CAPE

ENVIRONMENTAL
MANAGEMENT
I N C

TRANSMITTAL LETTER

Date: July 30, 1996
Re: Groundwater Monitoring Report, July 1996

To: 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
Phone #: (510) 567-6763

We are transmitting herewith the following:

- ☐ Specifications
- ☐ Prints
- ☐ Original drawings
- ☐ Shop drawings
- ■ Laboratory reports
- ☐ Electronic media
- ■ Other: Groundwater Monitoring Report
- ■ For your use

COPIES	DESCRIPTION
1	Groundwater Monitoring Report, July 1996

REMARKS

Ms. Shin - Please find the enclosed report. As noted on the report cover sheet, a copy has been forwarded to James Lew. Please feel free to call with any questions or comments.

Thank You,

Larry M. Harlan

20280 S. Vermont Ave.
Suite 250
Torrance, CA 90502
(310) 532-4500
(310) 532-6022 Fax

From: Larry M. Harlan

Job #: 2403.24

MANAGEMENT
I N C

July 29, 1996

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: Groundwater Monitoring Report, July 1996
Alameda Federal Center
620 Central Avenue, Alameda, California
STID 4655

Dear Ms. Shin:

Please find enclosed the groundwater monitoring report, July 1996, for the above-referenced project. This report has been prepared by Cape Environmental Management Inc (Cape) on behalf of the General Services Administration (GSA) to assess groundwater contamination conditions due to underground storage tank releases.

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

Respectfully Submitted,

CAPE ENVIRONMENTAL MANAGEMENT, INC.

Prepared by:

Larry M. Harlan
Project Geologist

Reviewed by:

William W. Millar, RG
Senior Geologist

Attachment

cc: James Lew/GSA Region 9
Project File

CAPE
ENVIRONMENTAL
MANAGEMENT
I N C

Groundwater Monitoring Report, July 1996

Alameda Federal Center
620 Central Avenue
Alameda, California

GSA Project No. RCA21602
Cape Project No. 2403C.24

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 1996

TABLE OF CONTENTS

Section 1
Introduction

On behalf of General Services Administration (GSA), Cape Environmental Management Inc (Cape) is performing groundwater monitoring and testing at the Alameda Federal Center, located at 620 Central Avenue, Alameda, California. The purpose of the groundwater monitoring program is to investigate the extent and severity of impacted groundwater due to underground storage tank (UST) releases. Figure 1 is a Site Vicinity Map depicting the area around the subject site.

Cape has completed a year-long four quarter monitoring program. This report describes field work and analytical results of additional groundwater monitoring activities, conducted in July 1996, as requested by the Alameda County Department of Environmental Health (DEH). Previously, Cape has submitted to the DEH a ***Preliminary Site Assessment (PSA) Report***, dated July 1995, a ***Second Quarter Groundwater Monitoring Report - August 1995***, dated October 2, 1995, an ***Addenda to Second Quarter Groundwater Monitoring Report - August 1995***, dated October 30, 1995, a ***Third Quarter Groundwater Monitoring Report - December 1995***, dated January 1996, and a ***Fourth Quarter Groundwater Monitoring Report - March 1996***, dated April 1996. Figure 2 is a Site Map depicting location and orientation of the subject site. Figure 3 illustrates tank areas 1 and 2, the location and orientation of the former USTs, and the location of monitoring wells used in the groundwater monitoring program, MW-1, MW-2R, MW-4, TW/MW-5, and MW-6.

Monitoring well MW-3 is located adjacent to two (2) existing 10,000-gallon USTs (Tanks 3 and 4). These USTs are scheduled for removal and MW-3 will be destroyed during the excavation and removal activities. Sampling of MW-3 has been omitted from the monitoring program; however, water level measurements are being obtained for use in estimating local groundwater gradient.

Section 2
Project Description

On July 5, 1996, Cape performed additional groundwater monitoring at the site. Activities included water level sounding of monitoring wells MW-1, MW-2R, MW-4, TW/MW-5, and MW-6, and the purging and sampling of wells MW-1, TW/MW-5, and MW-6.

2.1 Water Level Sounding, Purging and Sampling

Cape performed concurrent water level sounding of wells MW-1, MW-2R, MW-3, MW-4, TW/MW-5, and MW-6 with the use of an electronic water level indicator. Following sounding activities, wells MW-1, TW/MW-5 and MW-6 were purged of approximately three (3) well volumes, measurements were recorded for temperature, pH, and conductivity, and samples were obtained. Depths to ground water and purging and sampling details for each well are provided in Appendix A. Water samples were collected with dedicated disposable 2-inch diameter polyethylene 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 Sample Preparations and Handling

All groundwater samples, following collection, were secured in laboratory supplied containers fitted with threaded Teflon-lined caps and containing hydrochloric acid preservative where appropriate. Sample containers were immediately placed in a pre-cooled ice chest and delivered to the analytical laboratory within approximately 5 hours after collection. Samples were submitted for a 10-day turn-around analytical testing schedule.

2.3 Laboratory Testing

Chemical analyses of samples from the three (3) groundwater monitoring wells included the following methods:

- hydrocarbon oil and grease (O&G) using method SMWW 5520 for all wells;
- total extractable petroleum hydrocarbons (TEPH) using DHS/LUFT procedure EPA Method 8015-modified for diesel fuel (C12-C22)) with silica gel cleanup for all wells;
- volatile halocarbons (VH) using EPA Test Method 8010 for all wells;
- polynuclear aromatic compounds (PNA) using EPA Method 8270 for all wells, and
- benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020 for MW-1 only

Section 3
Analytical and Monitoring Results

This section describes analytical and monitoring results for the current additional sampling event with respect to identified groundwater contamination and groundwater flow direction.

3.1 Analytical Results

Groundwater samples were obtained from pre-existing well MW-1, new monitoring well MW-6, and new test well TW/MW-5. Well locations are shown on Figure 3 - Tank 1 and 2 Area/Boring Locations.

Concentrations of O&G, TEPH, and PNA's were reported to be below respective reporting limits (not detected) for all groundwater samples collected (MW-1, TW/MW-5, and MW-6). Concentrations of VH were not detected in samples from wells TW/MW-5 and MW-6, however a concentration of 22 µg/l cis-1,2-dichloroethene and 5.0 µg/l trans-1,2-dichloroethene was reported for MW-1. BTEX analysis for the water sample from well MW-1 resulted in not detected. Certified laboratory results and sample chain-of-custody documentation is provided in Appendix B. Groundwater sample analytical results for the current monitoring event are tabulated in Tables 1 and 2. Table 4 presents a summary of groundwater sample analytical data for the project to date.

The principal change in analytical results since the fourth quarter monitoring event is that TEPH concentrations (as diesel) in water samples collected from MW-1 have decreased from 13,000 µg/l to ND. It should be noted that the silica gel cleanup method was used for the current TEPH analysis. Also at MW-1, an increase in VH concentrations was reported for the compounds cis-1,2-dichloroethene, from 1 µg/l to 22 µg/l, and trans-1,2-dichloroethene, from ND to 5.0 µg/l. O&G concentrations at MW-1 decreased from 16 mg/l to ND.

3.2 Groundwater Gradient Determination

Static water level (SWL) gauging was performed for the groundwater monitoring wells on July 5, 1996. Current SWL data is presented in Table 3. A summary of SWL data for the groundwater monitoring wells to date is presented in Table 5. Survey graphics used in determining groundwater gradient are provided on Figure 4 - Groundwater Gradient Map. All elevations determined for this study are reduced to mean sea level datum.

Groundwater gradient at Tank 1 and 2 Area was detected by concurrent sounding of all five monitoring points. 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 the approximate groundwater gradient = 0 0034 ft/ft (approximately 17 9 ft/mile) with a flow direction compass bearing of approximately 194° (SSW) When compared to the last quarter results, this indicates a change in flow direction by approximately 31° to the south.

Section 4
Summary and Recommendations

This section presents a summary of analytical results for the groundwater monitoring program and includes recommendations for further action.

4.1 Summary

Cape performed a Preliminary Site Assessment on May 18, 1995, which constituted the initial first quarter of groundwater monitoring. Field work for subsequent monitoring quarters was conducted on August 31 and October 5, 1995 (second quarter and addendum), December 8, 1995 (third quarter), and March 8, 1996 (fourth quarter). The current additional groundwater sampling event was conducted to provide information for analyzing chemical concentration trends for MW-1, TW/MW-5, and MW-6. Please refer to Table 4 - Summary of Water Sample Analytical Results which provides a comprehensive representation of analytical results for each well during the monitoring program. The following is a summary of groundwater monitoring program observations to date.

- O&G was not detected in any samples throughout the duration of the program, with the exception of fourth quarter results which indicated a concentration of 16 mg/l at MW-1. O&G was not detected in the current sampling event.

- TVH (gasoline) was not detected in any samples throughout the duration of the program. Analysis for TVH was subsequently terminated after the second quarter following DEH approval.

- With the exception of MW-1, BTEX compounds were not detected in any samples throughout the duration of the program. Analysis for BTEX was subsequently terminated after the second quarter, following DEH approval. BTEX compounds were detected in the first quarter of monitoring at MW-1, with benzene reported at a concentration of 1.1 µg/l, however BTEX compounds were not detected subsequently.

- Analysis of total dissolved solids (TDS) was conducted in the second quarter. Concentrations ranged from 380 to 450 mg/kg, which is below the recommended state maximum contaminant level (MCL) of 500 mg/l.

