



December 30, 1997

Contracting Officer
Naval Facilities Engineering Command, Southwest Division
Mr. Dave Jespersen 57 CS1.DJ
Building 131, 1220 Pacific Highway
San Diego, California 92132-5187

Attn: Ms. Lynn Marie Hornecker, Code 56MC.LMH

**Re: *Tank Removal and Site Closure Report for
Underground Storage Tank (UST) 386A at
Marine Corps Air Station El Toro, California
SWDIV Contract No. N68711-93-D-1459
DCN SW 4693, Delivery Order 0070***

This Tank Removal and Site Closure Report summarizes the field activities conducted and associated with the removal of one underground storage tank (UST) designated as UST 386A at Marine Corps Air Station, El Toro, California (hereinafter referred to as "the Station"). The location of the Station is shown on Figure 1-1, Facility Location Map.

UST 386A is located in the southwest quadrant of the Station, north of the intersection of South Marine Way and K Street. UST 386A is associated with existing Building 386, Construction Equipment Shop and used for storage of fuel oil. The UST location is shown on Figure 1-2.

Summary of Field Activities

Field activities were conducted in accordance with the approved *Draft Work Plan, Remediation of Various Underground Storage Tanks at the Marine Corps Air Station El Toro, California (OHM, 1995)*. Details of the UST 386A field removal activities are described in the Tank Removal Summary Sheet, provided in Appendix A.

Permitting and Utility Investigation

Prior to initiating field activities, OHM completed an Orange County Health Care Agency (OCHCA) facility modification application and received approval (Permit No. 97-138) for the removal of UST 386A. The OCHCA facility modification application and approval form is provided as Appendix B.

A geophysical survey of the UST 386A area was conducted by the OHM subcontractor, Geovision Geophysical Services Inc., to locate the underground utilities in the area. The Geophysical Survey Data is provided as Appendix C.

UST Gauging, Removal and Disposal

UST 386A was located and identified as a 1,000-gallon fiberglass UST. The UST was exposed on November 25, 1997 and UST was found full of water. Approximately 900 gallons of water was pumped out from the UST 386A and transported to the Station's central treatment facility (operated and maintained under a separate phase of this contract) for treatment and disposal.

UST 386A was removed on November 26, 1997 in the presence of an OCHCA field inspector. The bottom of the UST was at a depth of approximately eight feet below ground surface. Approximately 20 yd³ of soil were excavated to remove the UST 386A.

Exposed piping associated with the UST that extended beyond the excavation limits was cut at the excavation limits, grouted, capped, and abandoned in place. The piping was abandoned in place with the concurrence of an OCHCA field inspector.

Confirmation Soil Sampling, Analyses, and Results

Following the removal of UST 386A, two confirmation soil samples were collected on November 26, 1997 from the bottom of the excavation (sample identification no. 18609-386A-776 and 18609-386A-777) in the presence of an OCHCA field inspector. The confirmation soil sampling locations are shown in Appendix D, Land Surveying Report and Soil Sample Locations.

The analytical result of the soil sample collected from the excavation pit are presented in Table 1, UST 386A-Confirmation Soil Sample Analytical Results. No petroleum hydrocarbons or Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) compounds were detected in the two confirmation soil samples. Based on review of the analytical result of the soil samples and the observed nonimpacted excavated soil condition, no further excavation was conducted. Laboratory analytical reports provided by APCL are included in Appendix E. Photographs of the field activities are provided in Appendix F, Site Photographs.

Waste Management

UST 386A contained approximately 900-gallons of water, which was pumped out and transferred to the Station's carbon adsorption treatment system for further treatment. Treated water was then transferred to the Station's Golf Course Holding Tank for reuse. The excavated 20 yd³ of soil was removed and transferred to the Station's Biocell facility.

UST 386A was decontaminated using steam and Alconox™ detergent. UST 386A was tested to verify the absence of flammable vapors and then transported to Station's central treatment facility compound. UST 386A was certified "clean" by a Marine Chemist on December 18, 1997. UST 386A is currently staged at the Station's central facility compound awaiting transport to the Defense Reutilization and Marketing Office for recycling. The Marine Chemist Certification for UST 386A is provided as Appendix G.

Land Surveying

After completing the confirmation soil sampling activities, the sample locations and limits of excavation were surveyed by California-registered land surveyor, Cal Vada Surveying Inc., The land surveying data for UST 386A is presented in Appendix D.

Site Restoration

Following receipt of the confirmation soil sample analytical results and with the concurrence of the Resident Officer in Charge of Construction, the excavation was backfilled on December 3, 1997 using clean treated soil and road base material on top. The site was restored to original grade.

Compaction was accomplished using a compaction wheel and a vibratory plate compactor, attached to a backhoe. Compaction tests were performed by R. T. Frankian and Associates. The compaction tests revealed greater than 90 percent relative compaction at the UST 386A excavation. A copy of the compaction results is provided in Appendix H, Compaction Test Field Reports.

Conclusions and Recommendation

Based on the information presented in this report and a review of the analytical results, the following conclusions have been reached:

- UST 386A was removed.
- There was no evidence of spillage or areas of heavy stains observed in the excavation.
- No petroleum hydrocarbons and BTEX compounds were detected in the confirmation soil samples.
- There was no groundwater encountered in the excavation.

Based on the information provided in this report, OHM, on behalf of the Station, recommends that a "No Further Action" status be granted by OCHCA for UST 386A.

Should you have any questions or comments, please feel free to contact the undersigned at (714) 263-1146.

Sincerely,
OHM REMEDIATION SERVICES, CORP.



Dhananjay Rawal
Project Engineer



Jay Neuhaus, R.G.
Project Manager

Attachments:

- Appendix A Tank Removal Summary Sheet
- Appendix B OCHCA Facility Modification Application
- Appendix C Geophysical Survey Data
- Appendix D Land Survey Report and Soil Sample Locations
- Appendix E Laboratory Analytical Reports
- Appendix F Site Photographs
- Appendix G Marine Chemist Certification
- Appendix H Compaction Test Field Reports

OHM Remediation Services Corp.

Table 1
Confirmation Soil Sample Analytical Results - UST Site 386A

OHM Sample Number		18609-386A-776	18609-386A-777
Sample Location		UST 386A-NW B Floor	UST 386A-SE B Floor
Date Collected		12/03/97	12/03/97
Depth (feet below ground surface)		9.7	9.7
		Unit	
<i>CA LUFT-8015M</i>			
TPH as Diesel		mg/kg	12 U
	<i>TPH as Motor Oil</i>	mg/kg	12 U
EPA 8020			
Benzene		µg/kg	5.9 U
Ethylbenzene		µg/kg	5.9 U
Toluene		µg/kg	5.9 U
Xylenes (total)		µg/kg	18 U
<i>ASTM D 2216</i>			
Percent Moisture		Percent	14.9
			14.6

Explanation:

B - bottom

CA LUFT - California Leaking Underground Fuel Tank

EPA - United States Environmental Protection Agency

M - modified

mg/kg - milligrams per kilogram

NW - northwest

OHM - OHM Remediation Services Corp.

S - south

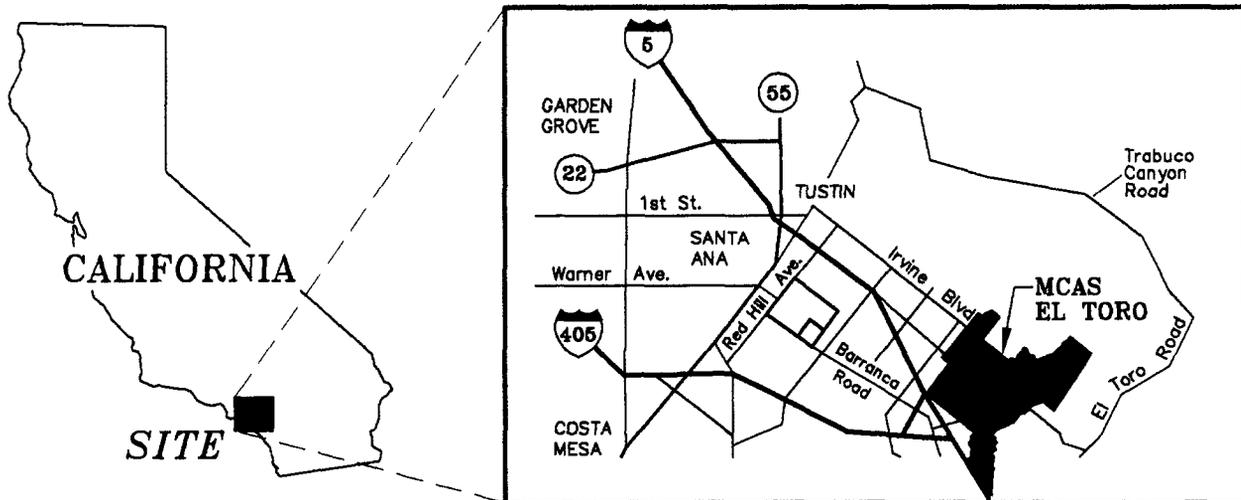
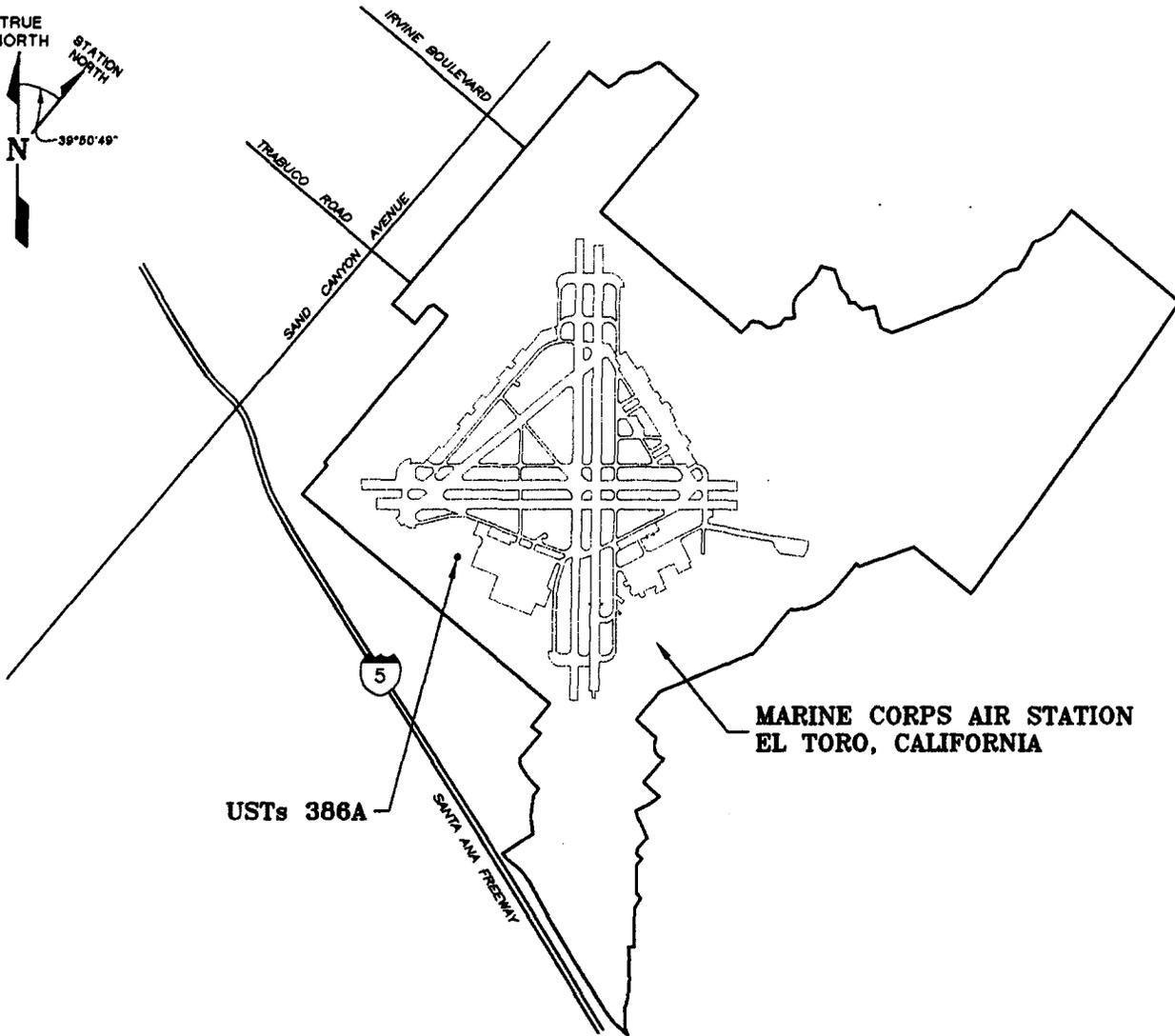
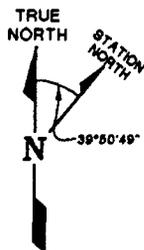
SE - southeast

