) Other
Well Conditions:
Well Clean to Bottom
(+) yes, ( ) no
Well in Good Condition
(+) yes, ( ) no
Surface Protection:
Clean (+) yes, ( ) no
Condition GOOD
Lock ( ) yes, (+) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

Method:
( ) Bladder Pump
(+) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other _____
Materials:
Pump/Bailer
( ) Teflon
( ) Stainless Steel
(+) PVC
( ) Other _____

Tubing/rope
( ) Teflon
(+) Polypropylene
( ) Nylon
(+) Other STEEL WIRE ROPE
Pumping Rate ~ 1-3 GPM (EST.)
Elapsed Time ~ 2 HR.
Volume Pumped ~~55~~ 40 GAL
Well Evacuated (+) yes, ( ) no
Number of Well Volumes Purged ~~3.3~~ 3.3

Purging Equipment 1323 = T
( ) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
NEW DISPOSABLE

Time Series Data

Measurement	1	2	3	4
Well Volumes				
Water Temp.	77.7	74.2	72.6	71.9
pH	17.52	11.5	10.39	9.85
Other EC	6.35	662	6.57	663

NOTE: pH meter appears malfunctin.

Sampling Data:

Method:
( ) Bladder Pump
(+) Bailer
( ) Submersible Pump
( ) Peristaltic Pump
( ) Other _____
Materials: Pump/Bailer
( ) Teflon
( ) Stainless Steel
(+) PVC
( ) Other _____
Materials: Tubing/rope
( ) Teflon
(+) Polypropylene
( ) Nylon
( ) Other _____
Sampling Equipment
(+) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
Metals Sample Field Filtered
( ) Yes
( ) No
Method N.A.

Physical & Chemical Data:
Appearance:
( ) Clear
(+) Turbid
( ) Color LIGHT GRAY
( ) Immiscible Product
( ) Other _____
Filed Condition of Sample
Temp _____
pH _____
Other 4°C IN ICE CHEST

Certification: Kenneth D. Ditchford, C.E.G.
This sample was collected and handled in accordance with standard regulatory and corporate procedures

Appendix F

Certified Laboratory Reports and Sample Chain-of-Custody Documentation

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710. Phone 510) 486-0900

A N A L Y T I C A L R E P O R T

Prepared for:

Cape Environmental INC.
20280 South Vermont Ave
Suite 250
Torrance, CA 90502

Date: 02-JUN-95
Lab Job Number: 121127
Project ID: 2403C.16
Location: Alameda Federal Center

Reviewed by: _____

Reviewed by: _____

Curtis & Tompkins, Ltd

Client: Cape Environmental INC. **Laboratory Login Number: 121127**

Project Name: Alameda Federal Center Report Date: 02 June 95
Project Number: 2403C.16

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520EF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
121127-001	TW/MW4-10'	Soil	17-MAY-95	18-MAY-95	30-MAY-95	ND	mg/Kg	50	TR	20869
121127-002	TW/MW4-5'	Soil	17-MAY-95	18-MAY-95	30-MAY-95	ND	mg/Kg	50	TR	20869
121127-003	TW/MW4-15'	Soil	17-MAY-95	18-MAY-95	30-MAY-95	290	mg/Kg	50	TR	20869
121127-007	MW6-4'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	90.	mg/Kg	50	TR	20869
121127-008	MW6-10'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	98.	mg/Kg	50	TR	20869
121127-009	MW6-13'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	ND	mg/Kg	50	TR	20869
121127-011	TB1-10'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	ND	mg/Kg	50	TR	20869
121127-012	TB1-15'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	ND	mg/Kg	50	TR	20869
121127-014	TB2-10'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	520	mg/Kg	50	TR	20869
121127-015	TB2-15'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	ND	mg/Kg	50	TR	20869
121127-016	TB3-5'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	140	mg/Kg	50	TR	20869
121127-017	TB3-10'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	150	mg/Kg	50	TR	20869
121127-018	TB3-15'	Soil	18-MAY-95	18-MAY-95	30-MAY-95	120	mg/Kg	50	TR	20869

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd

Q C B a t c h R e p o r t

Client: Cape Environmental INC.
Project Name: Alameda Federal Center
Project Number: 2403C.16

Laboratory Login Number: 121127
Report Date: 02 June 95

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **QC Batch Number: 20869**

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	50	mg/Kg	SMWW 17:5520EF	30-MAY-95

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	89%	SMWW 17:5520EF	30-MAY-95
BSD	84%	SMWW 17:5520EF	30-MAY-95

		Control Limits
Average Spike Recovery	86%	80% - 120%
Relative Percent Difference	6.1%	< 20%

Curtis & Tompkins Ltd

Client: Cape Environmental INC. **Laboratory Login Number: 121127**

Project Name: Alameda Federal Center Report Date: 02 June 95
Project Number: 2403C.16

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **METHOD: SMWW 17:5520BF**

Lab ID	Sample ID	Matrix	Sampled	Received	Analyzed	Result	Units	RL	Analyst	QC Batch
121127-019	TW5	Water	17-MAY-95	18-MAY-95	24-MAY-95	ND	mg/L	7	TR	20813
121127-020	MW4	Water	17-MAY-95	18-MAY-95	24-MAY-95	ND	mg/L	5	TR	20813
121127-021	MW-2R	Water	18-MAY-95	18-MAY-95	24-MAY-95	ND	mg/L	5	TR	20813
121127-022	MW1	Water	18-MAY-95	18-MAY-95	24-MAY-95	ND	mg/L	5	TR	20813
121127-023	MW3	Water	18-MAY-95	18-MAY-95	24-MAY-95	ND	mg/L	5	TR	20813
121127-024	MW6	Water	18-MAY-95	18-MAY-95	24-MAY-95	ND	mg/L	5	TR	20813

ND = Not Detected at or above Reporting Limit (RL).