- With the exception of TW/MW-5 and MW-1, VH compounds were not detected throughout the program. TW/MW-5 was reported to contain a concentration of 1.0 µg/l chloroform in the first quarter and 1 0 µg/l cis-1,2-dichloroethene in the fourth quarter VH compounds were not detected in the second and third quarters or during the current sampling event at TW/MW-5 At MW-1 the VH compounds cis-1,2-dichloroethene and trans-1,2-dichloroethene were reported in fluctuating concentrations ranging from ND to 5 7 µg/l for the first four quarters However, in the current sampling event concentrations of the VH compounds cis-1,2-dichloroethene and trans-1,2-dichloroethene were reported at 22 µg/l and 5 0 µg/l, respectively, which represent the greatest concentrations observed at MW-1 during

the monitoring program. It should be noted that the 22 µg/l concentration of cis-1,2-dichloroethene exceeds the State MCL of 6.0 µg/l. Trichloroethene (TCE) was detected at MW-1 in the first quarter at 7 µg/l, in the second quarter at 1.3 µg/l, and not detected subsequently. Also, at MW-1 tetra-chloroethene(PCE) and chloroform were reported at 1 µg/l in the first quarter and not detected during subsequent sampling events.

- With the exception of TW/MW-5, PNA compounds were not detected throughout the monitoring program. At TW/MW-5, the first quarter of PNA analyses indicated trace concentrations which were reported below the method detection limit (MDL) of 10 µg/l . This was accomplished by using the instrument detection limits (IDL) which ranged from 1 to 5 µg/l. Napthalene was reported at a concentration of 7.5 µg/l , fluoranthene at 8.5 µg/l, pyrene at 14 µg/l, chrysene at 5.5 µg/l, and benzo(a)pyrene at 6.2 µg/l. These compounds were not detected in the subsequent sampling events at TW/MW-5. PNA analysis in the second quarter included all of the semi-volatile organic compounds, of which bis(2-ethylhexyl)phthalate was reported at a concentration of 14 µg/l for TW/MW-5.

- In general, a fluctuation in TEPH concentrations has been observed at monitoring wells MW-1 and MW-6 throughout the monitoring period. First quarter results for MW-1 indicated 5,500 µg/l TEPHd (quantified as diesel), second quarter results of 840 µg/l TEPHd and 1,400 µg/l TEPHmo (quantified as motor oil), third quarter results of 49 µg/l TEPHd, fourth quarter monitoring results of 13,000 µg/l TEPHd, and ND for TEPHd using the silica gel cleanup method during the current sampling event. TEPH results for MW-6 indicated not detected in the first quarter, 370 µg/l TEPHd in the second quarter, 3,700 µg/l TEPHd in the third quarter, ND in the fourth quarter, and ND for TEPHd using the silica gel cleanup method for the current sampling event. Results for TW/MW-5 indicated 680 µg/l TEPHd in the first quarter, 230 µg/l TEPHd in the second quarter, ND in the third and fourth quarters, and ND for TEPHd using the silica gel cleanup method for the current sampling event. It should be noted that the current TEPHd analysis using the silica gel cleanup method resulted in not detected and may indicate that previous concentrations of TEPHd may be attributable to biogenic materials.

4.2 Recommendations

Based upon the information obtained during the monitoring program, Cape recommends terminating quarterly groundwater sampling and testing for monitoring wells MW-2R, MW-4, TW/MW-5, and MW-6. Following termination of sampling at these wells, Cape recommends abandoning them in accordance with applicable regulations. At MW-1 it was observed that the volatile halocarbon compound cis-1,2-dichloroethene was present at concentrations which exceeded the state MCL in the second quarter and current sampling event. Cape recommends performing additional water sampling at monitoring well MW-1 to determine the prevalence of this compound

Table 1

Analytical Results July 1996
Petroleum Compounds

Sample ID	Date Sampled	O&G (mg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
MW-1	7/5/96	ND	ND	ND	ND	ND	ND
TW/MW-5	7/5/96	ND	ND	--	--	--	--
MW-6	7/5/96	ND	ND	--	--	--	--

NOTES:

mg/L- Milligrams per liter.
µg/L- Micrograms per liter.
ND- Not detected at or above Reporting Limit (RL).
-- Not analyzed
O&G- Hydrocarbon oil and grease using Test Method SMWW 5520 with RL of 5 mg/L.
TEPH- Total extractable petroleum hydrocarbons as diesel (C12-C22) using California Department of Health Services (DOHS) Method (EPA Method 8015 Modified) with silica gel cleanup and RL of 47 µg/L.
BTEX- Benzene, toluene, ethyl benzene and total xylenes using EPA Test Method 8020 with RL of 0.5 µg/L.

Table 2

Analytical Results July 1996
Volatile Halocarbons and Polynuclear Aromatic Hydrocarbons

Sample ID	Date Sampled	VH (µg/L)	PNA (µg/L)
MW-1	7/5/96	22 cis-1,2-dichloroethene (1.0) 5.0 trans-1,2-dichloroethene(1.0)	ND
TW/MW-5	7/5/96	ND	ND
MW-6	7/5/96	ND	ND

NOTES: Results indicate concentration of compound detected and corresponding reporting limit (RL) in parenthesis following respective compound.

µg/L- Micrograms per liter.
ND- Compounds not detected at or above RL.
VH- Halogenated volatile organics using EPA Test Method 8010 with compound RL's ranging from 1.0 µg/L to 20 µg/L.
PNA- Polynuclear aromatic hydrocarbons using EPA Test Method 8270 with RL of 9.4 µg/L.

Table 3

July 1996
Static Water Level (SWL) Measurements

Location	Date	Time	SWL	Casing Elevation	Water Elevation
MW-1	7/5/96	1228	4.65	8.19	3.54
MW-2R	7/5/96	1220	4.53	8.27	3.74
MW-3	7/5/96	1142	4.96	9.00	4.04
MW-4	7/5/96	1223	4.93	8.53	3.60
TW/MW-5	7/5/96	1227	4.68	8.37	3.69
MW-6	7/5/96	1218	4.97	8.61	3.64

NOTES:

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

Table 4

Summary of Water Sample Analytical Results
Alameda Federal Center, Groundwater Monitoring Well MW-1

Collection Date	5/18/95	8/31/95	10/5/95	12/8/95	3/8/96	7/5/96
Compound						
O&G (mg/l)(SMWW 5520)	ND	ND	NA	ND	16	ND
TEPH (µg/l)(DOHS 8015 mod.)	5,500 d	840 d 1,400 mo	NA	49 d	13,000 d	ND *
TVH (µg/l)(DOHS 8015 mod.)	ND	NA	ND	NA	NA	NA
Benzene (µg/l)(EPA 8020)	1.1	NA	ND	ND	ND	ND
Toluene (µg/l)(EPA 8020)	ND	NA	ND	ND	ND	ND
Ethyl Benzene (µg/l)(EPA8020)	0.9	NA	ND	ND	ND	ND
Total Xylenes (µg/l)(EPA 8020)	1.6	NA	ND	ND	ND	ND
Tot. dis. solids (mg/l)(EPA 160.1)	NA	410	NA	NA	NA	NA
Volatile Halocarbons (EPA 8010)						
cis-1,2-dichloroethene (µg/l)	3	NA	7.4	5.7	1	22
trans-1,2-dichloroethene (µg/l)	3	NA	3.4	2.1	ND	5.0
trichloroethene (µg/l)	7	NA	1.3	ND	ND	ND
tetra-chloroethene (µg/l)	1	NA	ND	ND	ND	ND
chloroform (µg/l)	1	NA	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (EPA 8270)						
bis(2-ethylhexyl)phthalate (µg/l)	NA	ND	NA	NA	NA	NA
napthalene (µg/l)	ND	ND	NA	ND	ND	ND
fluoranthene (µg/l)	ND	ND	NA	ND	ND	ND
pyrene (µg/l)	ND	ND	NA	ND	ND	ND
chrysene (µg/l)	ND	ND	NA	ND	ND	ND
benzo(a)pyrene (µg/l)	ND	ND	NA	ND	ND	ND

Notes:

mg/l	milligrams per liter
µg/l	micrograms per liter
ND	not detected at or above the method reporting limit (RL)
NA	Not Analyzed
O&G	hydrocarbon oil and grease using test method SMWW 5520
TEPH	total extractable petroleum hydrocarbons using California Department of Health Services (DOHS) Method EPA 8015 modified A "d" or "mo" following the reported concentration represents quantitation in the diesel or motor oil range, respectively
TVH	total Volatile hydrocarbons as gasoline using California DOHS Method EPA 8015 modified
*	TEPH analysis for diesel (C12-C22) using silica gel cleanup.