TPH - total petroleum hydrocarbons

U - not detected above or equal to the stated reporting limit

UST - underground storage tank

µg/kg - micrograms per kilogram



Dec 31, 1997 - 10:43:02 C:\PROJECTS\18609\18609097.dwg

OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA				DRAWN BY R. PIRMORADIAN		DATE 12/31/97		
				CHECKED BY		DATE		
CONTRACT NAME SWDIV				APPROVED BY		DATE		
				PROJECT MANAGER		DATE		
AUTOCAD FILE No. 18609097.DWG		PLOT SCALE 1=1	SHEET OF 1 1	SCALE NONE	DOCUMENT CONTROL No. SW4693	OHM PROJECT No. 18609	FIGURE No. FIG 1-1	REVISION 0

**FACILITY LOCATION MAP
UST 386A**

**MARINE CORPUS AIR STATION
EL TORO, CALIFORNIA**

Appendix A
Tank Removal Summary Sheet

TANK REMOVAL AND SITE CLOSURE SUMMARY SHEET

Underground Storage Tank ID: UST 386A

Location: Marine Corps Air Station
El Toro, California

Site: Building 386, Construction Equipment Shop
South Marine Way and K Street

UST Size and Construction: 1,000-gallon fiberglass tank

Original Tank Usage: Storage of Fuel oil

UST Contents Disposed: 900 gallons of water to the Station's GAC System

UST Removal Date: November 26, 1997

OCHCA UST Removal Permit Number: 97-138

Confirmation Soil Sample Collected: 2 @ 9 feet below surface grade at bottom

OCHCA Field Inspector Present: Yes, during UST removal

Sample Analysis Methods: BTEX (EPA Method 8020)
TPH-Full Range (CALUFT 8015E)

Excavation Backfill: Approximately 42 cubic yards of stockpiled soil with crushed aggregate road base up to finish grade.

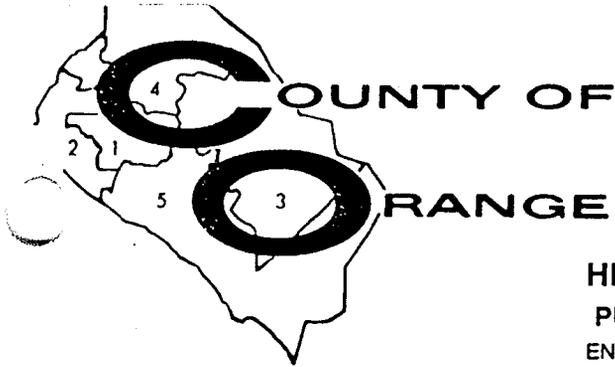
Excavation Compaction: 90 to 95 percent relative compaction

Sample Analytical Results: All Results below Detection Limits

Depth to Groundwater: 104 feet

Reference: Monitoring Well 10_DGMW77

Appendix B
Orange County Health Care Agency
Modification Application and Approval
Form.



TOM URAM
DIRECTOR

HUGH F. STALLWORTH, M.D.
HEALTH OFFICER

ENVIRONMENTAL HEALTH DIVISION
ROBERT E. MERRYMAN, REHS, MPH
DEPUTY DIRECTOR

HEALTH CARE AGENCY
PUBLIC HEALTH SERVICES
ENVIRONMENTAL HEALTH DIVISION
2009 E. EDINGER AVENUE
SANTA ANA, CALIFORNIA 92705
(714) 667-3700

CREDIT

5th Set.

5

DATE: 6/16/97

FACILITY MODIFICATION
APPLICATION
(INSTALLATION/REMOVAL/REPAIR)
(COMPLETE PAGES 1 & 2)

FACILITY INFORMATION

NAME: MARINE CORPS AIR STATION ELTORO
STREET ADDRESS: P O Box 95001
CITY: Santa Ana CA 92709
TOTAL NUMBER OF TANKS (AFTER INSTALLATION/REMOVAL)
AT THIS LOCATION: 0
TYPE OF BUSINESS:
 GASOLINE STATION FARM
 GOVERNMENT OTHER

TYPE OF CONSTRUCTION

INDICATE NO. OF TANK(S) BEING
REMOVED/REPAIRED/INSTALLED BELOW: (COMPLETE
PAGE 2 - INDICATING THE TANKS TO BE
INSTALLED/REMOVED, OR AFFECTED BY THE REPAIR)

- INSTALLATION(S)
- REPAIR(S)/RELINING(S) TO USTs
- CLOSURE(S)/REMOVAL(S)
- SYSTEM MODIFICATION (E.G. REPIPE, REPAIR TO PIPING)
- OTHER (SPECIFY) CREDIT FOR Removal

24 HOUR EMERGENCY CONTACT PERSON

DAYS: SCOTT KEHE 714-726-2506
NAME TELEPHONE
NIGHTS: OHM - 1-800-537-9540
ELTORO - 714-726-4111/2172
NAME TELEPHONE

APPLICANT

NAME: Dhananjay Raul
PLEASE PRINT
SIGNATURE: [Signature]

COMPANY NAME: OHM Remediation Services
TELEPHONE NO: 714-263-1146 x 303

FACILITY OPERATOR (CONTACT PERSON)

NAME: Lt Hope Katherian (Env. Dept)
BUSINESS TELEPHONE NO.: 714-726-3385

NK OWNER NAME (CORP., INDIVIDUAL, PUBLIC AGENCY):
MCA's ELTORO
STREET ADDRESS: Near Gate No. 3 Desert Station
CITY: ELTORO
STATE: CA ZIP 92630
TELEPHONE NO: 714-726-3309

BILLING ADDRESS INFORMATION

BILL TO NAME: OHM Remediation Services
BILL TO ADDRESS: 2031 main st
CITY: IRVINE
STATE: CA ZIP 92714
TELEPHONE NO.: 714-263-1146

NOTES: NEW INSTALLATIONS, CLOSURES, REPAIRS AND SYSTEM MODIFICATIONS OF UNDERGROUND STORAGE TANKS REQUIRE THE SUBMITTAL OF (4) SETS OF PLANS TO THIS DIVISION. THESE PLANS MUST BE APPROVED PRIOR TO THE INITIATION OF ANY CONSTRUCTION OR MODIFICATION. ALL PLANS OR REPORTS REQUIRED MUST ACCOMPANY THIS FORM AT THE TIME OF SUBMITTAL.

PLAN APPROVAL AND FEES ARE VALID FOR ONE YEAR. IF TANKS HAVE NOT BEEN REMOVED, INSTALLED OR MODIFIED WITHIN ONE YEAR OF THE APPROVAL DATE, NEW PLANS AND FEES MUST BE SUBMITTED.

OFFICE USE ONLY

PLAN CHECK NO.: _____ FEES PAID: _____ RCVD. BY: _____
PLAN APPROVAL DATE: _____ BY: _____
NUMBER OF TANKS TO RECEIVE A SURCHARGE BILL: _____ NUMBER OF TANKS TO BE ADDED TO BILLING: _____

TANK INFORMATION

PROVIDE THE INFORMATION BELOW FOR ALL TANKS AND PIPING SYSTEMS TO BE INSTALLED, REMOVED OR REPAIRED. ALSO INDICATE THE UPGRADE/CHANGES TO BE MADE TO EACH TANK SYSTEM.

TANK I.D.		98 #1 A	130 #2 A	130#3 B	130#4		
MATERIAL STORED	MATERIAL OR WASTE STORED	CURRENTLY	Fuel oil/Sul Diesel	Diesel	Diesel	Sand	
		PROPOSED	None	None	None	None	
		PREVIOUSLY	Unknown	Unknown	Unknown	Diesel	
	FUEL TYPE, I.E., UNLEADED		N/A	N/A	N/A	N/A	
CONTAINER	TYPE (TANK, SUMP, OTHERS)		TANK	UST	UST	UST	
	DOUBLE WALL/SINGLE WALL		N/A	N/A	N/A	N/A	
	UL NUMBER		N/A	N/A	N/A	N/A	
	YEAR INSTALLED		1943	Unknown	Unknown	1943	
	VAULTED/NOT VAULTED		N/A	N/A	N/A	N/A	
	PRIMARY	MANUFACTURER		N/A	N/A	N/A	N/A
		CAPACITY (GALLONS)		1,500	1,500	1,500	1,000
		CONSTRUCTION MATERIAL		Concrete	Steel	Steel	Steel
		THICKNESS (UNITS)		N/A	N/A	N/A	N/A
		INTERIOR LINING		N/A	N/A	N/A	N/A
	SECONDARY	MANUFACTURER					
		CAPACITY (GALLONS)		None	None	None	None
		CONSTRUCTION MATERIAL		None	None	None	None
		THICKNESS (UNITS)		None	None	None	None
	CORROSION PROTECTION						
TYPE OF LEAK DETECTION FOR USTs (LIQUID, PROBE, ETC.)		None	None	None	None		
MANUFACTURER OF LEAK DETECTOR							
PIPING	LOCATION (UNDER/ABOVE GROUND)		Underground	Underground	Underground	Underground	
	SUCTION/PRESSURE GRAVITY/UNKNOWN		Unknown	Unknown	Unknown	Unknown	
	PRIMARY	CONSTRUCTION MATERIAL					
		MANUFACTURER	None	None			
	SECONDARY	CONSTRUCTION MATERIAL					
		MANUFACTURER	None	None			
	TYPE OF LEAK DETECTION FOR PIPING (PRESSURE LOSS DEVICE, ETC.)		None	None	N/A	N/A	
MANUFACTURER OF LEAK DETECTOR							
OVERFILL PROTECTION (TYPE)							
SPILL CONTAINMENT (TYPE)							