Curtis & Tompkins, Ltd

Q C B a t c h R e p o r t

Client: Cape Environmental INC.
Project Name: Alameda Federal Center
Project Number: 2403C.16

Laboratory Login Number: 121127
Report Date: 02 June 95

ANALYSIS: Hydrocarbon Oil & Grease (Gravimetric) **QC Batch Number: 20813**

Blank Results

Sample ID	Result	MDL	Units	Method	Date Analyzed
BLANK	ND	5	mg/L	SMWW 17:5520BF	24-MAY-95

Spike/Duplicate Results

Sample ID	Recovery	Method	Date Analyzed
BS	86%	SMWW 17:5520BF	24-MAY-95
BSD	82%	SMWW 17:5520BF	24-MAY-95

		Control Limits
Average Spike Recovery	84%	80% - 120%
Relative Percent Difference	4.4%	< 20%

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER

DATE SAMPLED: 05/17,18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26,27/95
DATE REPORTED: 06/02/95
BATCH NO: 20779

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	SAMPLE ID	DIESEL RANGE (mg/Kg)	REPORTING LIMIT (mg/Kg)
121127-001	TW/MW4-10'	19*	2.0
121127-002	TW/MW4-5'	3.3*	1.0
121127-003	TW/MW4-15'	3.2*	1.0
121127-007	MW6-4'	ND	1.0
121127-008	MW6-10'	25*	5.0
121127-009	MW6-13'	ND	1.0
121127-011	TB1-10'	ND	1.0
121127-012	TB1-15'	ND	1.0
121127-014	TB2-10'	3.2*	1.0
121127-015	TB2-15'	ND	1.0
121127-016	TB3-5'	9.3*	5.0
121127-017	TB3-10'	42*	5.0
121127-018	TB3-15'	10*	1.0
METHOD BLANK	N/A	ND	1.0

ND = Not detected at or above reporting limit.

* Sample chromatogram does not resemble diesel standard.

QA/QC SUMMARY: MS/MSD of sample no: 121127-015

RPD,%	15
RECOVERY, %	82

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER

DATE SAMPLED: 05/17,18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/29/95
DATE ANALYZED: 05/30,31/95
DATE REPORTED: 06/02/95
BATCH NO: 20875

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	DIESEL RANGE (ug/L)	REPORTING LIMIT (ug/L)
121127-019	TW5	680*	50
121127-020	MW4	ND	50
121127-021	MW-2R	ND	50
121127-022	MW1	5,500*	50
121127-023	MW3	92*	50
121127-024	MW6	ND	50
METHOD BLANK	N/A	ND	50

ND = Not detected at or above reporting limit.

* Sample chromatogram does not resemble diesel standard.

QA/QC SUMMARY: BS/BSD

RPD, %	4
RECOVERY, %	103

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER

DATE SAMPLED: 05/17,18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/25/95
DATE REPORTED: 06/02/95
BATCH NO.: 20773

Total Volatile Hydrocarbons with BTXE in Solids and Wastes
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (mg/Kg)	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)
121127-001	TW/MW4-10'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-002	TW/MW4-5'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-003	TW/MW4-15'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-007	MW6-4'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-008	MW6-10'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-009	MW6-13'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-011	TB1-10'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-012	TB1-15'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-014	TB2-10'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-015	TB2-15'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-016	TB3-5'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-017	TB3-10'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
121127-018	TB3-15'	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
METHOD BLANK	N/A	ND(1.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY: MS/MSD of sample no:121128-002

RPD, %	<1
RECOVERY, %	76

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER

DATE SAMPLED: 05/17,18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/24/95
DATE REPORTED: 06/02/95
BATCH NO.: 20774

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
121127-019	TW5	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
121127-020	MW4	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
121127-021	MW-2R	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
121127-022	MW1	ND(50)	1.1	ND(0.5)	0.9	1.6
121127-023	MW3	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
121127-024	MW6	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)
METHOD BLANK	N/A	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY: MS/MSD of sample no:121106-001

RPD, %	2
RECOVERY, %	87

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-001
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW/MW4-10'

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/30/95
DATE REPORTED: 06/02/95
BATCH NO: 20894

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	91 %
Toluene-d8	112 %
Bromofluorobenzene	71 %

Curtis & Tompkins Ltd

LABORATORY NUMBER: 121127-002
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW/MW4-5'

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/30/95
DATE REPORTED: 06/02/95
BATCH NO: 20894

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	98 %
Toluene-d8	97 %
Bromofluorobenzene	86 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-003
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW/MW4-15'

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	103 %
Toluene-d8	97 %
Bromofluorobenzene	85 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-007
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6-4'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/30/95
DATE REPORTED: 06/02/95
BATCH NO: 20894

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	98 %
Toluene-d8	95 %
Bromofluorobenzene	83 %

Curtis & Tompkins Ltd.