Table 4 (Continued)

Summary of Water Sample Analytical Results
Alameda Federal Center, Groundwater Monitoring Well MW-2R

Collection Date	5/18/95	8/31/95	12/8/95	3/8/96	7/5/96
Compound					
O&G (mg/l)(SMWW 5520)	ND	ND	ND	ND	NA
TEPH (µg/l)(DOHS 8015 mod.)	5500	140 d	ND	ND	NA
TVH (µg/l)(DOHS 8015 mod.)	ND	ND	NA	NA	NA
Benzene (µg/l)(EPA 8020)	1.1	ND	NA	NA	NA
Toluene (µg/l)(EPA 8020)	ND	ND	NA	NA	NA
Ethyl Benzene (µg/l)(EPA8020)	0.9	ND	NA	NA	NA
Total Xylenes (µg/l)(EPA 8020)	1.6	ND	NA	NA	NA
Total dis. solids (mg/l)(EPA 160.1)	NA	390	NA	NA	NA
Volatile Halocarbons (EPA 8010)					
cis-1,2-dichloroethene (µg/l)	3	ND	ND	ND	NA
trans-1,2-dichloroethene (µg/l)	3	ND	ND	ND	NA
trichloroethene (µg/l)	7	ND	ND	ND	NA
tetra-chloroethene (µg/l)	1	ND	ND	ND	NA
chloroform (µg/l)	1	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (EPA 8270)					
bis(2-ethylhexyl)phthalate (µg/l)	NA	ND	NA	NA	NA
napthalene (µg/l)	ND	ND	ND	ND	NA
fluoranthene (µg/l)	ND	ND	ND	ND	NA
pyrene (µg/l)	ND	ND	ND	ND	NA
chrysene (µg/l)	ND	ND	ND	ND	NA
benzo(a)pyrene (µg/l)	ND	ND	ND	ND	NA

Notes:

mg/l	milligrams per liter
µ/l	micrograms per liter
ND	not detected at or above the method reporting limit (RL)
NA	Not Analyzed
O&G	hydrocarbon oil and grease using test method SMWW 5520
TEPH	total extractable petroleum hydrocarbons using California Department of Health Services (DOHS) Method EPA 8015 modified. A "d" or "mo" following the reported concentration represents quantitation in the diesel or motor oil range, respectively
TVH	total Volatile hydrocarbons as gasoline using California DOHS Method EPA 8015 modified

Table 4 (Continued)

Summary of Water Sample Analytical Results
Alameda Federal Center, Groundwater Monitoring Well MW-3

Collection Date	5/18/95	not sampled	not sampled	not sampled	not sampled
Compound					
O&G (mg/l)(SMWW 5520)	ND	NA	NA	NA	NA
TEPH (µg/l)(DOHS 8015 mod.)	92 d	NA	NA	NA	NA
TVH (µg/l)(DOHS 8015 mod.)	ND	NA	NA	NA	NA
Benzene (µg/l)(EPA 8020)	1.1	NA	NA	NA	NA
Toluene (µg/l)(EPA 8020)	ND	NA	NA	NA	NA
Ethyl Benzene (µg/l)(EPA8020)	0.9	NA	NA	NA	NA
Total Xylenes (µg/l)(EPA 8020)	1.6	NA	NA	NA	NA
Total dis. solids (mg/l)(EPA 160.1)	NA	390	NA	NA	NA
Volatile Halocarbons (EPA 8010)					
cis-1,2-dichloroethene (µg/l)	3	NA	NA	NA	NA
trans-1,2-dichloroethene (µg/l)	3	NA	NA	NA	NA
trichloroethene (µg/l)	7	NA	NA	NA	NA
tetra-chloroethene (µg/l)	1	NA	NA	NA	NA
chloroform (µg/l)	1	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons (EPA 8270)					
bis(2-ethylhexyl)phthalate (µg/l)	NA	NA	NA	NA	NA
napthalene (µg/l)	ND	NA	NA	NA	NA
fluoranthene (µg/l)	ND	NA	NA	NA	NA
pyrene (µg/l)	ND	NA	NA	NA	NA
chrysene (µg/l)	ND	NA	NA	NA	NA
benzo(a)pyrene (µg/l)	ND	NA	NA	NA	NA

Notes:

mg/l	**milligrams per liter**
µ/l	micrograms per liter
ND	not detected at or above the method reporting limit (RL)
NA	Not Analyzed
O&G	hydrocarbon oil and grease using test method SMWW 5520
TEPH	total extractable petroleum hydrocarbons using California Department of Health Services (DOHS) Method EPA 8015 modified A "d" or "mo" following the reported concentration represents quantitation in the diesel or motor oil range, respectively
TVH	total Volatile hydrocarbons as gasoline using California DOHS Method EPA 8015 modified

Table 4 (Continued)

Summary of Water Sample Analytical Results
Alameda Federal Center, Groundwater Monitoring Well MW-4

Collection Date	5/18/95	8/31/95	12/8/95	3/8/96	7/5/96
Compound					
O&G (mg/l)(SMWW 5520)	ND	ND	ND	ND	NA
TEPH (µg/l)(DOHS 8015 mod.)	92	190 d	ND	ND	NA
TVH (µg/l)(DOHS 8015 mod.)	ND	ND	NA	NA	NA
Benzene (µg/l)(EPA 8020)	1.1	ND	NA	NA	NA
Toluene (µg/l)(EPA 8020)	ND	ND	NA	NA	NA
Ethyl Benzene (µg/l)(EPA8020)	0.9	ND	NA	NA	NA
Total Xylenes (µg/l)(EPA 8020)	1.6	ND	NA	NA	NA
Total dis. solids (mg/l)(EPA 160.1)	NA	410	NA	NA	NA
Volatile Halocarbons (EPA 8010)					
cis-1,2-dichloroethene (µg/l)	3	ND	ND	ND	NA
trans-1,2-dichloroethene (µg/l)	3	ND	ND	ND	NA
trichloroethene (µg/l)	7	ND	ND	ND	NA
tetra-chloroethene (µg/l)	1	ND	ND	ND	NA
chloroform (µg/l)	1	ND	ND	ND	NA
Polynuclear Aromatic Hydrocarbons (EPA 8270)					
bis(2-ethylhexyl)phthalate (µg/l)	NA	ND	NA	NA	NA
napthalene (µg/l)	ND	ND	ND	ND	NA
fluoranthene (µg/l)	ND	ND	ND	ND	NA
pyrene (µg/l)	ND	ND	ND	ND	NA
chrysene (µg/l)	ND	ND	ND	ND	NA
benzo(a)pyrene (µg/l)	ND	ND	ND	ND	NA

Notes:

mg/l	milligrams per liter
µl	micrograms per liter
ND	not detected at or above the method reporting limit (RL)
NA	Not Analyzed
O&G	hydrocarbon oil and grease using test method SMWW 5520
TEPH	total extractable petroleum hydrocarbons using California Department of Health Services (DOHS) Method EPA 8015 modified A "d" or "mo" following the reported concentration represents quantitation in the diesel or motor oil range, respectively
TVH	total Volatile hydrocarbons as gasoline using California DOHS Method EPA 8015 modified

Table 4 (Continued)

Summary of Water Sample Analytical Results
Alameda Federal Center, Groundwater Monitoring Well TW/MW-5

Collection Date	5/17/95	8/31/95	12/8/95	3/8/96	5/7/96
Compound					
O&G (mg/l)(SMWW 5520)	ND	ND	ND	ND	ND
TEPH (µg/l)(DOHS 8015 mod.)	680 d	230 d	ND	ND	ND *
TVH (µg/l)(DOHS 8015 mod.)	ND	ND	NA	NA	NA
Benzene (µg/l)(EPA 8020)	1.1	ND	NA	NA	NA
Toluene (µg/l)(EPA 8020)	ND	ND	NA	NA	NA
Ethyl Benzene (µg/l)(EPA8020)	0.9	ND	NA	NA	NA
Total Xylenes (µg/l)(EPA 8020)	1.6	ND	NA	NA	NA
Total dis. solids (mg/l)(EPA 160.1)	NA	380	NA	NA	NA
Volatile Halocarbons (EPA 8010)					
cis-1,2-dichloroethene (µg/l)	3	ND	ND	1	ND
trans-1,2-dichloroethene (µg/l)	3	ND	ND	ND	ND
trichloroethene (µg/l)	7	ND	ND	ND	ND
tetra-chloroethene (µg/l)	1	ND	ND	ND	ND
chloroform (µg/l)	1	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (EPA 8270)					
bis(2-ethylhexyl)phthalate (µg/l)	NA	14	NA	NA	NA
napthalene (µg/l)	7.5	ND	ND	ND	ND
fluoranthene (µg/l)	8.5	ND	ND	ND	ND
pyrene (µg/l)	14	ND	ND	ND	ND
chrysene (µg/l)	5.5	ND	ND	ND	ND
benzo(a)pyrene (µg/l)	6.2	ND	ND	ND	ND

Notes:

mg/l	**milligrams per liter**
µ/l	micrograms per liter
ND	not detected at or above the method reporting limit (RL)
NA	Not Analyzed
O&G	hydrocarbon oil and grease using test method SMWW 5520
TEPH	total extractable petroleum hydrocarbons using California Department of Health Services (DOHS) Method EPA 8015 modified A "d" or "mo" following the reported concentration represents quantitation in the diesel or motor oil range, respectively
TVH	total Volatile hydrocarbons as gasoline using California DOHS Method EPA 8015 modified
*	TEPH analysis for diesel (C12-C22) using silica gel cleanup.