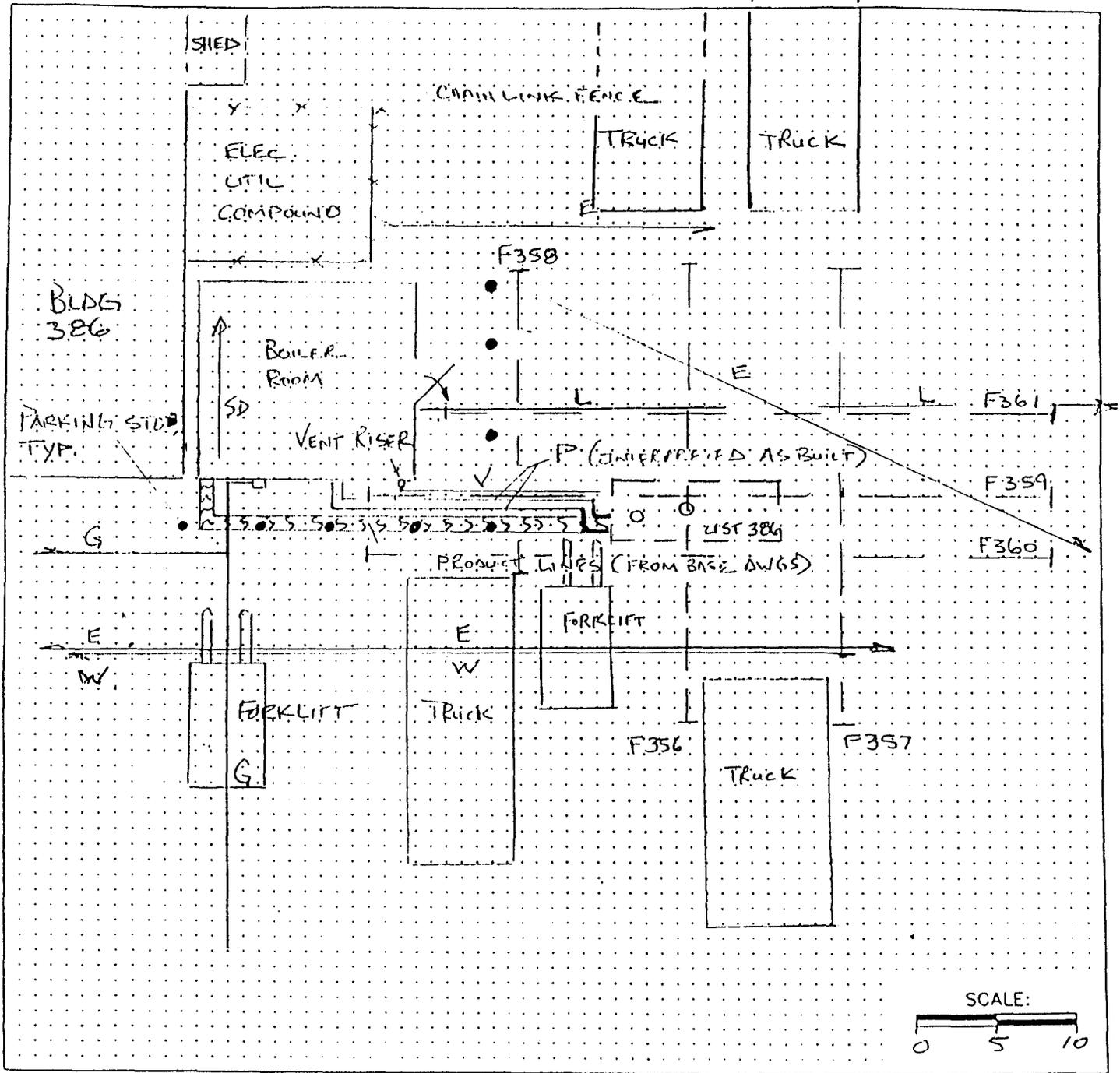
TANK INFORMATION

PROVIDE THE INFORMATION BELOW FOR ALL TANKS AND PIPING SYSTEMS TO BE INSTALLED, REMOVED OR REPAIRED. ALSO INDICATE THE UPGRADE/CHANGES TO BE MADE TO EACH TANK SYSTEM.

TANK I.D.		257 #1	386#2 A	#3	#4	
MATERIAL STORED	MATERIAL OR WASTE STORED	CURRENTLY	Fuel oil			
		PROPOSED	None			
		PREVIOUSLY	Unknown			
FUEL TYPE, I.E., UNLEADED			N/A			
CONTAINER	TYPE (TANK, SUMP, OTHERS)		UST			
	DOUBLE WALL/SINGLE WALL		N/A			
	UL NUMBER		N/A			
	YEAR INSTALLED		1984			
	VAULTED/NOT VAULTED		N/A			
	PRIMARY	MANUFACTURER		N/A		
		CAPACITY (GALLONS)		1,500		
		CONSTRUCTION MATERIAL		Steel		
		THICKNESS (UNITS)		N/A		
		INTERIOR LINING		N/A		
	SECONDARY	MANUFACTURER		N/A		
		CAPACITY (GALLONS)				
		CONSTRUCTION MATERIAL				
		THICKNESS (UNITS)				
	CORROSION PROTECTION			None		
	TYPE OF LEAK DETECTION FOR USTs (LIQUID, PROBE, ETC.)			None		
	MANUFACTURER OF LEAK DETECTOR			None		
PIPING	LOCATION (UNDER/ABOVE GROUND)		Underground			
	SUCTION/PRESSURE GRAVITY/UNKNOWN		N/A			
	PRIMARY	CONSTRUCTION MATERIAL	N/A			
		MANUFACTURER				
	SECONDARY	CONSTRUCTION MATERIAL	N/A			
		MANUFACTURER				
	TYPE OF LEAK DETECTION FOR PIPING (PRESSURE LOSS DEVICE, ETC.)			None		
MANUFACTURER OF LEAK DETECTOR						
OVERFILL PROTECTION (TYPE)						
PILL CONTAINMENT (TYPE)						

Site 386A

GEOPHYSICAL SURVEY MAP



LEGEND

— — — — — GEOPHYSICAL TRAVERSE

UTILITY:

E = ELECTRICAL, T = TELEPHONE,
 G = GAS, S = SEWER, SD = STORM DRAIN,
 W = WATER, P = PRODUCT LINE,
 V = VENT LINE, L = UNKNOWN LINE



Appendix C
Geophysical Survey Data

GEOPHYSICAL SURVEY RESULTS
FOR
SITE 386

MARINE CORPS AIR STATION, EL TORO
SANTA ANA, CALIFORNIA

Prepared for

OHM Remediation Services Corporation
Irvine, California

Prepared by

GEOVISION GEOPHYSICAL SERVICES
1785 Pomona Road, Suite B
Corona, California, 91720

April 9, 1997

GEOVISION JOB NUMBER: 97206-2

1.0 Introduction

A geophysical investigation was carried out on April 7, 1997 for OHM Remediation Services Corporation surrounding Building 386, located at Marine Corps Air Station (MCAS) El Toro, Santa Ana, California. The investigation was conducted to verify and accurately locate the presence of all detectable underground utilities prior to drilling in the surveyed area.

2.0 Field Procedures

GEOVision's standard clearance procedures were used to survey the site to accurately locate underground utilities in the surrounding area. GEOVision field teams used the attached GEOPHYSICAL CLEARANCE FORM to ensure that all appropriate procedures were followed. Procedures that were not appropriate for the site were lined out.

The crew used the Metrotech utility locator in the 82 MHz mode, which picks up any conductive piping in the area, to circle the suspected utility location. One field crew member stood on or near the suspected utility location holding the transmitter, and keeping it constantly oriented on the second crew member who swept out a circle around the suspected utility location. If a line was found, the Metrotech transmitter was then placed on the suspected line while the second crew member tracked the line with the receiver. We also swept the area with the Metrotech in 60 hz mode to locate any live electrical lines. The utility lines found were marked on the ground and located on the map.

The area above the suspected tank was swept using the Fisher deep search metal detector. This instrument is useful for identifying the location of large metal objects such as U.S.T.'s

A GSSI SIR-2 digital Ground Penetrating Radar (GPR) system was used to collect GPR profiles surrounding the site and on the area where the Fisher indicated a possible buried metal object. The enclosed site map shows the locations of all profiles. The profiles were chosen to intercept utilities entering the area to be cleared. Additional profiles along lines 5 feet apart in the possible U.S.T. area were collected. All radar data were collected using the 500 MHz antenna. A marker switch on the antenna handle was used to place 5' spaced fiduciary marks on each profile as the antenna was pulled along the profile lines. All GPR records were stored on the system's hard drive for later processing and archiving, and were printed out onsite using a portable printer. Representative GPR profiles, hand annotated by the operator in the field, are attached.

An accurate, scaled geophysical survey map was then drawn on the back of the GEOPHYSICAL CLEARANCE FORM. All features found by GPR or Metrotech within the surveyed area were marked at the site. They are also shown on the enclosed site map.

3.0 Conclusions

Five utilities were located as shown on the site map. All utilities were successfully located via utility locator or radar. The tank at this site is fiberglass; it was located from surface metallic caps on the tank lids. The tank area is marked in orange paint. Caution is indicated at this site before proceeding with excavation due to the presence of high voltage lines.



geophysical services
a division of Agbalian Associates

GEOPHYSICAL CLEARANCE FORM

PROJECT NAME: OHM PROJECT NUMBER 97206-2
 LOCATION MANS EL TORO
 DATE 8 APR 97 TIME 1045L
 SITE DESCRIPTION: TANK 386A

GEOPHYSICAL EQUIPMENT

GROUND PENETRATING RADAR (GPR) UNIT: SILZ MAGNETOMETER: 989
 ELECTROMAGNETIC (EM): --- EM LINE TRACER (LT): 7890
 METAL DETECTOR (MD): FISHER OTHER: -

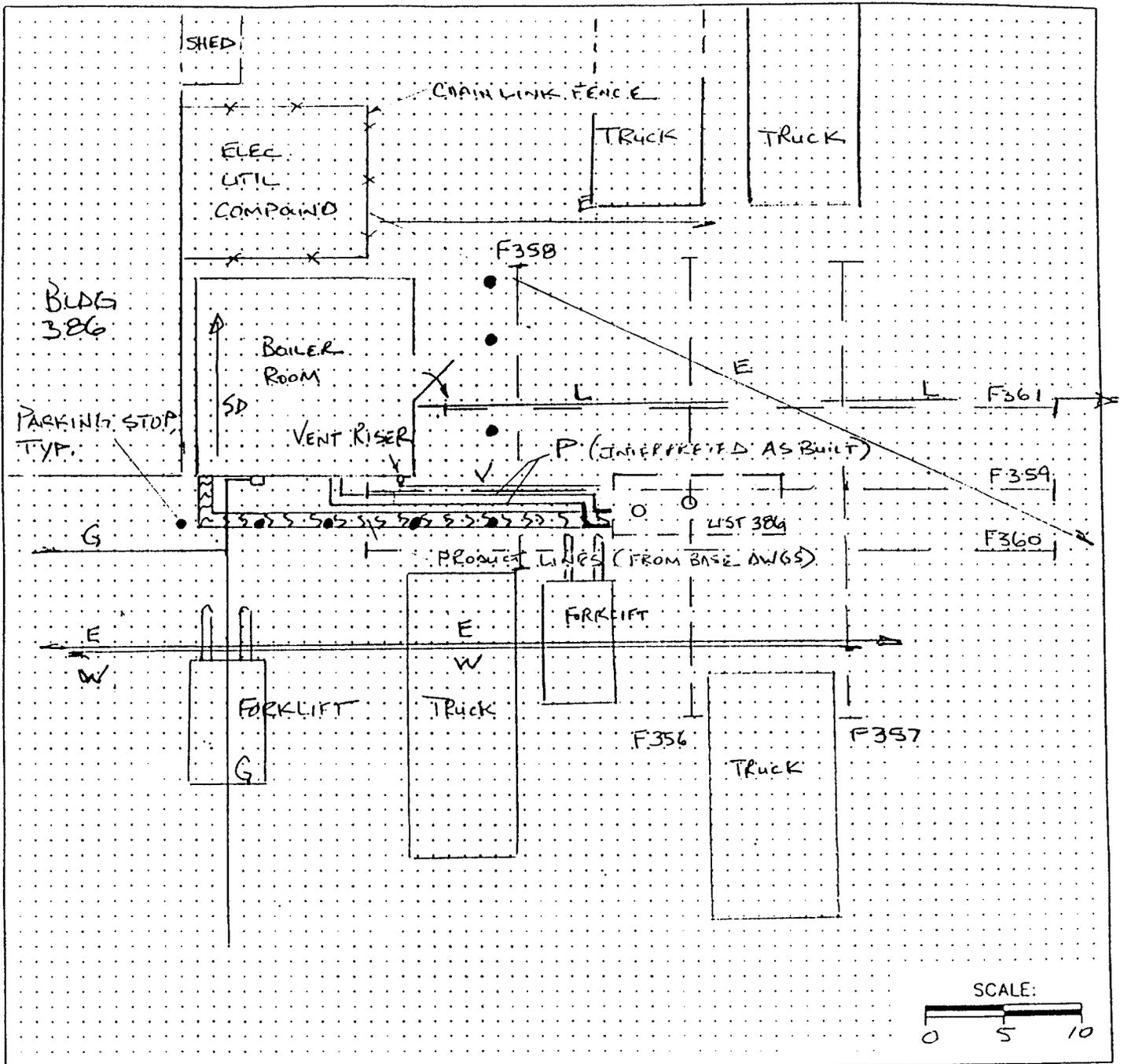
PROCEDURES

- 1. Inspect available utility maps and trace all recorded utilities in the vicinity of the proposed drilling location using LT, and if necessary GPR.
- 2. Review available geophysical data: Magnetic EM-31 EM-61
- 3. Inspect site and trace all pipes evident from field observations (ie. manhole, vault, valve, cracked asphalt, pipe at surface, etc)
- 4. Sweep proposed drilling location with LT in 50/60 Hz mode
- 5. Hold LT transmitter over proposed drilling location and circle at about a 40 foot radius with receiver tracing all utilities encountered.
- 6. Conduct two perpendicular GPR profiles through proposed borehole.
 GPR antenna: 500 MHz
 GPR range: 30 m sec Estimated depth penetration *: 2'-4'
 * utility lines below this depth cannot be detected using GPR
- 7. Other FIBERGLASS TANK, NO FISHER ANOMALY. TANK PROFILE & P4 LINE MAPPED FROM TANK FILL COPS AND ASPHALT PATCH FEATURES. BORE HOLE. ONE UTILITARIAN LINE NOT SHOWN ON SAFE DINGS BECAUSE