LABORATORY NUMBER: 121127-008
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.
* Surrogate recovery out due to matrix interference.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	102 %	
Toluene-d8	124 %	
Bromofluorobenzene	52 %	*

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-009
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6-13'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	103 %
Toluene-d8	99 %
Bromofluorobenzene	79 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-011
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB1-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	104 %
Toluene-d8	98 %
Bromofluorobenzene	84 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-012
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB1-15'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	100 %
Toluene-d8	101 %
Bromofluorobenzene	80 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-014
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB2-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	104 %
Toluene-d8	82 %
Bromofluorobenzene	85 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-015
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB2-15

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101 %
Toluene-d8	98 %
Bromofluorobenzene	82 %

Curtis & Tompkins Ltd

LABORATORY NUMBER: 121127-016
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB3-5'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.
* Surogate recovery out due to matrix effect.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	103 %
Toluene-d8	190 % *
Bromofluorobenzene	51 % *

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-017
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB3-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	107 %
Toluene-d8	102 %
Bromofluorobenzene	78 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-018
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB3-15'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	101 %
Toluene-d8	95 %
Bromofluorobenzene	78 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE ANALYZED: 05/30/95
DATE REPORTED: 06/02/95
BATCH NO: 20894

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	95 %
Toluene-d8	92 %
Bromofluorobenzene	90 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	100 %
Toluene-d8	93 %
Bromofluorobenzene	87 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20842

EPA 8010 Compound List by EPA 8240
Volatile Halocarbons in Soil & Wastes

Compound	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Chloromethane	ND	10
Bromomethane	ND	10
Vinyl chloride	ND	10
Chloroethane	ND	10
Methylene chloride	ND	20
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
Freon 113	ND	5.0
1,2-Dichloroethane	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon tetrachloride	ND	5.0
Bromodichloromethane	ND	5.0
1,2-Dichloropropane	ND	5.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
Dibromochloromethane	ND	5.0
Bromoform	ND	10
Tetrachloroethylene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
Chlorobenzene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	112 %
Toluene-d8	97 %
Bromofluorobenzene	84 %

Curtis & Tompkins, Ltd

8240 Laboratory Control Sample Report

Curtis & Tompkins, Ltd

Lab No: QC94004
Date Analyzed: 31-MAY-95
Matrix: SOIL
Batch No: 20894 425151001022

LCS Datafile: CEU22
Operator: LFL

Compound	ug/Kg	SpikeAmt	% Rec	Limits
1,1-Dichloroethene	48.4	50	97 %	59-172%
Trichloroethene	41.1	50	82 %	62-137%
Benzene	43.8	50	88 %	66-142%
Toluene	45.8	50	92 %	59-139%
Chlorobenzene	44.1	50	88 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	51.4	50	103 %	75-143%
Toluene-d8	45.7	50	91 %	77-134%
Bromofluorobenzene	42.2	50	84 %	65-129%

Results within Specifications - PASS

Note: Instrument C and D surrogates based on LCS data

Curtis & Tompkins, Ltd

8010MS MS/MSD Report

Curtis & Tompkins, Ltd

Matrix Sample Number: 121127-002
Lab No: QC93804 QC93805
Matrix: SOIL
Batch No: 20842 425146207016 425146214017 425146166010

Date Analyzed: 26-MAY-95
Spike File: CEQ16
Spike Dup File: CEQ17
Analyst: LFL

	Instrdg	SpikeAmt	% Rec	Limits
MS RESULTS				
1,1-Dichloroethene	69.7	50	139 %	59-172%
Trichloroethene	48.4	50	97 %	62-137%
Benzene	49.8	50	100 %	66-142%
Toluene	51.4	50	103 %	59-139%
Chlorobenzene	49.7	50	99 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	53.8	50	108 %	75-143%
Toluene-d8	47.2	50	94 %	77-134%
Bromofluorobenzene	40	50	80 %	65-129%
MSD RESULTS				
1,1-Dichloroethene	58.3	50	117 %	59-172%
Trichloroethene	42.1	50	84 %	62-137%
Benzene	44.6	50	89 %	66-142%
Toluene	47.7	50	95 %	59-139%
Chlorobenzene	45.1	50	90 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	51.2	50	102 %	75-143%
Toluene-d8	48.6	50	97 %	77-134%
Bromofluorobenzene	42.9	50	86 %	65-129%
MATRIX RESULTS				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	0			
Toluene	0			
Chlorobenzene	0			
RPD DATA				
1,1-Dichloroethene	18 %			< 22%
Trichloroethene	14 %			< 24%
Benzene	11 %			< 21%
Toluene	8 %			< 21%
Chlorobenzene	10 %			< 21%

Results within Specifications - PASS

Curtis & Tompkins Ltd

LABORATORY NUMBER: 121127-019
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW5

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20844

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	1.0	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	99 %
Toluene-d8	87 %
Bromofluorobenzene	91 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-020
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW4

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20844

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	99 %
Toluene-d8	86 %
Bromofluorobenzene	91 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-021
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW-2R

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20844

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	100 %
Toluene-d8	87 %
Bromofluorobenzene	90 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-022
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW1

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20844

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	3.0	1.0
trans-1,2-Dichloroethene	3.0	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	7.0	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	1.0	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	100 %
Toluene-d8	87 %
Bromofluorobenzene	92 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20844

EPA 8010 Compound List by EPA 8240
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

1,2-Dichloroethane-d4	97 %
Toluene-d8	77 %
Bromofluorobenzene	102 %

Curtis & Tompkins, Ltd

8240 Laboratory Control Sample Report

Curtis & Tompkins, Ltd.