Table 4 (Continued)

Summary of Water Sample Analytical Results
Alameda Federal Center, Groundwater Monitoring Well MW-6

Collection Date	5/18/95	8/31/95	12/8/95	3/8/96	5/7/96
Compound					
O&G (mg/l)(SMWW 5520)	ND	ND	ND	ND	ND
TEPH (µg/l)(DOHS 8015 mod.)	5500	370 d	3700 d	ND	ND *
TVH (µg/l)(DOHS 8015 mod.)	ND	ND	NA	NA	NA
Benzene (µg/l)(EPA 8020)	1.1	ND	NA	NA	NA
Toluene (µg/l)(EPA 8020)	ND	ND	NA	NA	NA
Ethyl Benzene (µg/l)(EPA8020)	0.9	ND	NA	NA	NA
Total Xylenes (µg/l)(EPA 8020)	1.6	ND	NA	NA	NA
Total dis. solids (mg/l)(EPA 160.1)	NA	450	NA	NA	NA
Volatile Halocarbons (EPA 8010)					
cis-1,2-dichloroethene (µg/l)	3	ND	ND	ND	ND
trans-1,2-dichloroethene (µg/l)	3	ND	ND	ND	ND
trichloroethene (µg/l)	7	ND	ND	ND	ND
tetra-chloroethene (µg/l)	1	ND	ND	ND	ND
chloroform (µg/l)	1	ND	ND	ND	ND
Polynuclear Aromatic Hydrocarbons (EPA 8270)					
bis(2-ethylhexyl)phthalate (µg/l)	NA	ND	NA	NA	NA
napthalene (µg/l)	ND	ND	ND	ND	ND
fluoranthene (µg/l)	ND	ND	ND	ND	ND
pyrene (µg/l)	ND	ND	ND	ND	ND
chrysene (µg/l)	ND	ND	ND	ND	ND
benzo(a)pyrene (µg/l)	ND	ND	ND	ND	ND

Notes:

mg/l	milligrams per liter
µ/l	micrograms per liter
ND	not detected at or above the method reporting limit (RL)
NA	Not Analyzed
O&G	hydrocarbon oil and grease using test method SMWW 5520
TEPH	total extractable petroleum hydrocarbons using California Department of Health Services (DOHS) Method EPA 8015 modified. A "d" or "mo" following the reported concentration represents quantitation in the diesel or motor oil range, respectively
TVH	total Volatile hydrocarbons as gasoline using California DOHS Method EPA 8015 modified
*	TEPH analysis for diesel (C12-C22) using silica gel cleanup

Table 5

Summary Quarterly 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
	8/31/95	1125	4.93	8.19	3.26
	10/5/95	1252	5.09	8.19	3.10
	11/1/95	1157	5.25	8.19	2.94
	12/8/95	1041	5.36	8.19	2.83
	3/8/96	1026	3.49	8.19	4.70
	5/7/96	1228	4.65	8.19	3.50
MW-2R	5/18/95	1822	4.14	8.27	4.13
	8/31/95	1110	4.78	8.27	3.49
	10/5/95	1248	4.99	8.27	3.28
	11/1/95	1210	5.15	8.27	3.12
	12/8/95	1033	5.30	8.27	2.97
	3/8/96	1019	3.46	8.27	4.81
	7/5/96	1220	4.53	8.27	3.74
MW-3	5/16/95	1415	4.72	9.00	4.28
	8/31/95	1119	5.12	9.00	3.88
	10/5/95	1225	5.2	9.00	3.8
	11/1/95	1226	5.28	9.00	3.72
	12/8/95	1026	5.3	9.00	3.7
	3/8/96	1444	4.55	9.00	4.45
	7/5/96	1142	4.96	9.00	4.04
MW-4	5/18/95	1810	4.52	8.53	4.01
	8/31/95	1114	5.18	8.53	3.35
	10/5/95	1242	5.38	8.53	3.15
	11/1/95	1202	5 53	8 53	3
	12/8/95	1037	5 66	8.53	2 87
	3/8/96	1024	3.88	8.53	4.65
	7/5/96	1223	4 93	8.53	3 60

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

Table 5 (continued)

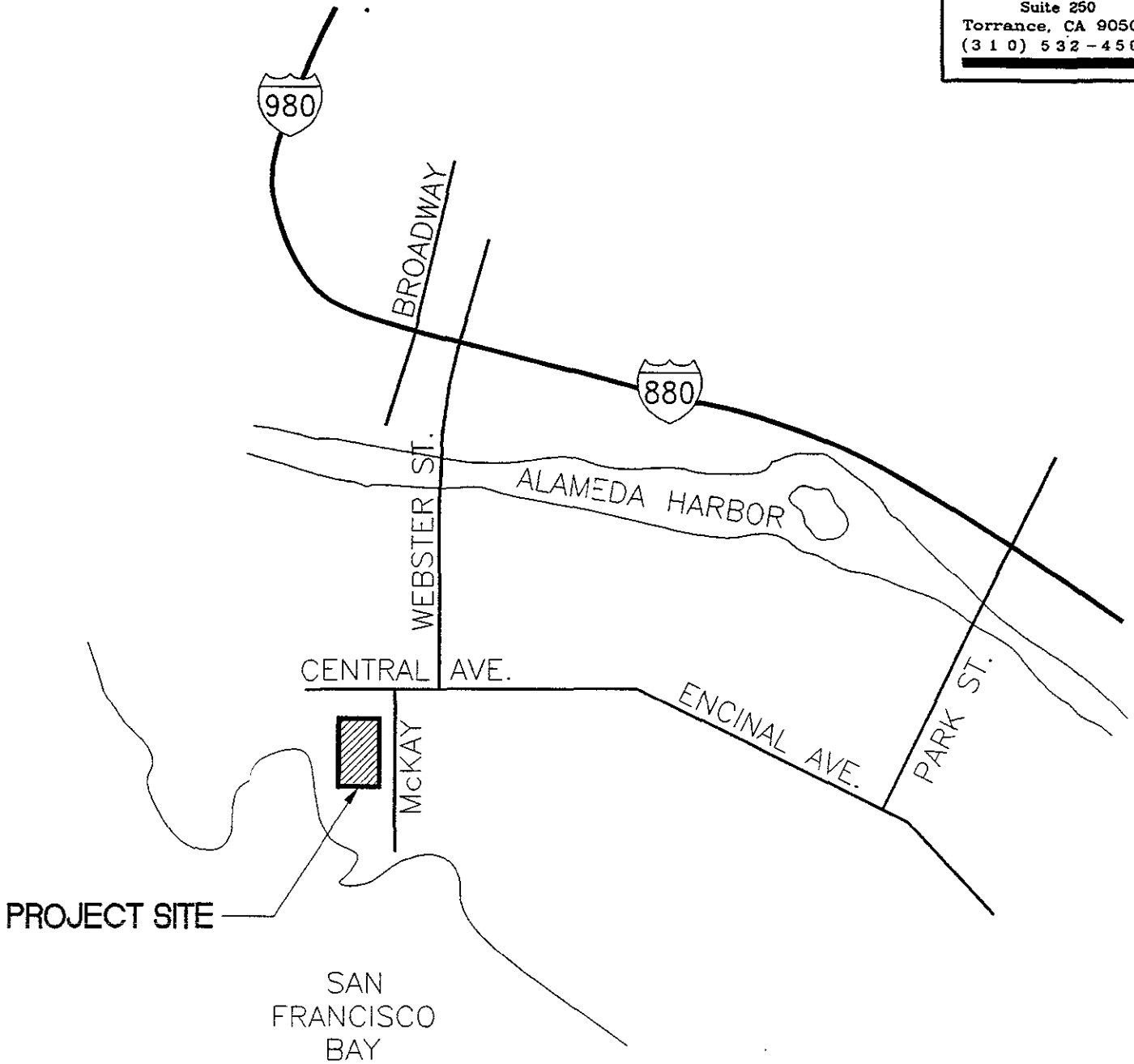
Summary Quarterly Static Water Level (SWL) Measurements

Location	Date	Time	SWL	Casing Elevation	Water Elevation
TW/MW-5	5/18/95	1819	4.27	8.37	4.1
	8/31/95	1107	4.98	8.37	3.39
	10/5/95	1233	5.17	8.37	3.2
	11/1/95	1214	5.33	8.37	3.04
	12/8/95	1039	5.47	8.37	2.9
	3/8/96	1021	3.51	8.37	4.86
	7/5/96	1227	4.68	8.37	3.69
MW-6	5/18/95	1819	4.27	8.61	4.1
	8/31/95	1112	5.22	8.61	3.39
	10/5/95	1239	5.42	8.61	3.19
	11/1/95	1206	5.58	8.61	3.03
	12/8/95	1035	5.71	8.61	2.9
	3/8/96	1023	3.86	8.61	4.75
	7/5/96	1218	4.97	8.61	3.64

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

FIGURES

C A P E
ENVIRONMENTAL
MANAGEMENT
I N C
20280 S Vermont Ave.
Suite 250
Torrance, CA 90502
(3 1 0) 5 3 2 - 4 5 0 0