FIELD PERSONNEL: R.A. MERRILL, A. QUINN

SIGNATURE: [Signature]

GEOPHYSICAL SURVEY MAP



LEGEND

— — — — — GEOPHYSICAL TRAVERSE

UTILITY:
 E = ELECTRICAL, T = TELEPHONE,
 G = GAS, S = SEWER, SD = STORM DRAIN,
 W = WATER, P = PRODUCT LINE,
 V = VENT LINE, L = UNKNOWN LINE



Position: 0.0nS Range: 40.0nS

Range Gain -18 10 37 57 52

V(IIR LP N=1 F=1300)

V(IIR HP N=2 F=50)

H(IIR STK TC=3)

Table #15: Transform #1

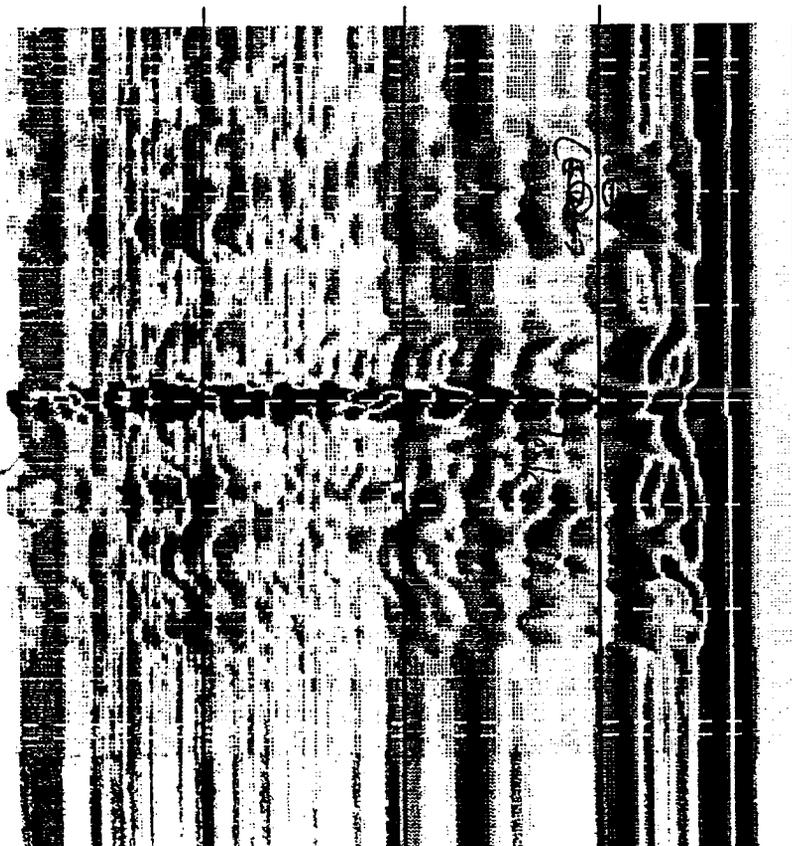


30.00ns

20.00ns

10.00ns

0.00ns



Position: 0.0nS Range: 40.0nS

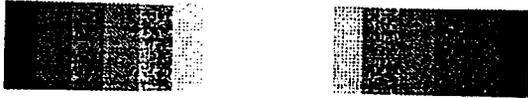
Range Gain -18 10 37 57 52

V(IIR LP N=1 F=1300)

V(IIR HP N=2 F=50)

H(IIR STK TC=3)

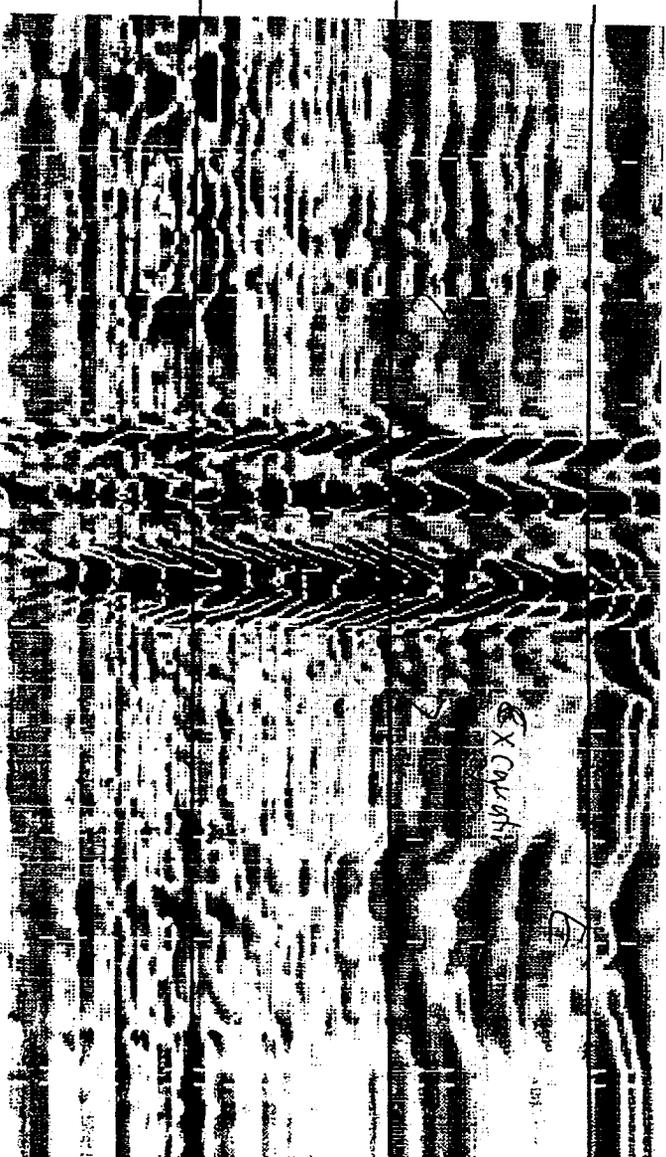
Table #15: Transform #1



30.00ns

20.00ns

10.00ns



500 MHz
5" ticks
DS-N
10" Soft
tank ctr.
Thru
dunk ctr.

Site 3
500 MHz
5" ticks
PW-E
thru ctr.
13" W/O
tank

Appendix D
Land Survey Report and Soil Sample
Location

MCAS, EL TORO
UST 386A D.O.70

BLD 386

SHED

TRANSFORMER

METAL SHED



270.21FS

270.57FS

270.56FS

270.42FS

270.48FS

18609-386A-776
261.02BTM

270.46FS

270.75FS

270.73FS

270.57FS

18609-386A-777
261.02BTM

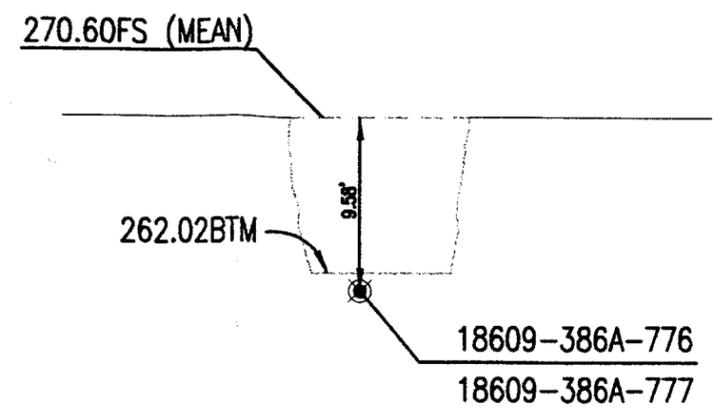
270.65FS

LIMITS OF EXCAVATION

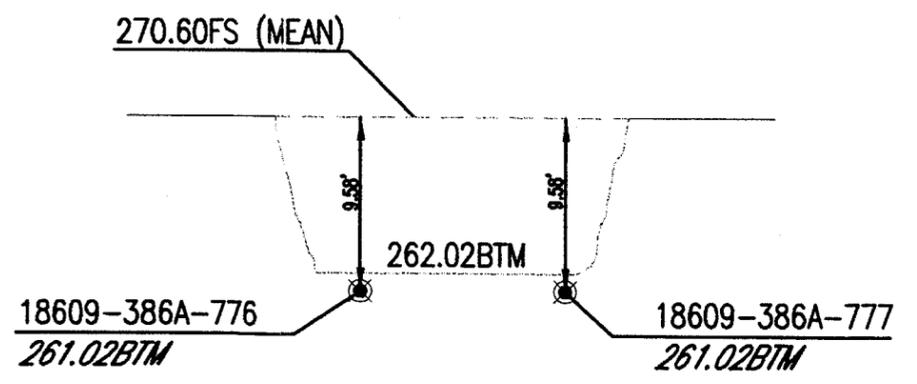
SAMPLE COORDINATE LISTING

NORTHING	EASTING	ELEV.	DESCRIPTION
2189351.6506	6108540.8161	261.02	18609-386A-777
2189358.3931	6108531.8926	261.02	18609-386A-776

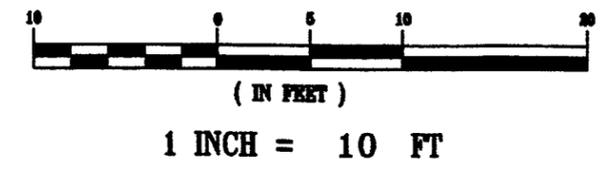
CROSS SECTION A



CROSS SECTION B



GRAPHIC SCALE



DATE OF SURVEY: 12-12-97
LEGEND

- SAMPLE LOCATION
- CHAIN LINK FENCE
- BOLLARD
- FS FINISH SURFACE
- BTM BOTTOM

CAL VADA
SURVEYING, INC.

108 Business Center Drive Corona, CA. 91720
1 800 CALVADA PHONE: (909) 280-9960 FAX: (909) 280-9746
WEB SITE <http://www.calvada.com>
JOB NO. 97102-70

PREPARED FOR:
OHM REMEDIATION SERVICES, CORP.
2031 MAIN ST., IRVINE, CA 92714
(714) 263-1146

Dec 15, 1997 54128 F:\DISK#2\CALVADA\386a\97102-70.dwg

Appendix E
Laboratory Analytical Reports

CHAIN OF CUSTODY
 Orange County Health Care Agency
 Environmental Health Division
 2009 E. Edinger Ave., Santa Ana, CA 92705
 Telephone: (714) 667-3700

- ALL SAMPLES ARE TO BE HANDLED AS COURT EVIDENCE, AND ARE TO BE PROPERLY STORED IN A SECURE LOCATION.
- PLEASE WRITE LEGIBLY.
- ATTACH THIS FORM TO THE ORIGINAL REPORT OF THE ANALYTICAL RESULTS AND RETURN THEM TO THIS OFFICE. LABORATORY RESULTS RECEIVED WITHOUT PROPER CHAIN OF CUSTODY DOCUMENTATION WILL NOT BE ACCEPTED.