Lab No: QC93814 LCS Datafile: DEQ03
Date Analyzed: 26-MAY-95
Matrix: WATER Operator: TW
Batch No: 20844 435146116003

Compound	ug/L	SpikeAmt	% Rec	Limits
1,1-Dichloroethene	46.0	50	92 %	61-145%
Trichloroethene	41.6	50	83 %	71-120%
Benzene	42.6	50	85 %	76-127%
Toluene	42.0	50	84 %	76-125%
Chlorobenzene	41.1	50	82 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	47.2	50	94 %	75-143%
Toluene-d8	43.0	50	86 %	77-134%
Bromofluorobenzene	44.6	50	89 %	65-129%

Results within Specifications - PASS

Note: Instrument C and D surrogates based on LCS data

Curtis & Tompkins, Ltd

8010MS MS/MSD Report

Curtis & Tompkins, Ltd.

Matrix Sample Number: 121127-022 Date Analyzed: 26-MAY-95
Lab No: QC93843 QC93844 Spike File: DEQ13
Matrix: WATER Spike Dup File: DEQ14
Batch No: 20844 435146177013 435146183014 435146171012 Analyst: TW

	Instrdg	SpikeAmt	% Rec	Limits
MS RESULTS				
1,1-Dichloroethene	47.5	50	95 %	61-145%
Trichloroethene	52.1	50	90 %	71-120%
Benzene	46.8	50	91 %	76-127%
Toluene	44.8	50	90 %	76-125%
Chlorobenzene	43.8	50	88 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	50.3	50	101 %	75-143%
Toluene-d8	43.5	50	87 %	77-134%
Bromofluorobenzene	45.5	50	91 %	65-129%
MSD RESULTS				
1,1-Dichloroethene	45.6	50	91 %	61-145%
Trichloroethene	50.9	50	87 %	71-120%
Benzene	45.7	50	89 %	76-127%
Toluene	43.7	50	87 %	76-125%
Chlorobenzene	42.6	50	85 %	75-130%
Surrogate Recoveries				
1,2-Dichloroethane-d4	49.3	50	99 %	75-143%
Toluene-d8	43.5	50	87 %	77-134%
Bromofluorobenzene	45.7	50	91 %	65-129%
MATRIX RESULTS				
1,1-Dichloroethene	0			
Trichloroethene	7.23			
Benzene	1.16			
Toluene	0			
Chlorobenzene	0			

RPD DATA		
1,1-Dichloroethene	4 %	< 14%
Trichloroethene	2 %	< 14%
Benzene	2 %	< 11%
Toluene	3 %	< 13%
Chlorobenzene	3 %	< 13%

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-023
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW3

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/25/95
DATE REPORTED: 06/02/95
BATCH NO: 20812

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

Surrogate Recovery	
Bromobenzene	105 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-024
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE ANALYZED: 05/25/95
DATE REPORTED: 06/02/95
BATCH NO: 20812

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

Surrogate Recovery	
Bromobenzene	101 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE ANALYZED: 05/25/95
DATE REPORTED: 06/02/95
BATCH NO: 20812

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	20
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Bromoform	ND	2.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

Surrogate Recovery	
Bromobenzene	101 %

Curtis & Tompkins, Ltd

8010 BS/BSD Report

Curtis & Tompkins, Ltd.

Date Analyzed: 25-MAY-95
Spike File: 145W002
Matrix: WATER
Spike Dup File: 145W003
Batch No: 20812 325145147002 325145156003 Analyst: LW

	Instrdg	SpikeAmt	% Rec	Limits
BS RESULTS				
1,1-Dichloroethene	24.2	20	121 %	68-134%
Trichloroethene	23.0	20	115 %	85-141%
Chlorobenzene	20.8	20	104 %	69-135%
Surrogate Recoveries				
Bromobenzene	100.9	100	101 %	85-119%
BSD RESULTS				
1,1-Dichloroethene	22.5	20	112 %	68-134%
Trichloroethene	21.9	20	110 %	85-141%
Chlorobenzene	21.0	20	105 %	69-135%
Surrogate Recoveries				
Bromobenzene	102.2	100	102 %	85-119%
RPD DATA				
1,1-Dichloroethene	7 %			< 14%
Trichloroethene	5 %			< 14%
Chlorobenzene	1 %			< 13%

Column: Rtx 502.2
Water Limits based on LCS Data Generated 5/95
Soil Limits based on 3/90 SOW

Results within Specifications - PASS

Curtis & Tompkins, Ltd

Curtis & Tompkins, Ltd.

8240 Laboratory Control Sample Report

Lab No: QC93939 LCS Datafile: CEU03
Date Analyzed: 30-MAY-95
Matrix: SOIL Operator: LFL
Batch No: 20878 425150110003

Compound	ug/Kg	SpikeAmt	% Rec	Limits
1,1-Dichloroethene	44.3	50	89 %	59-172%
Trichloroethene	39.6	50	79 %	62-137%
Benzene	41.0	50	82 %	66-142%
Toluene	44.2	50	88 %	59-139%
Chlorobenzene	42.9	50	86 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	50.0	50	100 %	75-143%
Toluene-d8	46.2	50	93 %	77-134%
Bromofluorobenzene	42.7	50	85 %	65-129%

Results within Specifications - PASS

Note: Instrument C and D surrogates based on LCS data

Curtis & Tompkins, Ltd

8240 MS/MSD Report

Curtis & Tompkins, Ltd.