VICINITY MAP

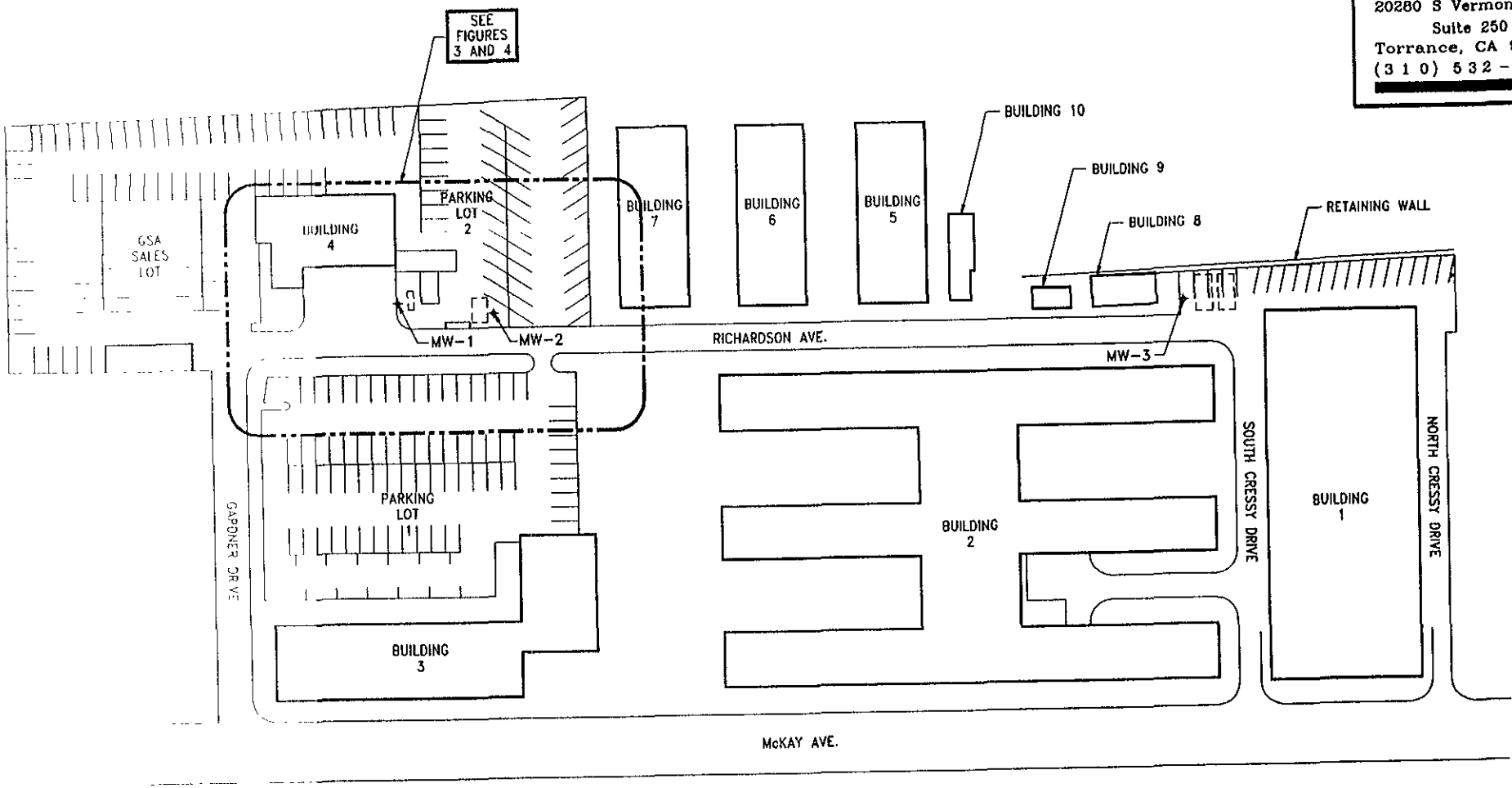
NOT TO SCALE

PROJECT NORTH

SHEET TITLE	CHECKED BY	PROJECT NUMBER
FIGURE 1 – SITE VICINITY MAP	L. HARLAN	24030 24

PROJECT TITLE	DRAWN BY	DATE	SHEET
ALAMEDA FEDERAL CENTER ALAMEDA, CA	J GONZALES	JUL 29, '96	1 OF 1

C A P E
ENVIRONMENTAL
MANAGEMENT
I N C
20280 S Vermont Ave.
Suite 250
Torrance, CA 90502
(3 1 0) 5 3 2 - 4 5 0 0



LEGEND

MW EXISTING MONITORING WELL

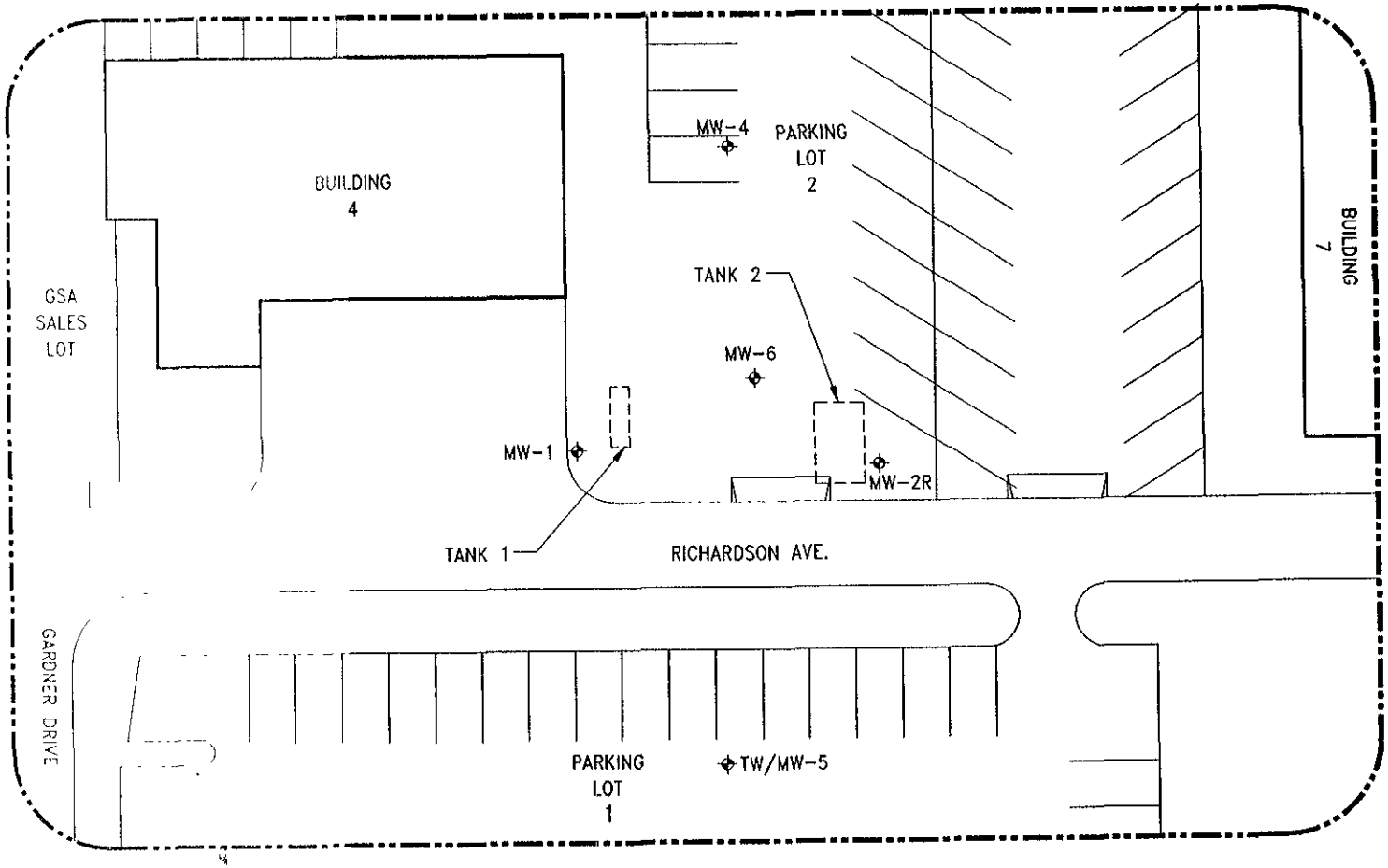
GRAPHIC SCALE

0 10 50 100 150'

PROJECT NORTH

SHEET TITLE: FIGURE 2 - SITE PLAN		CHECKED BY: L. HARLAN	PROJECT NUMBER: 2403C.24
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUL. 29, '96	SHEET: 1 OF 1

C A P E
ENVIRONMENTAL
MANAGEMENT
I N C
20280 S Vermont Ave.
Suite 250
Torrance, CA 90502
(3 1 0) 5 3 2 - 4 5 0 0