4. TO BE COMPLETED BY LABORATORY ANALYST

5. TO BE COMPLETED BY SAMPLE COLLECTOR

LAB NO.: _____

DATE RECEIVED: _____

SAMPLE(S) CONDITION (PLEASE CHECK):

CHILLED: _____ COUNTY SEAL(S) INTACT: _____

CONTAINER IN GOOD CONDITION: _____

DATE ANALYSIS COMPLETED: _____

ANALYST: _____

SITE NAME/ADDRESS: MICAS EL TORO
Bldg. 386, Tray #356A, Santa Ana

DATE OF COLLECTION: 12.3.97

SAMPLE COLLECTOR/COMPANY: M. Brundias
OHM Remediation

TELEPHONE NO.: _____

HCA REPRESENTATIVE: A. K... ..

6.

SAMPLE NUMBER	DETERMINATION REQUESTED	SAMPLE DESCRIPTION/COMMENTS	TIME OF COLLECTION
18609-386A-776	TPH (SOLIS)	BT CV (SOLIS)	8:05 am
18609-386A-777		↓	8:12 am

7.

CHAIN OF CUSTODY		
1. <u>Miguelina P...</u> SIGNATURE	<u>Hoz. Warte</u> COMPANY/AGENCY	<u>12.3.97 - 8:15 am</u> INCLUSIVE DATES/TIMES
2. <u>M...</u> SIGNATURE	<u>SP Tech / OHM</u> COMPANY/AGENCY	<u>12.3.97 - 08:15 AM</u> INCLUSIVE DATES/TIMES
3. <u>A...</u> SIGNATURE	<u>APC L</u> COMPANY/AGENCY	<u>12-3-97 - 1500</u> INCLUSIVE DATES/TIMES
4. _____ SIGNATURE	_____ COMPANY/AGENCY	_____ INCLUSIVE DATES/TIMES
5. _____ SIGNATURE	_____ COMPANY/AGENCY	_____ INCLUSIVE DATES/TIMES
6. _____ SIGNATURE	_____ COMPANY/AGENCY	_____ INCLUSIVE DATES/TIMES

WHITE-RETURN THIS COPY TO ENVIRONMENTAL HEALTH, CANARY-LABORATORY COPY
 PINK-CONTRACTOR/CONSULTANT COPY, GOLDENROD-OFFICE COPY

Applied P & Ch Laboratory
Organic Analysis Results for Method 8020

Client Name: OHM Remediation Services (Irvine)	Project No: 18292	Collection Date: 12/03/97
Project ID: Quarterly Ground Water	Service ID: 974948	Collected by:
Sample ID: 18609-386A-776	Lab Sample ID: 97-4948-1	Received Date: 12/03/97
Sample Type: Field Sample	Sample Matrix: Soil	Moisture %: 14.9
Anal. Method: 8020	Prep. Method: 5030	Instrument ID: GC: B
Batch No: 97G4628	Prep. Date: 12/08/97	Anal. Date: 12/08/97
Data File Name: 4948.001	Prep. No: -	Anal. Time: 15:10
Methanol Vol. -	Sample Amount: 1 g	Dilution Factor: 1
Test Level: Low	Spurge Size: 5 mL	Heated Purge: (Y/N) Y

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/kg	5.9	<5.9	U
2	ETHYLBENZENE	100-41-4	µg/kg	5.9	<5.9	U
3	TOLUENE	108-88-3	µg/kg	5.9	<5.9	U
4	XYLENES (TOTAL)	1330-20-7	µg/kg	18	<18	U
Surrogates				Control Limit, %	Surro. Rec.%	
1	4-BROMO-FLUOROBENZENE (BFB)	460-00-4		65-126	94	
# of out-of-control					0	
Internal Standard				Control Limit, %	IS Rec.%	
1	α, α, α-TRIFLUOROTOLUENE	98-08-8		50-200	114	
# of out-of-control					0	

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Applied P & Ch Laboratory
Organic Analysis Results for Method 8020

Client Name: OHM Remediation Services (Irvine)	Project No: 18292	Collection Date: 12/03/97
Project ID: Quarterly Ground Water	Service ID: 974948	Collected by:
Sample ID: 18609-386A-777	Lab Sample ID: 97-4948-2	Received Date: 12/03/97
Sample Type: Field Sample	Sample Matrix: Soil	Moisture %: 14.6
Anal. Method: 8020	Prep. Method: 5030	Instrument ID: GC: B
Batch No: 97G4628	Prep. Date: 12/08/97	Anal. Date: 12/08/97
Data File Name: 4948.002	Prep. No: -	Anal. Time: 15:34
Methanol Vol. -	Sample Amount: 1 g	Dilution Factor: 1
Test Level: Low	Spurge Size: 5 mL	Heated Purge: (Y/N) Y

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/kg	5.9	<5.9	U
2	ETHYLBENZENE	100-41-4	µg/kg	5.9	<5.9	U
3	TOLUENE	108-88-3	µg/kg	5.9	<5.9	U
4	XYLENES (TOTAL)	1330-20-7	µg/kg	18	<18	U

Surrogates

1	4-BROMO-FLUOROBENZENE (BFB)	460-00-4	Control Limit, %	Surro. Rec.%
			65-126	88
	# of out-of-control			0

Internal Standard

1	α, α, α-TRIFLUOROTOLUENE	98-08-8	Control Limit, %	IS Rec.%
			50-200	133
	# of out-of-control			0

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
 J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
 E - Exceed calibration range
 B - A positive value was found in the method blank
 D - Diluted

Applied P & Ch Laboratory
Organic Analysis Results for Method 8020

Client Name: OHM Remediation Services (Irvine)	Project No: 18292	Collection Date: 12/03/97
Project ID: Quarterly Ground Water	Service ID: 974948	Collected by:
Sample ID: 18609-386A-778	Lab Sample ID: 97-4948-3	Received Date: 12/03/97
Sample Type: Field Sample	Sample Matrix: Water	Moisture %: -
Anal. Method: 8020	Prep. Method: 5030	Instrument ID: GC: N
Batch No: 97G4612	Prep. Date: 12/05/97	Anal. Date: 12/05/97
Data File Name: 4948.003	Prep. No: -	Anal. Time: 20:12
Methanol Vol. -	Sample Amount: 5 mL	Dilution Factor: 1
Test Level: Low	Spurge Size: 5 mL	Heated Purge: (Y/N) N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	BENZENE	71-43-2	µg/L	0.5	<0.5	U
2	ETHYLBENZENE	100-41-4	µg/L	0.5	<0.5	U
3	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
4	XYLENES (TOTAL)	1330-20-7	µg/L	1.5	<1.5	U
Surrogates				Control Limit, %	Surro. Rec.%	
1	4-BROMO-FLUOROBENZENE (BFB)	460-00-4		71-134	99	
# of out-of-control					0	
Internal Standard				Control Limit, %	IS Rec.%	
1	α, α, α-TRIFLUOROTOLUENE	98-08-8		50-200	105	
# of out-of-control					0	

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Applied P & Ch Laboratory
Organic Analysis Results for Method M8015E

Client Name: OHM Remediation Services (Irvine)	Project No: 18292	Collection Date: 12/03/97
Project ID: Quarterly Ground Water	Service ID: 974948	Collected by:
Sample ID: 18609-386A-776	Lab Sample ID: 97-4948-1	Received Date: 12/03/97
Sample Type: Field Sample	Sample Matrix: Soil	Moisture %: 14.9
Anal. Method: M8015E	Prep. Method: 3550	Instrument ID: GC: H
Batch No: 97G4624	Prep. Date: 12/06/97	Anal. Date: 12/06/97
Data File Name: 4948.001	Prep. No: 1 of 1	Anal. Time: 21:11
Extract Vol. 1.0 mL	Sample Amount: 20.0 g	Dilution Factor: 1

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	TPH AS DIESEL	68334-30-5	mg/kg	12	< 12	U
2	TPH AS MOTOR OIL	TBD-0002	mg/kg	12	< 12	U
Surrogates				Control Limit, %	Surro. Rec.%	
1	HEXACOSANE, C ₂₆	630-01-3		50-146	73	
# of out-of-control					0	

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Applied P & Ch Laboratory
Organic Analysis Results for Method M8015E

Client Name: OHM Remediation Services (Irvine)	Project No: 18292	Collection Date: 12/03/97
Project ID: Quarterly Ground Water	Service ID: 974948	Collected by:
Sample ID: 18609-386A-777	Lab Sample ID: 97-4948-2	Received Date: 12/03/97
Sample Type: Field Sample	Sample Matrix: Soil	Moisture %: 14.6
Anal. Method: M8015E	Prep. Method: 3550	Instrument ID: GC: H
Batch No: 97G4624	Prep. Date: 12/06/97	Anal. Date: 12/06/97
Data File Name: 4948.002	Prep. No: 1 of 1	Anal. Time: 20:45
Extract Vol. 1.0 mL	Sample Amount: 20.0 g	Dilution Factor: 1

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	TPH AS DIESEL	68334-30-5	mg/kg	12	<12	U
2	TPH AS MOTOR OIL	TBD-0002	mg/kg	12	<12	U
Surrogates				Control Limit, %	Surro. Rec.%	
1	HEXACOSANE, C ₂₆	630-01-3		50-146	77	
# of out-of-control					0	

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Wet Analysis Results for Method ASTM-D2216

Client Name: OHM Remediation Services (Irvine) Project No: 18292 Anal. Method ASTM-D2216
 Project ID: Quarterly Ground Water Service ID: 974948 Collected by:

Component Name: Moisture, percent in soil

CAS No: 7732-18-5

Lab ID	Sample ID	Matrix	Coll. Date	Rcv Date	Anal. Date	Batch	Unit	RL	Result	Q
97-4948-1	18609-386A-776	Soil	12/03/97	12/03/97	12/08/97	97W6158	%Moisture	0.5	14.9	
97-4948-2	18609-386A-777	Soil	12/03/97	12/03/97	12/08/97	97W6158	%Moisture	0.5	14.6	

Note: Q - Qualifier.

Qualifier: U - Not Detected or less than MDL

B - Less than RL (PQL, EQL or CRDL), but greater than MDL.