Matrix Sample Number: 121154-001 Date Analyzed: 30-MAY-95
Lab No: QC93943 QC93944 Spike File: CEU09
Matrix: SOIL Spike Dup File: CEU10
Batch No: 20878 425150156009 425150163010 425150135006 Analyst: LFL

	Instrdg	SpikeAmt	% Rec	Limits
MS RESULTS				
1,1-Dichloroethene	47.4	50	95 %	59-172%
Trichloroethene	39.9	50	80 %	62-137%
Benzene	42.7	50	85 %	66-142%
Toluene	46.7	50	93 %	59-139%
Chlorobenzene	43.9	50	88 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	46.1	50	92 %	75-143%
Toluene-d8	46.9	50	94 %	77-134%
Bromofluorobenzene	40.8	50	82 %	65-129%
MSD RESULTS				
1,1-Dichloroethene	45.6	50	91 %	59-172%
Trichloroethene	40.3	50	81 %	62-137%
Benzene	42.6	50	85 %	66-142%
Toluene	46.8	50	94 %	59-139%
Chlorobenzene	44.5	50	89 %	60-133%
Surrogate Recoveries				
1,2-Dichloroethane-d4	46.5	50	93 %	75-143%
Toluene-d8	49.2	50	98 %	77-134%
Bromofluorobenzene	39.8	50	80 %	65-129%
MATRIX RESULTS				
1,1-Dichloroethene	0			
Trichloroethene	0			
Benzene	0			
Toluene	0			
Chlorobenzene	0			

RPD DATA		
1,1-Dichloroethene	4 %	< 22%
Trichloroethene	1 %	< 24%
Benzene	0 %	< 21%
Toluene	0 %	< 21%
Chlorobenzene	1 %	< 21%

Results within Specifications - PASS

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-001
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW/MW4-10'

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	450	330
Anthracene	ND	330
Fluoranthene	1,400	330
Pyrene	3,400*	3300
Benzo(a)anthracene	740	330
Chrysene	1,000	330
Benzo(b)fluoranthene	1,000	330
Benzo(k)fluoranthene	660	330
Benzo(a)pyrene	1,400	330
Indeno(1,2,3-cd)pyrene	770	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	980	330

ND = Not detected at or above reporting limit.

* Result obtained from a 1:10 dilution analyzed on 05/30/95.

SURROGATE RECOVERIES

Nitrobenzene-d5	75 %
2-Fluorobiphenyl	76 %
Terphenyl-d14	112 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-002
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW/MW4-5'

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES	
Nitrobenzene-d5	71 %
2-Fluorobiphenyl	77 %
Terphenyl-d14	88 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-003
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW/MW4-15'

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES	
Nitrobenzene-d5	62 %
2-Fluorobiphenyl	70 %
Terphenyl-d14	85 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-007
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6-4'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES	
Nitrobenzene-d5	71 %
2-Fluorobiphenyl	74 %
Terphenyl-d14	87 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-008
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	Detected(240)	330
Anthracene	ND	330
Fluoranthene	490	330
Pyrene	1,100	330
Benzo(a)anthracene	450	330
Chrysene	390	330
Benzo(b)fluoranthene	660	330
Benzo(k)fluoranthene	540	330
Benzo(a)pyrene	830	330
Indeno(1,2,3-cd)pyrene	370	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	460	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	75 %
2-Fluorobiphenyl	97 %
Terphenyl-d14	118 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-009
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6-13'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	62 %
2-Fluorobiphenyl	74 %
Terphenyl-d14	95 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-011
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB1-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	Detected(230)	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES	
Nitrobenzene-d5	69 %
2-Fluorobiphenyl	78 %
Terphenyl-d14	95 %

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-012
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB1-15'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	63 %
2-Fluorobiphenyl	70 %
Terphenyl-d14	85 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-014
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB2-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/30/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	67 %
2-Fluorobiphenyl	76 %
Terphenyl-d14	103 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-015
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB2-15'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES	
Nitrobenzene-d5	46 %
2-Fluorobiphenyl	54 %
Terphenyl-d14	97 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-016
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB3-5'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	73 %
2-Fluorobiphenyl	85 %
Terphenyl-d14	126 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-017
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB3-10'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/30/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	420	330
Anthracene	ND	330
Fluoranthene	1,100	330
Pyrene	2,600	330
Benzo(a)anthracene	660	330
Chrysene	780	330
Benzo(b)fluoranthene	680	330
Benzo(k)fluoranthene	710	330
Benzo(a)pyrene	930	330
Indeno(1,2,3-cd)pyrene	340	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	410	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	62 %
2-Fluorobiphenyl	76 %
Terphenyl-d14	129 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-018
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TB3-15'

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	Detected(260)	330
Anthracene	ND	330
Fluoranthene	900	330
Pyrene	1,500	330
Benzo(a)anthracene	410	330
Chrysene	500	330
Benzo(b)fluoranthene	370	330
Benzo(k)fluoranthene	370	330
Benzo(a)pyrene	590	330
Indeno(1,2,3-cd)pyrene	Detected(270)	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	330	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	70 %
2-Fluorobiphenyl	80 %
Terphenyl-d14	115 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE EXTRACTED: 05/26/95
DATE ANALYZED: 05/27/95
DATE REPORTED: 06/02/95
BATCH NO: 20859

Polynuclear Aromatic Hydrocarbons in Soils & Wastes by EPA 8270
Extraction Method: EPA 3550

COMPOUND	RESULT ug/Kg	REPORTING LIMIT ug/Kg
Naphthalene	ND	330
Acenaphthylene	ND	330
Acenaphthene	ND	330
Fluorene	ND	330
Phenanthrene	ND	330
Anthracene	ND	330
Fluoranthene	ND	330
Pyrene	ND	330
Benzo(a)anthracene	ND	330
Chrysene	ND	330
Benzo(b)fluoranthene	ND	330
Benzo(k)fluoranthene	ND	330
Benzo(a)pyrene	ND	330
Indeno(1,2,3-cd)pyrene	ND	330
Dibenzo(a,h)anthracene	ND	330
Benzo(g,h,i)perylene	ND	330

ND = Not detected at or above reporting limit.