LEGEND

MW — EXISTING MONITORING WELL

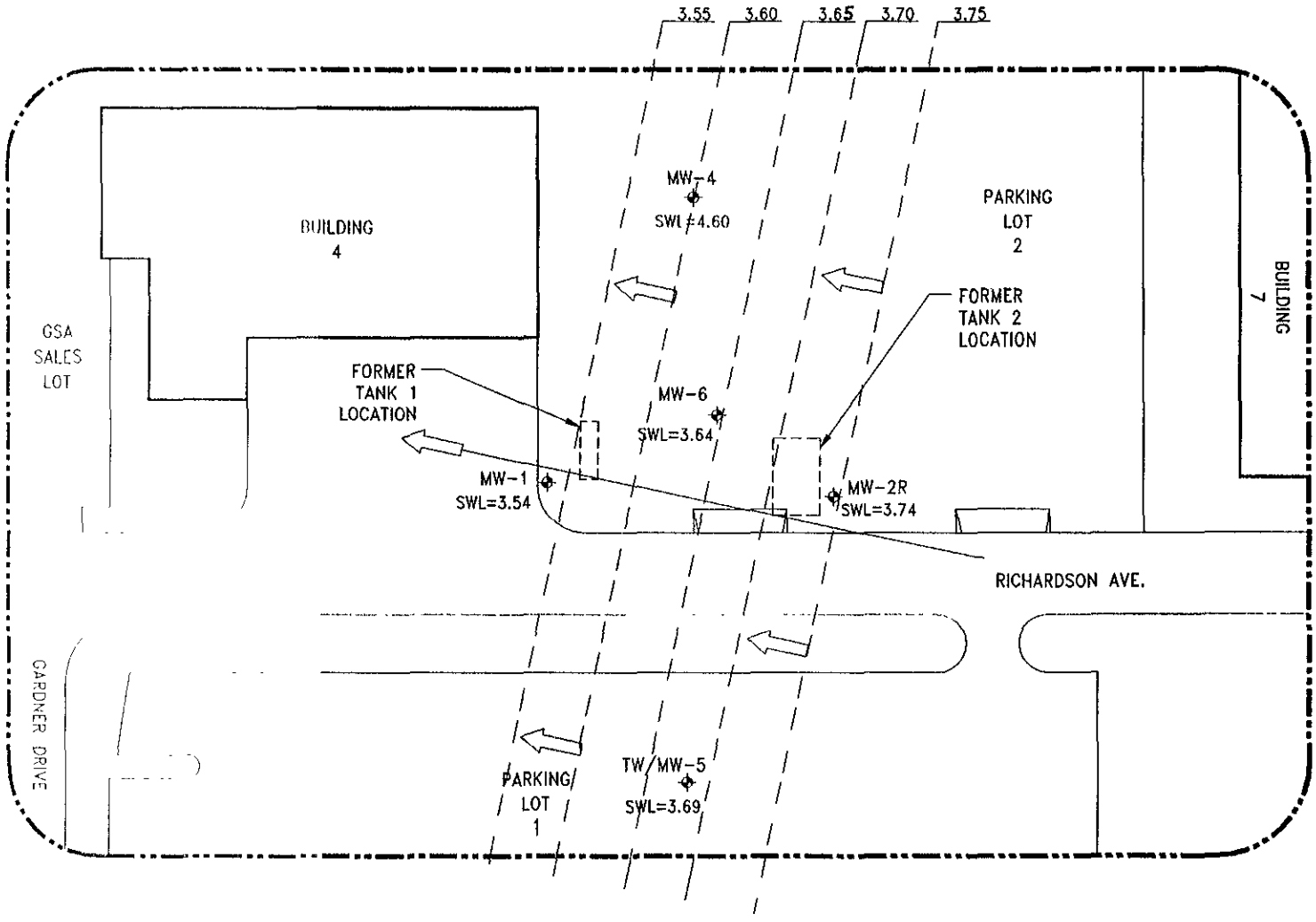
----- APPROX. LOCATION OF REMOVED UST's

GRAPHIC SCALE

PROJECT NORTH

SHEET TITLE: FIGURE 3 - TANK 1 & 2 AREA / BORING LOCATIONS	CHECKED BY: L. HARLAN	PROJECT NUMBER: 2403C.24	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUL. 29, '96	SHEET: 1 OF 1

C A P E
ENVIRONMENTAL
MANAGEMENT
I N C
20280 S Vermont Ave.
Suite 250
Torrance, CA 90502
(3 1 0) 5 3 2 - 4 6 0 0



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 4 – GROUNDWATER GRADIENT MAP (JULY 5, 1996)	CHECKED BY: L. HARLAN	PROJECT NUMBER: 2403C.24	
PROJECT TITLE: ALAMEDA FEDERAL CENTER, ALAMEDA, CA	DRAWN BY: J. GONZALES	DATE: JUL. 29, '96	SHEET: 1 OF 1

APPENDIX A

GROUNDWATER MONITOR WELL SAMPLING AND FIELD DATA SHEET

Groundwater Monitor Well Sampling & Field Data Sheet

CAPE ENVIRONMENTAL MANAGEMENT INC

Location No. MW-1
Sample No. MW-1
Project/Client: GSA- Alameda
Location: Alameda
Job No. 2403C-24

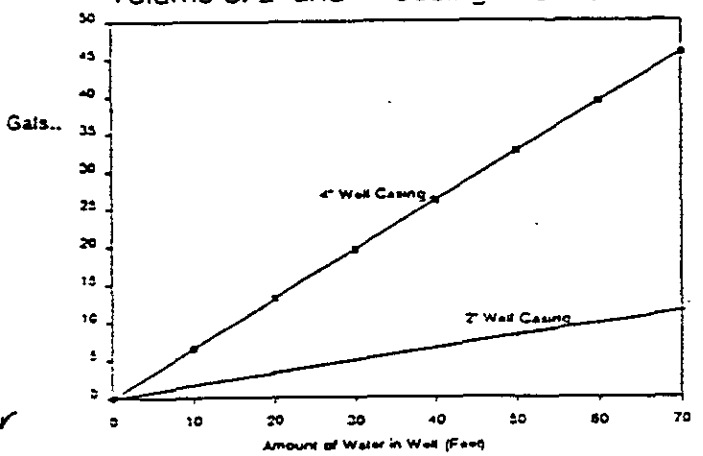
Date: 7-5-96 Time: 1445
Weather:
Conditions Clear Sunny
Air Temperature ~ 74° F
Personnel LH

WELL INFORMATION

Casing, Dia.: 2"
( ) Stainless Steel
( ) Steel
(X) PVC
( ) Teflon
( ) Other
Water Level: 4.65
Total Depth: 13
Measuring Device
( ) M-Scope
(X) Other Solinst
Volume of Water in Casing 1.5 gal. Approx.
Datum:
( ) Top of Surf. Casing
(X) Top of Well Casing
( ) Other

Intake, Diameter:
( ) Stainless Steel
( ) Steel
( ) 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 Fair. Stripped screw on traffic cover
Lock (X) yes, ( ) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

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

Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
( ) Other
Pumping Rate
Elapsed Time
Volume Pumped 8 gal.
Well Evacuated (X) yes, ( ) no
Number of Well Volumes Purged 5
→ At 6 gals.

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

Time Series Data

Measurement	1	2	3	4
Well Volumes	2.5 gal.	5 gal.	10 gal.	
Water Temp.	81.2	7 76	77.2	
pH	8.31	7.74	7.69	
Other Cond.	498	468	472	

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
( ) Polypropylene
(X) 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
( ) Turbid
(X) Color Light brown - Opaque
( ) Immiscible Product
(X) Other Slight sheen
Filed Condition of Sample
Temp
pH
Other

Certification:
This sample was collected and handled in accordance with standard regulatory and corporate procedures

Groundwater Monitor Well Sampling & Field Data Sheet

CAPE ENVIRONMENTAL MANAGEMENT INC

Location No. TW/MW-5
Sample No. TW/MW-5
Project/Client: GSA Alameda
Location: Alameda
Job No. 2403C.24

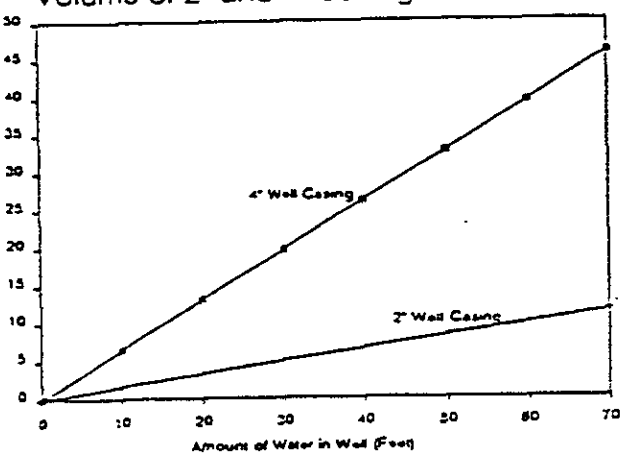
Date: 7-5-96 Time: 1315
Weather:
Conditions Clear Sunny
Air Temperature ~74° F
Personnel LH

WELL INFORMATION

Casing, Dia.: 2"
( ) Stainless Steel
( ) Steel
(X) PVC
( ) Teflon
( ) Other
Water Level: 4.68
Total Depth: 13
Measuring Device
( ) M-Scope
(X) Other Solinst
Volume of Water in Casing 1.5 gal. Approx.
Datum:
( ) Top of Surf. Casing
(X) Top of Well Casing
( ) Other

Intake, Diameter:
( ) Stainless Steel
( ) Steel
( ) 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 Good
Lock (X) yes, ( ) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

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

Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
( ) Other
Pumping Rate
Elapsed Time
Volume Pumped 8 gal.
Well Evacuated ( ) yes, (X) no
Number of Well Volumes Purged 5

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

Time Series Data

Measurement	1	2	3	4
Well Volumes	2.5 gal.	3.5 gal	5.5 gal.	8.5 gal.
Water Temp.	84.6	83.2	80.1	80.4
pH	7.72	7.61	7.64	7.63
Other Cond.	617	584	580	586

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
( ) Polypropylene
(X) Nylon
( ) Other
Sampling Equipment
(X) Dedicated
( ) Prepared Off-Site
( ) Field Cleaned
Metals Sample Field Filtered
( ) Yes
( ) No
Method N/A

Physical & Chemical Data:

Appearance:
(X) Clear
( ) Turoid
( ) Color
( ) Immiscible Product
(X) Other Fine sediment at well bottom
Filed Condition of Sample
Temp
pH
Other

Certification:
This sample was collected and handled in accordance with standard regulatory and corporate procedures

Groundwater Monitor Well Sampling & Field Data Sheet

CAMP ENVIRONMENTAL MANAGEMENT INC

Location No. MW-6
Sample No. MW-6
Project/Client: GSA. Alameda
Location: Alameda
Job No. 2403C.24

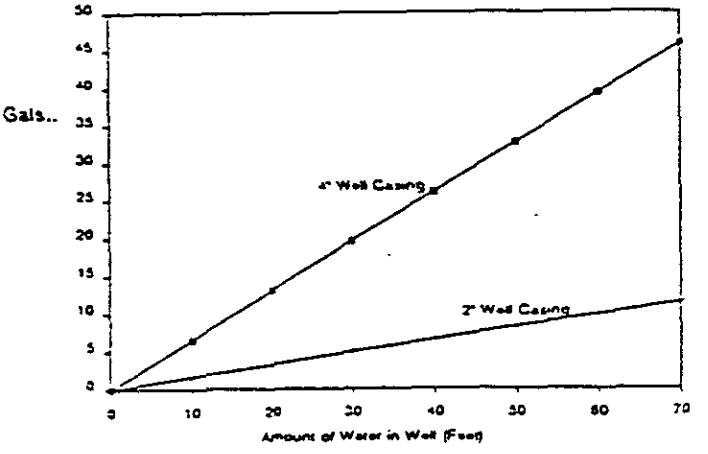
Date: 7-5-96 Time: 1415
Weather:
Conditions Clear Sunny
Air Temperature ~ 74°F
Personnel CH

WELL INFORMATION

Casing, Dia.: 4"
( ) Stainless Steel
( ) Steel
(X) PVC
( ) Teflon
( ) Other
Water Level: 4.97
Total Depth: 14
Measuring Device
( ) M-Scope
(X) Other Solinst
Volume of Water in Casing 5 gal. Approx.
Datum:
( ) Top of Surf. Casing
(X) Top of Well Casing
( ) Other

Intake, Diameter:
( ) Stainless Steel
( ) Steel
( ) 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 Good
Lock (X) yes, ( ) no

Volume of 2" and 4" Casing in Gallons



Purging Data:

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

Tubing/rope
( ) Teflon
(X) Polypropylene
( ) Nylon
( ) Other
Pumping Rate
Elapsed Time
Volume Pumped 15 gal
Well Evacuated (X) yes. ( ) no
Number of Well Volumes Purged 3
→ At 6 gals.