Applied P & Ch Laboratory
Organic Analysis Results for Method M8015V

Client Name: OHM Remediation Services (Irvine)	Project No: 18609	Collection Date: 09/17/97
Project ID: El Toro	Service ID: 973999	Collected by: D. IsHida
Sample ID: 18609-572	Lab Sample ID: 97-3999-1	Received Date: 09/17/97
Sample Type: Field Sample	Sample Matrix: Water	Moisture %: -
Anal. Method: M8015V	Prep. Method: 5030	Instrument ID: GC: B
Batch No: 97G3775	Prep. Date: 09/18/97	Anal. Date: 09/18/97
Data File Name: 3999.001	Prep. No: -	Anal. Time: 18:26
Methanol Vol. -	Sample Amount: 5 mL	Dilution Factor: 1
Test Level: Low	Sparge Size: 5 mL	Heated Purge: (Y/N) N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	GASOLINE	8006-61-9	mg/L	0.05	< 0.05	U
2	BENZENE	71-43-2	µg/L	0.5	< 0.5	U
3	ETHYLBENZENE	100-41-4	µg/L	0.5	< 0.5	U
4	TOLUENE	108-88-3	µg/L	0.5	< 0.5	U
5	XYLENES (TOTAL)	108-38-3	µg/L	1.5	< 1.5	U
Surrogates				Control Limit, %	Surro. Rec.%	
1	4-BROMO-FLUOROBENZENE (FID)	460-00-4		68-124	90	
2	4-BROMO-FLUOROBENZENE (PID)	460-00-4		71-134	100	
# of out-of-control					0	
Internal Standard				Control Limit, %	IS Rec.%	
1	α, α, α-TRIFLUOROTOLUENE	98-08-8		50-200	97	
# of out-of-control					0	

Not Detected (N.D.) is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Organic Analysis Results for Method M8015V

Client Name:	OHM Remediation Services (Irvine)	Project No:	18609	Collection Date:	09/17/97
Project ID:	El Toro	Service ID:	973999	Collected by:	D. IsHida
Sample ID:	18609-573	Lab Sample ID:	97-3999-2	Received Date:	09/17/97
Sample Type:	Field Sample	Sample Matrix:	Water	Moisture %:	-
Anal. Method:	M8015V	Prep. Method:	5030	Instrument ID:	GC: B
Batch No:	97G3775	Prep. Date:	09/18/97	Anal. Date:	09/18/97
Data File Name:	3999.002	Prep. No:	-	Anal. Time:	18:48
Methanol Vol.	-	Sample Amount:	5 mL	Dilution Factor:	1
Test Level:	Low	Sparge Size:	5 mL	Heated Purge: (Y/N)	N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	GASOLINE	8006-61-9	mg/L	0.05	0.44 ^(a)	
2	BENZENE	71-43-2	µg/L	0.5	1.4	
3	ETHYLBENZENE	100-41-4	µg/L	0.5	86.3	
4	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
5	XYLENES (TOTAL)	108-38-3	µg/L	1.5	199	
Surrogates				Control Limit, %	Surro. Rec.%	
1	4-BROMO-FLUOROBENZENE (FID)	460-00-4		68-124	93	
2	4-BROMO-FLUOROBENZENE (PID)	460-00-4		71-134	102	
# of out-of-control					0	
Internal Standard				Control Limit, %	IS Rec.%	
1	α, α, α-TRIFLUOROTOLUENE	98-08-8		50-200	95	
# of out-of-control					0	

^(a)Sample chromatogram contains two main peaks which correspond to ethylbenzene and Xylene, respectively.

Not Detected (N.D.) is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

AMENDED

12/29/97

17108

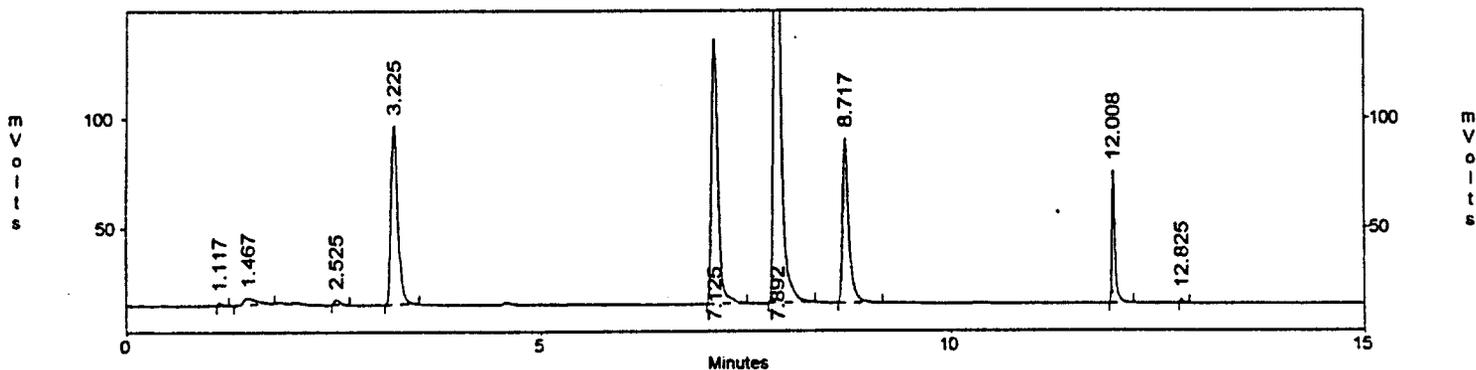
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 Method : c:\ezchrom\methods\luft-049.b00
 Sample ID : 3999-2 w f=1
 Acquired : Sep 18, 1997 18:48:30
 Printed : Sep 22, 1997 12:45:24
 Channel A Results

No.	Name	RT, min	Area	H, V	Ave RF	ESTD (ppb)
4	2. TFT	3.22	495731	81809	5161.28174	96.0
7	7. BFB	8.72	404893	75278	4333.73779	93.4
8	10. 3-Br-cl-bz	12.01	165927	60602	2269.23804	73.1
G1	1. Gasoline		1975222		4513.64404	437.6

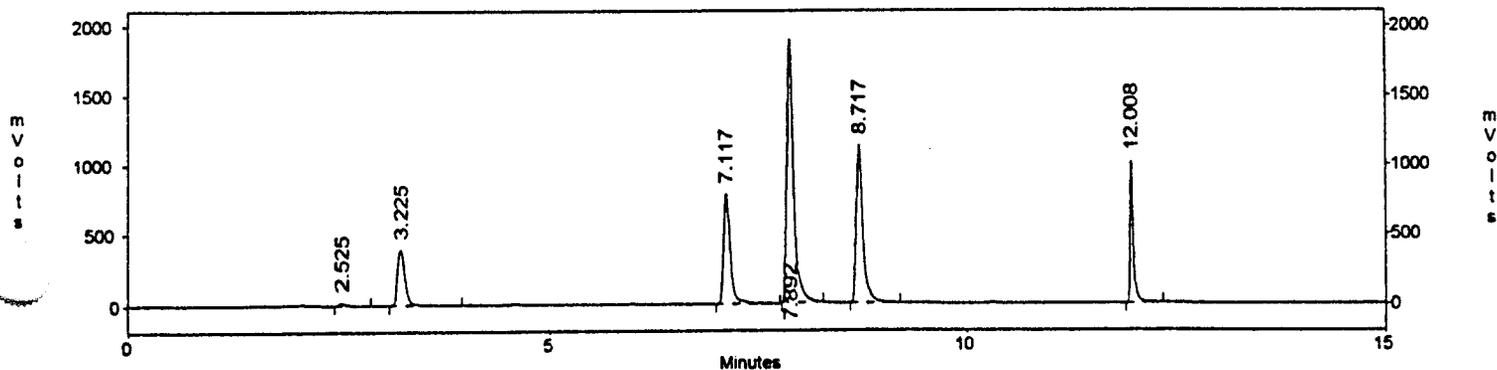
Channel B Results

No.	Name	Rt. min	Area	H, V	Ave. Rf	ISTD (ppb)
--	9. MTBE	1.81	0	0	0.00000	0.00
1	1. Benzene W 20	2.53	105158	19615	3.05141	1.42
2	2. TFT (Int.)	3.22	2421340	386933	1.00000	100.00
--	3. Toluene W 80	4.73	0	0	0.00000	0.00
3	5. Et-Bz W 19	7.12	4344747	782758	2.07960	86.28
--	6. P/M xylene W 82	7.44	0	0	0.00000	0.00
4	7. O-xylene W 27	7.89	10614534	1893120	2.20580	198.74
5	8. BFB (Surr.)	8.72	6113462	1127765	2.46945	102.24
6	10. 3-Br-cl-bz	12.01	2835638	1010508	1.36224	85.97

c:\data\9709\97g3775\3999.002 - Channel A



c:\data\9709\97g3775\3999.002 - Channel B



Applied P & Ch Laboratory
Organic Analysis Results for Method M8015V

Client Name: OHM Remediation Services (Irvine)	Project No: 18609	Collection Date: 09/17/97
Project ID: El Toro	Service ID: 973999	Collected by: D. IsHida
	Lab Sample ID: 97-3999-3	Received Date: 09/17/97
Sample ID: 18609-574	Sample Matrix: Water	Moisture %: -
Sample Type: Field Sample	Prep. Method: 5030	Instrument ID: GC: B
Anal. Method: M8015V	Prep. Date: 09/18/97	Anal. Date: 09/18/97
Batch No: 97G3775	Prep. No: -	Anal. Time: 19:10
Data File Name: 3999.003	Sample Amount: 5 mL	Dilution Factor: 1
Methanol Vol: -		
Test Level: Low	Sparge Size: 5 mL	Heated Purge: (Y/N) N

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	GASOLINE	8006-61-9	mg/L	0.05	0.37 (a)	
2	BENZENE	71-43-2	µg/L	0.5	1.5	
3	ETHYLBENZENE	100-41-4	µg/L	0.5	86.4	
4	TOLUENE	108-88-3	µg/L	0.5	<0.5	U
5	XYLENES (TOTAL)	108-38-3	µg/L	1.5	145	

Surrogates			Control Limit, %	Surro. Rec.%
1	4-BROMO-FLUOROBENZENE (FID)	460-00-4	68-124	96
2	4-BROMO-FLUOROBENZENE (PID)	460-00-4	71-134	102
# of out-of-control				0

Internal Standard			Control Limit, %	IS Rec.%
1	α, α, α-TRIFLUOROTOLUENE	98-08-8	50-200	99
# of out-of-control				0

(a) Sample chromatogram contains two main peaks which correspond to ethylbenzene and Xylene, respectively.
 Not Detected (N.D.) is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL
 J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)
 E - Exceed calibration range
 B - A positive value was found in the method blank
 D - Diluted

AMENDED

12/29/97

17110

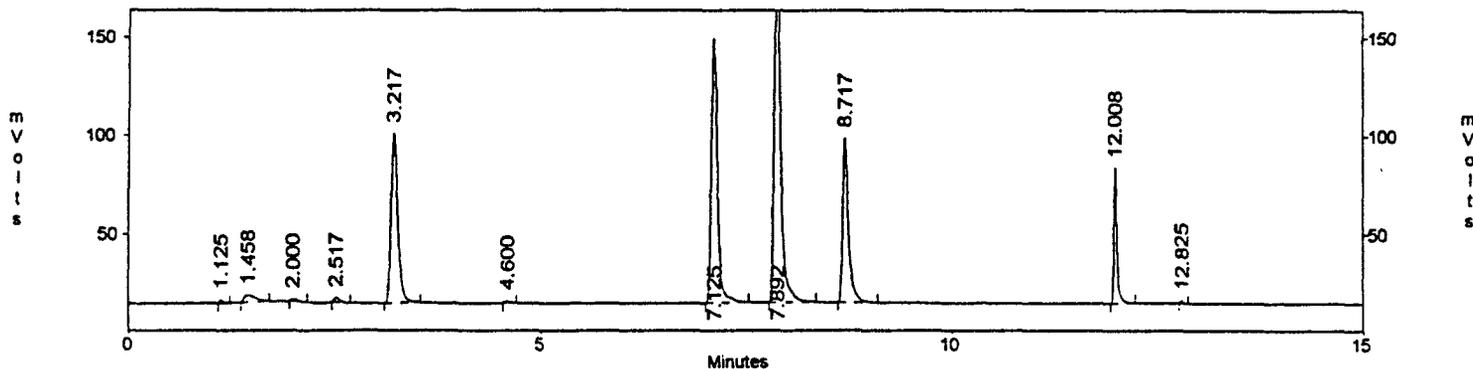
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 Sample ID : 3999-3 w f=1
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 Printed : Sep 19, 1997 08:33:13
 Channel A Results

No.	Name	RT, min	Area	H, V	Ave RF	ESTD (ppb)
5	2. TFT	3.22	513658	86288	5161.28174	99.5
9	7. BFB	8.72	417616	83615	4333.73779	96.4
10	10. 3-Br-cl-bz	12.01	186636	68785	2269.23804	82.2
G1	1. Gasoline		1686165		4513.64404	373.6