SURROGATE RECOVERIES

Nitrobenzene-d5	60 %
2-Fluorobiphenyl	63 %
Terphenyl-d14	89 %

Curtis & Tompkins, Ltd

8270 Laboratory Control Sample Report

Curtis & Tompkins, Ltd.

Lab No: QC93864
Date Analyzed: 27-MAY-95
Matrix: SOIL
Batch No: 20859 515147088005
Dilution Factor : 1

LCS Datafile: 05LCS_20859
Extraction Chemist: TEW
MS Operator: KC
Prep Final Vol : 1

Compound	ug/Kg	SpikeAmt	% Rec	Limits
Phenol	1400	2500	56 %	26-90%
2-Chlorophenol	1500	2500	60 %	25-102%
4-Chloro-3-methylphenol	1600	2500	64 %	26-103%
4-Nitrophenol	1700	2500	68 %	11-114%
Pentachlorophenol	1500	2500	60 %	17-109%
1,4-Dichlorobenzene	780	1700	46 %	28-104%
N-Nitroso-di-n-propylamine	930	1700	55 %	41-126%
1,2,4-Trichlorobenzene	900	1700	53 %	38-107%
Acenaphthene	1000	1700	59 %	31-137%
2,4-Dinitrotoluene	1100	1700	65 %	28-89%
Pyrene	1300	1700	76 %	35-142%
Surrogate Recoveries				
2-Fluorophenol	1800	2500	72 %	25-121%
Phenol-d5	1800	2500	72 %	24-113%
2,4,6-Tribromophenol	2100	2500	84 %	19-122%
Nitrobenzene-d5	1200	1700	71 %	23-120%
2-Fluorobiphenyl	1200	1700	71 %	30-115%
Terphenyl-d14	1500	1700	88 %	18-137%
2-Chlorophenol-d4	1800	2500	72 %	20-130%
1,2-Dichlorobenzene-d4	900	1700	53 %	20-130%

Results within Specifications - PASS

EPA 8270
SOIL SEMIVOLATILE MATRIX SPIKE\MATRIX SPIKE DUPLICATE RECOVERY

Curtis & Tompkins, Ltd.

Lab Name: CURTIS & TOMPKINS, LTD Batchnum: 20859

Matrix Spike Sample No : 121127-012

Percent moisture: N/A %

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	% REC	#	QC LIMITS REC.
Phenol	2500	0	1600	64		26-90
2-Chlorophenol	2500	0	1700	68		25-102
1,4-Dichlorobenzene	1700	0	780	46		28-104
N-Nitroso-di-n-prop.(1)	1700	0	1100	65		41-126
1,2,4-Trichlorobenzene	1700	0	950	56		38-107
4-Chloro-3-methylphenol	2500	0	1700	68		26-103
Acenaphthene	1700	0	1200	71		31-137
4-Nitrophenol	2500	0	1800	72		11-114
2,4-Dinitrotoluene	1700	0	1100	65		28-89
Pentachlorophenol	2500	0	1200	48		17-109
Pyrene	1700	0	1300	76		35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
Phenol	2500	1500	60		6		35	26-90
2-Chlorophenol	2500	1500	60		13		50	25-102
1,4-Dichlorobenzene	1700	740	44		4		27	28-104
N-Nitroso-di-n-prop.(1)	1700	1000	59		10		38	41-126
1,2,4-Trichlorobenzene	1700	940	55		2		23	38-107
4-Chloro-3-methylphenol	2500	1700	68		0		33	26-103
Acenaphthene	1700	1100	65		9		19	31-137
4-Nitrophenol	2500	1800	72		0		50	11-114
2,4-Dinitrotoluene	1700	1100	65		0		47	28-89
Pentachlorophenol	2500	1200	48		0		47	17-109
Pyrene	1700	1400	82		8		36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-019
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: TW5

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	Detected(7.5)	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	Detected(8.5)	10
Pyrene	14	10
Benzo(a)anthracene	ND	10
Chrysene	Detected(5.5)	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	Detected(6.2)	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	30 %*
2-Fluorobiphenyl	21 %*
Terphenyl-d14	11 %*

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-020
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW4

DATE SAMPLED: 05/17/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Benzo(a)anthracene	ND	10
Chrysene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	33 %*
2-Fluorobiphenyl	31 %*
Terphenyl-d14	31 %*

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-021
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW-2R

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Benzo(a)anthracene	ND	10
Chrysene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	34 %*
2-Fluorobiphenyl	35 %*
Terphenyl-d14	34 %

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-022
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW1

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Benzo(a)anthracene	ND	10
Chrysene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	29 %*
2-Fluorobiphenyl	28 %*
Terphenyl-d14	30 %*

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-023
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW3

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Benzo(a)anthracene	ND	10
Chrysene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	30 %*
2-Fluorobiphenyl	33 %*
Terphenyl-d14	17 %*

Curtis & Tompkins, Ltd

LABORATORY NUMBER: 121127-024
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MW6