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

Time Series Data

Measurement	1	2	3	4
Well Volumes	2.5gal.	5gal	10gal.	15gal.
Water Temp.	79.4	79.8	77.9	78.4
pH	8.24	7.42	7.78	8.04
Other Cond.	553	597	583	598

1st 2 gals. black color w/ septic odor then clear.

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:
(X) Clear
( ) Turbid
( ) Color
( ) Immiscible Product
(X) Other Septic odor (SEE ABOVE)
Filed Condition of Sample
Temp
pH
Other

Certification:
This sample was collected and handled in accordance with standard regulatory and corporate procedures

APPENDIX B

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

ANALYTICAL REPORT

Prepared for:

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

Date: 19-JUL-96
Lab Job Number: 126205
Project ID: 2403C.24
Location: Alameda

Reviewed by: _____

Reviewed by: _____

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 126205
CLIENT: Cape Environmental, Inc.
PROJECT ID: 2403C.24
LOCATION: Alameda

DATE RECEIVED: 07/06/96
DATE SAMPLED : 07/06/96
DATE ANALYZED: 07/17/96
DATE REPORTED: 07/19/96

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520 BF

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
126205-001	MW-6	ND	mg/L	5
126205-002	TW/MW-5	ND	mg/L	5
126205-003	MW-1	ND	mg/L	5
METHOD BLK	N/A	ND	mg/L	5

ND = Not detected at or above reporting limit

QA/QC SUMMARY: BS/BSD OF SAMPLE QC26399

RPD, %	1
RECOVERY, %	81

Polynuclear Aromatic Hydrocarbons by GC/MS

Client:	Cape Environmental, Inc.	Analysis Method:	EPA 8270
Project#:	2403C.24	Prep Method:	EPA 3520
Location:	Alameda		

Field ID:	MW-6	Sampled:	07/06/96
Lab ID:	126205-001	Received:	07/06/96
Matrix:	Water	Extracted:	07/08/96
Batch#:	28585	Analyzed:	07/10/96
Units:	ug/L		
Diln Fac:	1		

Analyte	Result	Reporting Limit
Naphthalene	ND	9.4
Acenaphthylene	ND	9.4
Acenaphthene	ND	9.4
Fluorene	ND	9.4
Phenanthrene	ND	9.4
Anthracene	ND	9.4
Fluoranthene	ND	9.4
Pyrene	ND	9.4
Benzo(a)anthracene	ND	9.4
Chrysene	ND	9.4
Benzo(b)fluoranthene	ND	9.4
Benzo(k)fluoranthene	ND	9.4
Benzo(a)pyrene	ND	9.4
Indeno(1,2,3-cd)pyrene	ND	9.4
Dibenz(a,h)anthracene	ND	9.4
Benzo(g,h,i)perylene	ND	9.4

Surrogate	%Recovery	Recovery Limits
Nitrobenzene-d5	94	35-114
2-Fluorobiphenyl	85	43-116
Terphenyl-d14	49	33-141

Polynuclear Aromatic Hydrocarbons by GC/MS

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8270
Prep Method: EPA 3520

Field ID: TW/MW-5
Lab ID: 126205-002
Matrix: Water
Batch#: 28585
Units: ug/L
Diln Fac: 1

Sampled: 07/06/96
Received: 07/06/96
Extracted: 07/08/96
Analyzed: 07/10/96

Analyte	Result	Reporting Limit
Naphthalene	ND	9.4
Acenaphthylene	ND	9.4
Acenaphthene	ND	9.4
Fluorene	ND	9.4
Phenanthrene	ND	9.4
Anthracene	ND	9.4
Fluoranthene	ND	9.4
Pyrene	ND	9.4
Benzo(a)anthracene	ND	9.4
Chrysene	ND	9.4
Benzo(b)fluoranthene	ND	9.4
Benzo(k)fluoranthene	ND	9.4
Benzo(a)pyrene	ND	9.4
Indeno(1,2,3-cd)pyrene	ND	9.4
Dibenz(a,h)anthracene	ND	9.4
Benzo(g,h,i)perylene	ND	9.4

Surrogate	%Recovery	Recovery Limits
Nitrobenzene-d5	93	35-114
2-Fluorobiphenyl	89	43-116
Terphenyl-d14	46	33-141

Polynuclear Aromatic Hydrocarbons by GC/MS

Client:	Cape Environmental, Inc.	Analysis Method:	EPA 8270
Project#:	2403C.24	Prep Method:	EPA 3520
Location:	Alameda		

Field ID:	MW-1	Sampled:	07/06/96
Lab ID:	126205-003	Received:	07/06/96
Matrix:	Water	Extracted:	07/08/96
Batch#:	28585	Analyzed:	07/10/96
Units:	ug/L		
Diln Fac:	1		

Analyte	Result	Reporting Limit
Naphthalene	ND	9.4
Acenaphthylene	ND	9.4
Acenaphthene	ND	9.4
Fluorene	ND	9.4
Phenanthrene	ND	9.4
Anthracene	ND	9.4
Fluoranthene	ND	9.4
Pyrene	ND	9.4
Benzo(a)anthracene	ND	9.4
Chrysene	ND	9.4
Benzo(b)fluoranthene	ND	9.4
Benzo(k)fluoranthene	ND	9.4
Benzo(a)pyrene	ND	9.4
Indeno(1,2,3-cd)pyrene	ND	9.4
Dibenz(a,h)anthracene	ND	9.4
Benzo(g,h,i)perylene	ND	9.4

Surrogate	%Recovery	Recovery Limits
Nitrobenzene-d5	92	35-114
2-Fluorobiphenyl	81	43-116
Terphenyl-d14	45	33-141

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

Polynuclear Aromatic Hydrocarbons by GC/MS

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8270
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water
Batch#: 28585
Units: ug/L
Diln Fac: 1

Prep Date: 07/08/96
Analysis Date: 07/10/96

MB Lab ID: QC25851

Analyte	Result	Reporting Limit
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
Benzo(a)pyrene	ND	10
Indeno(1,2,3-cd)pyrene	ND	10
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10

Surrogate	%Rec	Recovery Limits
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	95	43-116
Terphenyl-d14	78	33-141

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

Polynuclear Aromatic Hydrocarbons by GC/MS

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8270
Prep Method: EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
Batch#: 28585
Units: ug/L
Diln Fac: 1

Prep Date: 07/08/96
Analysis Date: 07/10/96

BS Lab ID: QC25852

Analyte	Spike Added	BS	%Rec	#	Limits
Acenaphthene	50	47.63	95	✓	46-118
Pyrene	50	41.18	82	✓	26-127

Surrogate	%Rec	Limits
Nitrobenzene-d5	96	35-114
2-Fluorobiphenyl	92	43-116
Terphenyl-d14	86	33-141

BSD Lab ID: QC25853

Analyte	Spike Added	BSD	%Rec	#	Limits	RPD	#	Limit
Acenaphthene	50	45.22	90	✓	46-118	5		<31
Pyrene	50	38.31	77		26-127	6		<31

Surrogate	%Rec	Limits
Nitrobenzene-d5	95	35-114
2-Fluorobiphenyl	90	43-116
Terphenyl-d14	71	33-141

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 2 outside limits
Spike Recovery: 0 out of 4 outside limits

Halogenated Volatile Organics
EPA 8010 Analyte List

Client:	Cape Environmental, Inc.	Analysis Method:	EPA 8240
Project#:	2403C.24	Prep Method:	EPA 5030
Location:	Alameda		

Field ID:	MW-6	Sampled:	07/06/96
Lab ID:	126205-001	Received:	07/06/96
Matrix:	Water	Extracted:	07/15/96
Batch#:	28678	Analyzed:	07/15/96
Units:	ug/L		
Diln Fac:	1		

Analyte	Result	Reporting Limit
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	5.0
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

Surrogate	%Recovery	Recovery Limits
Toluene-d8	100	87-125
Bromofluorobenzene	95	79-122
1,2-Dichloroethane-d4	113	68-126

Halogenated Volatile Organics
EPA 8010 Analyte List

Client:	Cape Environmental, Inc.	Analysis Method:	EPA 8240
Project#:	2403C.24	Prep Method:	EPA 5030
Location:	Alameda		

Field ID:	TW/MW-5	Sampled:	07/06/96
Lab ID:	126205-002	Received:	07/06/96
Matrix:	Water	Extracted:	07/15/96
Batch#:	28678	Analyzed:	07/15/96
Units:	ug/L		
Diln Fac:	1		

Analyte	Result	Reporting Limit
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	5.0
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