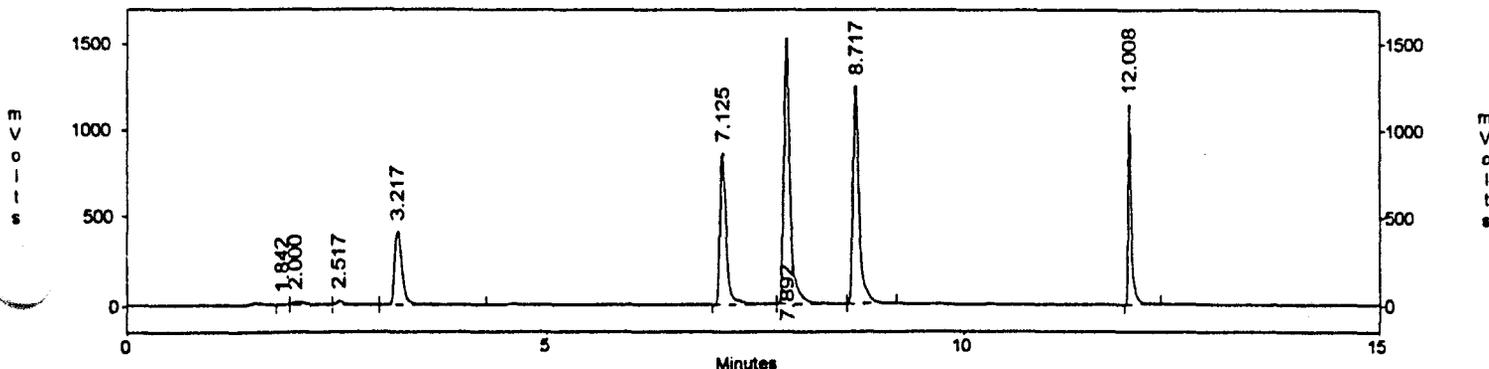
Channel B Results

No.	Name	Rt. min	Area	H, V	Ave. Rf	ISTD (ppb)
1	9. MTBE	1.84	17978	3005	0.80392	0.89
3	1. Benzene W 20	2.52	118727	19743	3.05141	1.54
4	2. TFT (Int.)	3.22	2522525	408383	1.00000	100.00
--	3. Toluene W 80	4.73	0	0	0.00000	0.00
5	5. Et-Bz W 19	7.13	4530477	866271	2.07960	86.36
--	6. P/M xylene W 82	7.44	0	0	0.00000	0.00
6	7. O-xylene W 27	7.89	8069156	1525616	2.20580	145.02
7	8. BFB (Surr.)	8.72 ^m	6324025	1245903	2.46945	101.52
8	10. 3-Br-cl-bz	12.01	3162121	1142173	1.36224	92.02

C:\DATA\9709\97g3775\3999.003 -- Channel A



C:\DATA\9709\97g3775\3999.003 -- Channel B



Applied P & Ch Laboratory
Organic Analysis Results for Method M8015E

Client Name: OHM Remediation Services (Irvine)	Project No: 18609	Collection Date: 09/17/97
Project ID: El Toro	Service ID: 973999	Collected by: D. IsHida
Sample ID: 18609-573	Lab Sample ID: 97-3999-2	Received Date: 09/17/97
Sample Type: Field Sample	Sample Matrix: Water	Moisture %: -
Anal. Method: M8015E	Prep. Method: 3510	Instrument ID: GC: H
Batch No: 97G3791	Prep. Date: 09/19/97	Anal. Date: 09/21/97
Data File Name: 3999.002	Prep. No: 1 of 1	Anal. Time: 04:04
Extract Vol. 1.0 mL	Sample Amount: 1000 mL	Dilution Factor: 1

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	TPH AS DIESEL	68334-30-5	mg/L	0.5	< 0.5	U
2	TPH AS MOTOR OIL	TBD-0002	mg/L	0.5	< 0.5	U
Surrogates				Control Limit, %	Surro. Rec.%	
1	HEXACOSANE, C ₂₆	630-01-3		50-149	88	
	# of out-of-control				0	

Not Detected (N.D.) is shown as PQL, with dilution and moisture corrected if applicable.

Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Applied P & Ch Laboratory
Organic Analysis Results for Method M8015E

Client Name: OHM Remediation Services (Irvine)	Project No: 18609	Collection Date: 09/17/97
Project ID: El Toro	Service ID: 973999	Collected by: D. IsHida
Sample ID: 18609-574	Lab Sample ID: 97-3999-3	Received Date: 09/17/97
Sample Type: Field Sample	Sample Matrix: Water	Moisture %: -
Anal. Method: M8015E	Prep. Method: 3510	Instrument ID: GC: H
Batch No: 97G3791	Prep. Date: 09/19/97	Anal. Date: 09/21/97
Data File Name: 3999.103	Prep. No: 1 of 1	Anal. Time: 04:54
Extract Vol. 1.0 mL	Sample Amount: 1000 mL	Dilution Factor: 1

#	Component Name	CAS No	Unit	RL	Result	Qualifier
1	TPH AS DIESEL	68334-30-5	mg/L	0.5	< 0.5	U
2	TPH AS MOTOR OIL	TBD-0002	mg/L	0.5	0.8	
Surrogates				Control Limit, %	Surro. Rec.%	
1	HEXACOSANE, C ₂₆	630-01-3		50-149	103	
# of out-of-control					0	

Not Detected (N.D.) is shown as PQL, with dilution and moisture corrected if applicable.

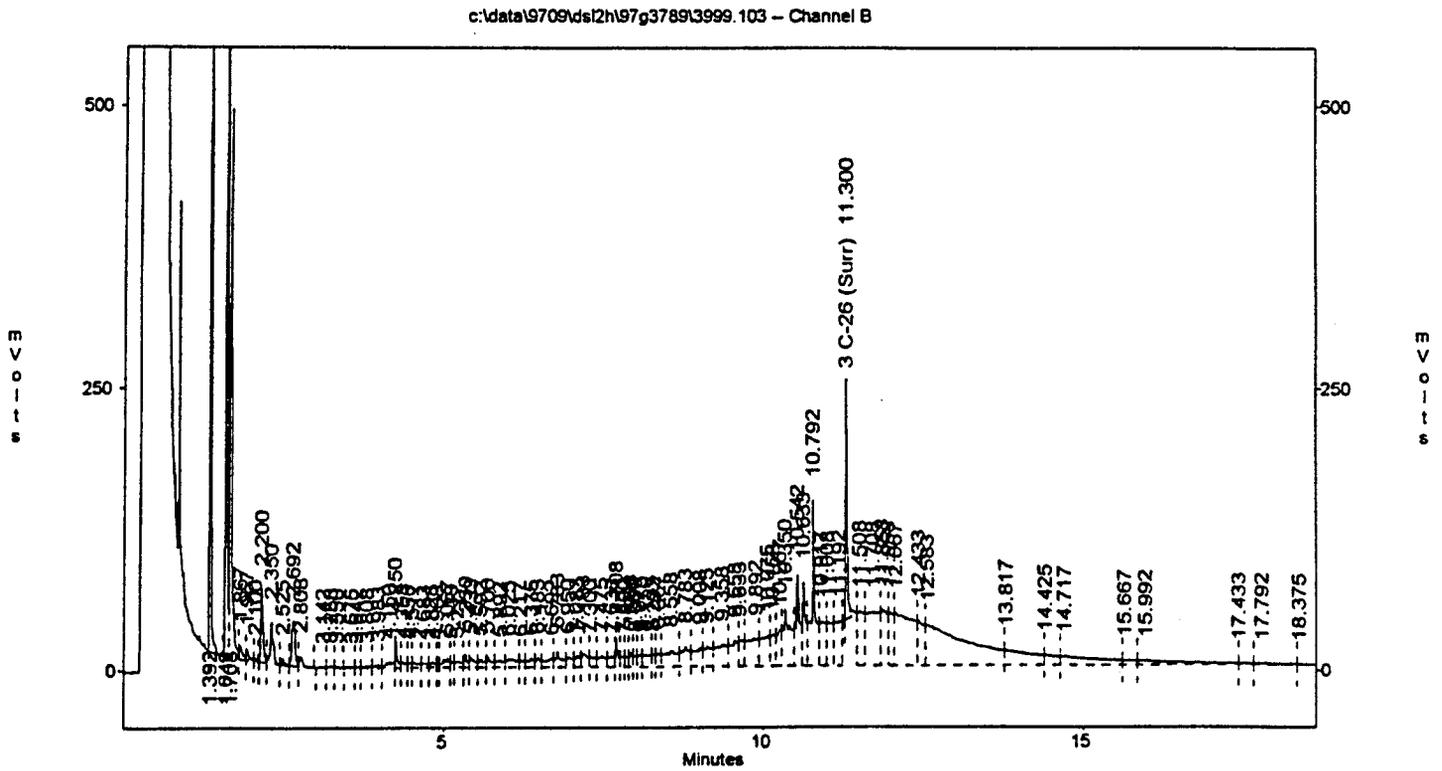
Qualifier: U - Not Detected or less than MDL	E - Exceed calibration range
J - Less than RL (PQL, EQL or CRDL), but greater than MDL, or an estimated result (e.g. for TIC)	B - A positive value was found in the method blank
	D - Diluted

Applied P & Ch Lab
 Total Extractable Petroleum Hydrocarbon Analysis by GC-FID
 Instrument ID: GC-H, Column: DB-1 (0.32mm x 15m x 0.25 um), 1ul

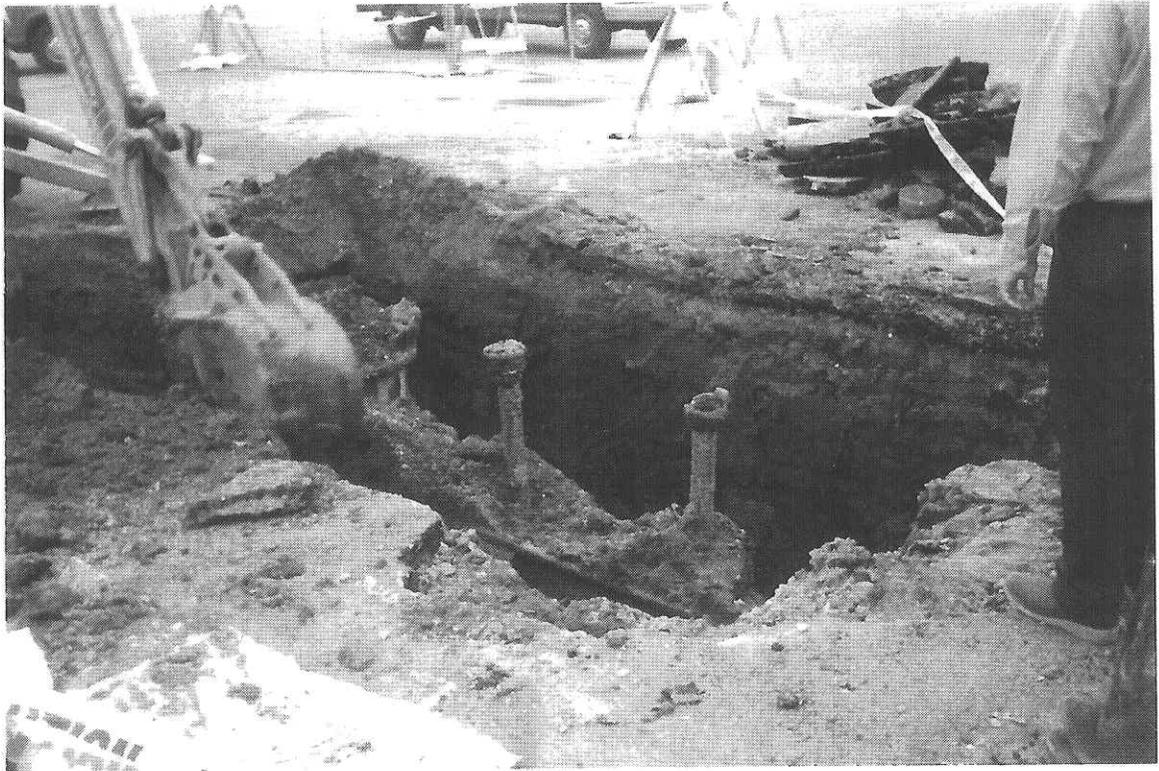
File : c:\data\9709\ds12h\97g3789\3999.103
 Method : c:\ezchrom\methods\j5mo-018.h00
 Sample ID : 3999-3 f=.001
 Vial : 38
 Volume : 1
 Acquired : Sep 21, 1997 04:54:33
 Printed : Sep 22, 1997 09:55:29
 User : System