DATE SAMPLED: 05/18/95
DATE RECEIVED: 05/18/95
DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Benzo(a)anthracene	ND	10
Chrysene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	24 %*
2-Fluorobiphenyl	25 %*
Terphenyl-d14	17 %*

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 121127-Method Blank
CLIENT: CAPE ENVIRONMENTAL INC.
PROJECT ID: 2403C.16
LOCATION: ALAMEDA FEDERAL CENTER
SAMPLE ID: MB

DATE EXTRACTED: 05/24/95
DATE ANALYZED: 05/26/95
DATE REPORTED: 06/02/95
BATCH NO: 20803

Polynuclear Aromatic Hydrocarbons in Water by EPA Method 8270
Extraction Method: EPA 3520

COMPOUND	RESULTS ug/L	REPORTING LIMIT ug/L
Naphthalene	ND	10
Acenaphthylene	ND	10
Acenaphthene	ND	10
Fluorene	ND	10
Phenanthrene	ND	10
Anthracene	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Benzo(a)anthracene	ND	10
Chrysene	ND	10
Benzo(b)fluoranthene	ND	10
Benzo(k)fluoranthene	ND	10
Fluoranthene	ND	10
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenzo(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

* Low surrogate recovery.

ND = Not detected at or above reporting limit.

QA/QC SUMMARY: SURROGATE RECOVERIES

Nitrobenzene-d5	73 %
2-Fluorobiphenyl	69 %
Terphenyl-d14	79 %

Curtis & Tompkins, Ltd

8270 Laboratory Control Sample Report

Curtis & Tompkins, Ltd

Lab No: QC93652
Date Analyzed: 26-MAY-95
Matrix: WATER
Batch No: 20803 505146134005
Dilution Factor : 1

LCS Datafile: 05BS_20803

Extraction Chemist: DC
MS Operator: KC
Prep Final Vol : 1

Compound	ug/L	SpikeAmt	% Rec	Limits
Phenol	47	75	63 %	12-110%
2-Chlorophenol	46	75	61 %	27-123%
4-Chloro-3-methylphenol	52	75	69 %	23-97%
4-Nitrophenol	38	75	51 %	10-80%
Pentachlorophenol	51	75	68 %	9-103%
1,4-Dichlorobenzene	27	50	54 %	36-97%
N-Nitroso-di-n-propylamine	37	50	74 %	41-116%
1,2,4-Trichlorobenzene	28	50	56 %	39-98%
Acenaphthene	35	50	70 %	46-118%
2,4-Dinitrotoluene	32	50	64 %	24-96%
Pyrene	38	50	76 %	26-127%
Surrogate Recoveries				
2-Fluorophenol	55	75	73 %	21-100%
Phenol-d5	62	75	83 %	10-94%
2,4,6-Tribromophenol	56	75	75 %	10-123%
Nitrobenzene-d5	38	50	76 %	35-114%
2-Fluorobiphenyl	38	50	76 %	43-116%
Terphenyl-d14	39	50	78 %	33-141%
2-Chlorophenol-d4	53	75	71 %	33-110%
1,2-Dichlorobenzene-d4	31	50	62 %	16-110%

Results within Specifications - PASS

EPA 8270
WATER SEMIVOLATILE BLANK SPIKE\BLANK SPIKE DUPLICATE RECOVERY

Lab Name: CURTIS & TOMPKINS, LTD

Batchnum: [illegible]

Curtis & Tompkins, Ltd.

Matrix Spike Sample No : QC93651

Percent Moisture: NA

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	BS CONCENTRATION (ug/L)	% REC #	QC LIMITS REC.
Phenol	75	0	47	63	12-110
2-Chlorophenol	75	0	46	61	27-123
1,4-Dichlorobenzene	50	0	27	54	36-97
N-Nitroso-di-n-prop.(1)	50	0	37	74	41-116
1,2,4-Trichlorobenzene	50	0	28	56	39-98
4-Chloro-3-methylphenol	75	0	51	68	23-97
Acenaphthene	50	0	35	70	46-118
4-Nitrophenol	75	0	37	49	10-80
2,4-Dinitrotoluene	50	0	32	64	24-96
Pentachlorophenol	75	0	50	67	9-103
Pyrene	50	0	38	76	26-127

COMPOUND	SPIKE ADDED (ug/L)	BSD CONCENTRATION (ug/L)	% REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol	75	47	63	0	42	12-110
2-Chlorophenol	75	46	61	0	40	27-123
1,4-Dichlorobenzene	50	27	54	0	28	36-97
N-Nitroso-di-n-prop.(1)	50	36	72	3	38	41-116
1,2,4-Trichlorobenzene	50	29	58	4	28	39-98
4-Chloro-3-methylphenol	75	51	68	0	42	23-97
Acenaphthene	50	36	72	3	31	46-118
4-Nitrophenol	75	40	53	8	50	10-80
2,4-Dinitrotoluene	50	34	68	6	38	24-96
Pentachlorophenol	75	57	76	13	50	9-103
Pyrene	50	36	72	5	31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

ABBREVIATIONS

BTEX - Benzene, Toluene, Ethyl Benzene, and Total Xylenes.

CCR - California Code of Regulations.

DHS - California Department of Health Services.

EPA - United States Environmental Protection Agency.

LCS - Laboratory Control Spike

LUFT - Leaking Underground Fuel Tank.

MDL - Method Detection Limit

NA - Not Applicable.

NC - Not Calculable

ND - Not Detected at or above the defined detection limit.