Surrogate	%Recovery	Recovery Limits
Toluene-d8	100	87-125
Bromofluorobenzene	95	79-122
1,2-Dichloroethane-d4	112	68-126

Halogenated Volatile Organics
EPA 8010 Analyte List

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8240
Prep Method: EPA 5030

Field ID: MW-1
Lab ID: 126205-003
Matrix: Water
Batch#: 28678
Units: ug/L
Diln Fac: 1

Sampled: 07/06/96
Received: 07/06/96
Extracted: 07/15/96
Analyzed: 07/15/96

Analyte	Result	Reporting Limit
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	22	1.0
trans-1,2-Dichloroethene	5.0	1.0
Chloroform	ND	1.0
Freon 113	ND	5.0
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

Surrogate	%Recovery	Recovery Limits
Toluene-d8	100	87-125
Bromofluorobenzene	95	79-122
1,2-Dichloroethane-d4	112	68-126

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

Halogenated Volatile Organics
EPA 8010 Analyte List

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8240
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 28678
Units: ug/L
Diln Fac: 1

Prep Date: 07/15/96
Analysis Date: 07/15/96

MB Lab ID: QC26253

Analyte	Result	Reporting Limit
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	5.0
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

Surrogate	%Rec	Recovery Limits
Toluene-d8	99	87-125
Bromofluorobenzene	94	79-122
1,2-Dichloroethane-d4	106	68-126

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

Halogenated Volatile Organics

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8240
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 28678
Units: ug/L
Diln Fac: 1

Prep Date: 07/15/96
Analysis Date: 07/15/96

LCS Lab ID: QC26252

Analyte	Result	Spike Added	%Rec #	Limits
1,1-Dichloroethene	54.82	50	110	51-180
Trichloroethene	50.01	50	100	73-141
Chlorobenzene	50.93	50	102	83-129

Surrogate	%Rec	Limits
Toluene-d8	100	87-125
Bromofluorobenzene	94	79-122
1,2-Dichloroethane-d4	102	68-126

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 3 outside limits

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

Halogenated Volatile Organics

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8240
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ
Lab ID: 126271-009
Matrix: Water
Batch#: 28678
Units: ug/L
Diln Fac: 1

Sample Date: 07/11/96
Received Date: 07/12/96
Prep Date: 07/15/96
Analysis Date: 07/15/96

MS Lab ID: QC26272

Analyte	Spike Added	Sample	MS	%Rec #	Limits
1,1-Dichloroethene	50	0	51.75	103	51-180
Trichloroethene	50	0	48.67	97	73-141
Chlorobenzene	50	0	49.92	100	83-129

Surrogate	%Rec	Limits
Toluene-d8	100	87-125
Bromofluorobenzene	96	79-122
1,2-Dichloroethane-d4	110	68-126

MSD Lab ID: QC26273

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
1,1-Dichloroethene	50	51.31	103	51-180	1	<22
Trichloroethene	50	49.01	98	73-141	1	<24
Chlorobenzene	50	49.36	99	83-129	1	<21

Surrogate	%Rec	Limits
Toluene-d8	100	87-125
Bromofluorobenzene	95	79-122
1,2-Dichloroethane-d4	108	68-126

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 3 outside limits
Spike Recovery: 0 out of 6 outside limits

BTXE

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8020
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
126205-003	MW-1	28655	07/06/96	07/15/96	07/15/96	

Matrix: Water

Analyte	Units	126205-003
Diln Fac:		1
Benzene	ug/L	<0.5
Toluene	ug/L	<0.5
Ethylbenzene	ug/L	<0.5
m,p-Xylenes	ug/L	<0.5
o-Xylene	ug/L	<0.5
Surrogate		
Trifluorotoluene	%REC	95
Bromobenzene	%REC	75

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

BTXE

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8020
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 28655
Units: ug/L
Diln Fac: 1

Prep Date: 07/15/96
Analysis Date: 07/15/96

MB Lab ID: QC26149

Analyte	Result
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	93	58-130
Bromobenzene	74	62-131

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

BTXE

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8020
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 28655
Units: ug/L
Diln Fac: 1

Prep Date: 07/15/96
Analysis Date: 07/15/96

LCS Lab ID: QC26151

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	19.1	20	96	80-120
Toluene	19.2	20	96	80-120
Ethylbenzene	18.3	20	92	80-120
m,p-Xylenes	37.1	40	93	80-120
o-Xylene	18.9	20	95	80-120

Surrogate	%Rec	Limits
Trifluorotoluene	96	58-130
Bromobenzene	83	62-131

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
Spike Recovery: 0 out of 5 outside limits

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

BTXE

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: EPA 8020
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: MW-1
Lab ID: 126205-003
Matrix: Water
Batch#: 28655
Units: ug/L
Diln Fac: 1

Sample Date: 07/06/96
Received Date: 07/06/96
Prep Date: 07/15/96
Analysis Date: 07/15/96

MS Lab ID: QC26152

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Benzene	20	<0.5000	20.1	101	75-125
Toluene	20	<0.5000	19.4	97	75-125
Ethylbenzene	20	<0.5000	19.5	98	75-125
m,p-Xylenes	40	<0.5000	37.9	95	75-125
o-Xylene	20	<0.5000	19.3	97	75-125

Surrogate	%Rec	Limits
Trifluorotoluene	97	58-130
Bromobenzene	82	62-131

MSD Lab ID: QC26153

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Benzene	20	20	100	75-125	1	<20
Toluene	20	19.3	97	75-125	1	<20
Ethylbenzene	20	19.6	98	75-125	1	<20
m,p-Xylenes	40	38.3	96	75-125	1	<20
o-Xylene	20	19.7	99	75-125	2	<20

Surrogate	%Rec	Limits
Trifluorotoluene	97	58-130
Bromobenzene	84	62-131

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

TEH-Tot Ext Hydrocarbons

Client: Cape Environmental, Inc.
Project#: 2403C.24
Location: Alameda

Analysis Method: CA LUFT (EPA 8015M)
Prep Method: EPA 3520
Cleanup Method: 3630

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
126205-001	MW-6	28679	07/06/96	07/15/96	07/17/96	
126205-002	TW/MW-5	28679	07/06/96	07/15/96	07/17/96	
126205-003	MW-1	28679	07/06/96	07/15/96	07/17/96	

Matrix: Water

Analyte	Units	126205-001	126205-002	126205-003
Diln Fac:		1	1	1
Diesel C12-C22	ug/L	<47	<47	<47
Surrogate				
Hexacosane	%REC	80	82	83

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Client:	Cape Environmental, Inc.	Analysis Method:	CA LUFT (EPA 8015M)
Project#:	2403C.24	Prep Method:	EPA 3520
Location:	Alameda	Cleanup Method:	EPA 3630

METHOD BLANK

Matrix:	Water	Prep Date:	07/15/96
Batch#:	28679	Analysis Date:	07/17/96
Units:	ug/L		
Diln Fac:	1		

MB Lab ID: QC26255

Analyte	Result	
Diesel C12-C22	<50	
Surrogate	**%Rec**	**Recovery Limits**
Hexacosane	88	60-140

Curtis & Tompkins, Ltd.

Lab #: 126205 BATCH QC REPORT

TEH-Tot Ext Hydrocarbons

Client:	Cape Environmental, Inc.	Analysis Method:	CA LUFT (EPA 8015M)
Project#:	2403C.24	Prep Method:	EPA 3520
Location:	Alameda	Cleanup Method:	EPA 3630

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix:	Water	Prep Date:	07/15/96
Batch#:	28679	Analysis Date:	07/17/96
Units:	ug/L		
Diln Fac:	1		

BS Lab ID: QC26256

Analyte	Spike Added	BS	%Rec	#	Limits
Diesel C12-C22	2565	1737	70		60-140
Surrogate	%Rec	Limits			
Hexacosane	92	60-140			

BSD Lab ID: QC26257

Analyte	Spike Added	BSD	%Rec	#	Limits	RPD	#	Limit
Diesel C12-C22	2565	1686	68		60-140	3		<35
Surrogate	%Rec	Limits						
Hexacosane	86	60-140						

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 1 outside limits
Spike Recovery: 0 out of 2 outside limits

CHAIN OF CUSTODY FORM

Page 1 of 1

12625

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

Sampler: Larry M. Harlan

Report to: SAME

Project No: 2403C.24 Company: Cape Env. Mgmt. Inc.

Project Name: GSA - ALAMEDA Telephone: 310 532 4500

Turnaround Time: 10 DAY (NORMAL) Fax: " 5326022

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: OIL & GREASE 5520	Analyses: TEH w/ SILICA CLEAN-UP	Analyses: 8010	Analyses: 8270 PNA'S ONLY	Analyses: 8020 BTEX
-1	MW-6	7.6.96	1425		X		2	X				VOA			X		
	MW-6		1425				2					1 L AMBER		X		X	
	MW-6		1425				1	*				1 L AMBER	X				
-2	TW/MW-5		1332				2	X				VOA			X		
	TW/MW-5		1332				2					1 L AMBER		X		X	
	TW/MW-5		1332				1	*				1 L AMBER	X				
-3	MW-1		1510				4	X				VOA			X		X
	MW-1		1510				2					1 L AMBER		X		X	
	MW-1		1510				1					1 L AMBER	X				
			1696		X												

5520 was not preserved! Client informed me. CW

RELINQUISHED BY:	RECEIVED BY:
Larry M Harlan 7/5/96 1621 DATE/TIME	Carol Workman 7/5/96 1624 DATE/TIME
DATE/TIME	DATE/TIME
DATE/TIME	DATE/TIME

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