PQL - Practical Quantitation Limit

RPD - Relative percent difference.

STLC - Soluble Threshold Limit Concentration.

Surr. - Surrogates.

TCLP - Toxicity Characteristic Leaching Procedure.

TEH - Total Extractable Petroleum Hydrocarbons.

Title 26 - Title 26 of the California Code of Regulations (CCR).

TR~ - Trace, estimated value .

TTLC - Total Threshold Limit Concentration.

TVH - Total Volatile Hydrocarbons.

WET - Waste Extraction Test.

UNITS

cm3 - Cubic centimeter
Kg - kilogram.
L - Liter.
mg - Milligrams.
M3 - Cubic meter.

1umhos/cm - uS/cm - Micro Siemens/centimeter
ppb - Parts per billion.
ppm - Parts per million.
ug - Micrograms.
ppbv - Parts per billion per unit volume

CHAIN OF CUSTODY FORM

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

Sampler: Kenneth Pitchford

Report to: Larry Harlan

Company: Cape Env. Managment Inc

Project No: 2403C.16

Project Name: Alameda Federal Center

Telephone: 310 5324500

Fax: 310 532 6022

Turnaround Time: 5 Day

Analyses: 8015 D; 8015 G; 8020 / 602; 8010 / 601; 8270 (PNA's only); 5520 Sil & Grease

Laboratory Number	Sample ID.	Sampling Date	Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	Field Notes
	TW/MW4-10'											
	~~TW/MW4-10'~~	5-17-95		X			1					
	TW/MW4-5'	5/17/95										
	TW/MW4-15'	5/17/95										
	TW/MW5-5'	5-17-95										
	TW/MW5-10'	5-17-95										
	TW/MW5-13'	5-17-95										
	MW6-4'	5-18-95										
	MW6-10'	5-18-95										
	MW6-13'	5-18-95										
	TB1-5'	5-18-95										
	TB1-10'	5-18-95										
	TB1-15'	5-18-95										
	TB2-5'	5-18-95		X			1					

NOTES:

~~8310~~ for the 8270 Analysis for the 8100 suite of analytes.

RELINQUISHED BY:

Ray M. Hale 5-18-95 2004 ~~2004~~ DATE/TIME

DATE/TIME

DATE/TIME

RECEIVED BY:

Mary Please 5/18/95 2005 DATE/TIME

DATE/TIME

DATE/TIME

Signature on this form constitutes a firm purchase order for the services requested above.

CHAIN OF CUSTODY FORM

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

Sampler: L.P.

Report to: L.H.

Company: CEMI

Project No: 2403C.16

Project Name: Alameda Federal Center

Telephone: 300 5324500

Fax: 5326012

Turnaround Time: 5 day

Laboratory Number	Sample ID.	Sampling Date	Sampling Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Field Notes	Analyses: 8015 D	Analyses: 8015 G	Analyses: 8020/602	Analyses: 8010/601	Analyses: 8240 - 8270	Analyses: Grease & Oil 5520	Analyses: CAM Metals
	TB2-10'	5.18.95		X			1												
	TB2-15'	5.18.95																	
	TB3-5'	5.18.95																	
	TB3-10'	5.18.95																	
	TB3-15'	5.18.95		X			1												
	TW5	5.17.95			X		2					liter	X					X	
	TW5	5.17.95			X		3	X				VOA's		X	X	X	X		
	MW4	5.17.95			X		3	X				VOAS		X	X	X			
	MW4	5.17.95			X		2					liter	X					X	
	MW-2R	5.18.95			X		2					liter	X					X	
	MW-2R	5.18.95			X		3	X				VOA		X	X	X	X		
	MW1	5.18.95			X		2					liter	X					X	
	MW1	5.18.95			X		3	X				VOA		X	X	X	X		

NOTES:
8240 Method for 8100 Suite
only 1 Liter for both O&G & PNAs

RELINQUISHED BY:

Larry M. Hale 2004 5/18/95
DATE/TIME

DATE/TIME

DATE/TIME

RECEIVED BY:

Mary Pleasant 5/18/95 2005
DATE/TIME

DATE/TIME

DATE/TIME

Signature on this form constitutes a firm purchase order for the services requested above.

CHAIN OF CUSTODY FORM

Curtis & Tompkins, Ltd.
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

Sampler: K.P.

Report to: L.H

Company: CEMI

Project No: 2403C.16

Project Name: Alameda Federal Center

Telephone: 310 532 4500

Turnaround Time: 5 day

Fax: 532 6022

Laboratory Number	Sample ID.	Sampling Date	Sampling Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Field Notes	Analyses: 8015 D	Analyses: 8015 G	Analyses: 8020/602	Analyses: 8010/601	Analyses: 8270 - 8100	Analyses: 5520 Oil & Grease
	MW3	5.18.95			X		2					liter	X					X
	MW3	5.18.95			X		3	X				VOA		X	X	X	X	
	MW6	5.18.95			X		2					liter	X					X
	MW6	5.18.95			X		3	X				VOA		X	X	X	X	
	TRIP BLANK				X		2	X				VOA						

NOTES:

8270 method for 8100 Suite

~~Confirm~~

RELINQUISHED BY:

Larry M. Hala 5/18/95 2004 DATE/TIME

DATE/TIME

DATE/TIME

RECEIVED BY:

Mary Klesar 5/18/95 2004 DATE/TIME

DATE/TIME

DATE/TIME

Signature on this form constitutes a firm purchase order for the services requested above.