Channel B Results

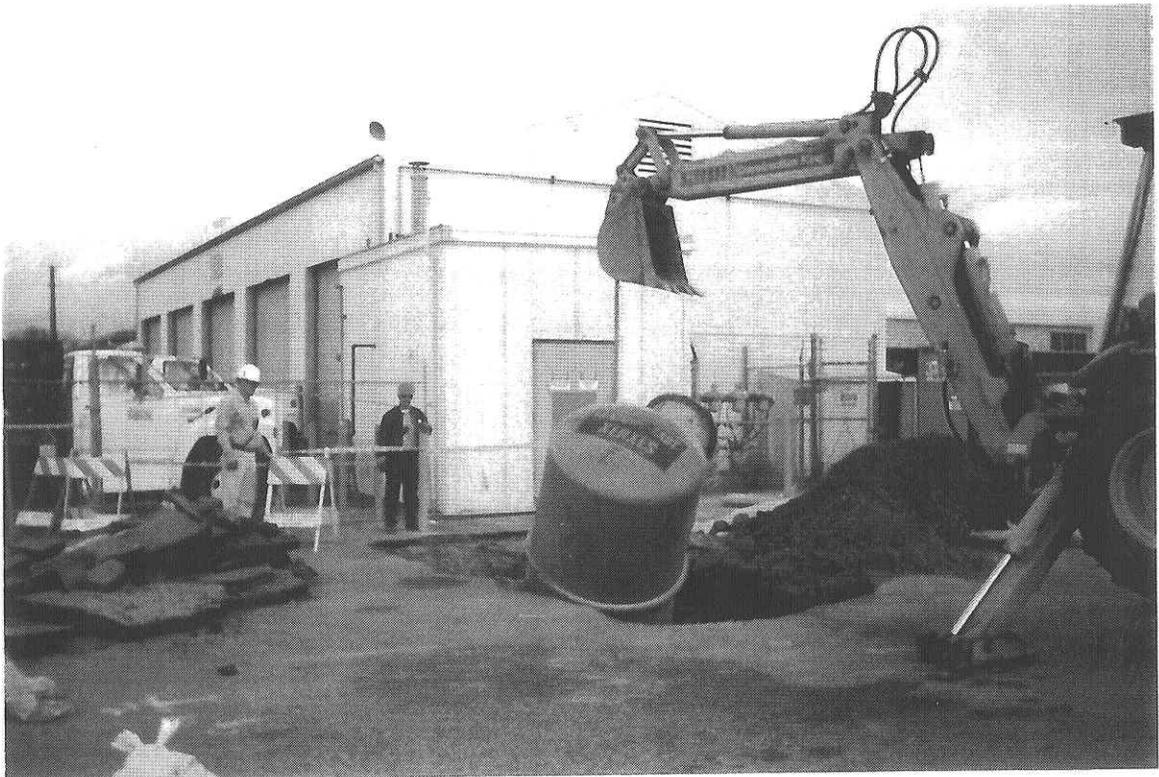
Name	Time	Area	Conc (ppm)
3 C-26 (Surr)	11.30	342858	34.872
1 Jp-5		2012021	103.813
2 motor oil		10637492	766.560



Appendix F
Site Photographs



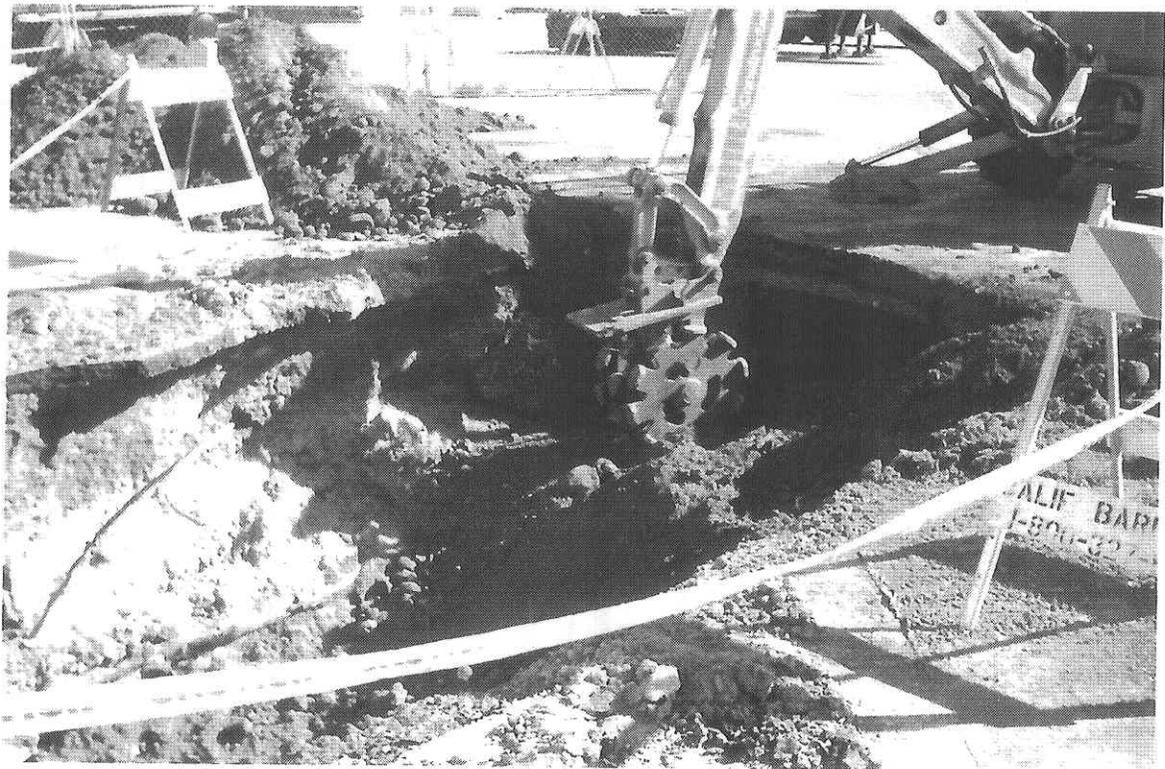
Photograph No. 1: UST 386A exposure from the ground.



Photograph No. 2: UST 386A removal from the excavation.



Photograph No. 3: UST 386A excavation following the removal of the UST.



Photograph No. 4: UST 386A excavation backfilling and compaction.

Appendix G
Marine Chemist Certification

Serial # 8703

18 DEC 97

EL TORO M.C.A.S.

Requested by
 VEASSEL
 LAST CARGO

Vessel Owner or Agent
 Type of Vessel
 Tests Performed

Date
 Specific Location of Vessel
 Time Survey Completed

UNDERGROUND FIBREGLASS
 CONSTRUCTED TANK
 MARKED WITH YELLOW
 SPRAY PAINT.

SITE 386
 AND
 8703

TESTED: 0% LEL
 20.8% O₂ / N₂

NOT SAFE FOR WORKERS
 NOT SAFE FOR HOT WORK

TANK HAS BEEN TRIPLE
 RINSED TO REMOVE RESIDUALS

SAFE TO WELD LIFT TANK

In the event of any physical or atmospheric changes adversely affecting the STANDARD SAFETY DESIGNATIONS assigned to any of the above spaces, or if in any doubt, immediately stop all work and contact the undersigned Marine Chemist.

QUALIFICATIONS: Transfer of ballast or manipulation of valves or closure equipment tending to alter conditions in pipe lines, tanks or compartments subject to gas accumulation, unless specifically approved in this Certificate, requires inspection and endorsement or release of Certificate for the spaces so affected. All lines, vents, heating coils, valves, and similarly enclosed appurtenances shall be considered "not safe" unless otherwise specifically designated.

STANDARD SAFETY DESIGNATIONS (partial list, paraphrased from NFPA 306 Subsections 2-3.1 through 2-3.5, and Subsection 6-3.2)

SAFE FOR WORKERS: Means that in the compartment or space so designated: (a) the oxygen content of the atmosphere is at least 19.5 percent by volume; and that, (b) toxic materials in the atmosphere are within permissible concentrations; and that, (c) the residues are not capable of producing toxic materials under existing atmospheric conditions while maintained as directed on the Marine Chemist's Certificate.

NOT SAFE FOR WORKERS: Means that in the compartment or space so designated, the requirements of Safe for Workers have not been met.

ENTER WITH RESTRICTIONS: Means that in any compartment or space so designated, entry for work may be made only if conditions of proper protective equipment, clothing, and time are as specified.

SAFE FOR HOT WORK: Means that in the compartment so designated: (a) oxygen content of the atmosphere is at least 19.5 percent by volume, with the exception of inerted spaces or where external hot work is to be performed; and that, (b) the concentration of flammable materials in the atmosphere is below 10 percent of the lower flammable limit; and that, (c) the residues are not capable of producing a higher concentration than permitted by (b) above under existing atmospheric conditions in the presence of fire, and while maintained as directed on the Marine Chemist's Certificate; and further, that, (d) all adjacent spaces containing or having contained flammable or combustible materials have been cleaned sufficiently to prevent the spread of fire, or are satisfactorily inerted, or, in the case of fuel tanks or lube oil tanks, or engine room or fire room bilgees, have been treated in accordance with the Marine Chemist's requirements.

NOT SAFE FOR HOT WORK: Means that in the compartment so designated, the requirements of Safe for Hot Work have not been met.

MIST'S ENDORSEMENT. This is to certify that I have personally determined that all spaces in the foregoing list are in accordance with NFPA 306 Control of Gas Hazards vessels and have found the condition of each to be in accordance with its assigned designation.

The undersigned acknowledges receipt of this Certificate under Section 2-6 of NFPA 306 and understands conditions and limitations under which it was issued.

This Certificate is based on conditions existing at the time the inspection herein set forth was completed and is issued subject to compliance with all qualifications and instructions.

Signed TR 13158
 Name Company

Signed Thomas Beck 594
 Marine Chemist Certificate No.

Appendix H
Compaction Test Field Reports

FIELD REPORT

This report shall not be construed as supervision, direction of construction, or a recommendation.

Client <u>DHM</u>	Job Address <u>E1 TORO MEAS</u>	City <u>E1 TORO</u>
Job Superintendent <u>Greg Early</u>	General Contractor <u>DHM</u>	Job Phone <u>n/a</u>
Grading Contractor	Concrete Contractor	Other

Test No.	Location	Remarks	Elev.	Dry Den.	% Moist.	Max.	% Comp.
<u>1</u>	<u>Site 386-0070</u>		<u>-6'</u>	<u>111</u>	<u>15.1</u>	<u>122</u>	<u>91</u>
<u>2</u>	<u>✓ - ✓</u>		<u>-4'</u>	<u>114</u>	<u>13.6</u>	<u>122</u>	<u>93</u>
<u>3</u>	<u>✓ - ✓</u>		<u>-2'</u>	<u>115</u>	<u>13.9</u>	<u>122</u>	<u>94</u>

Arrived on base at 8:30a. Contractor has removed (1) 1500g fiberglass tank at site 386-0070. Starting depth is approximately 8' and the excavation dimensions are 17' x 16'. Bottom is moist w/ some slough from caving. Compacted the bottom w/ compaction wheel attached to a CASE 580SK turbo backhoe. Placed loose lifts of treated soil imported from the bio-cell then compacted. Ran (3) sandcone tests w/ good results listed above. Contractor will bring up to F56 w/ base. Contractor will call when sub contractor is on-site to place A/C (will rework CAB). The final surface test will be run at this time. Left base at 3:00 p.

INSPECTION BY: <input checked="" type="checkbox"/> Field Engineer <input type="checkbox"/> Field Technician <input type="checkbox"/> Deputy Grading Insp. (Staff Eng. or Supr. Field Eng.)	NEXT INSPECTION: <input checked="" type="checkbox"/> Contractor to call <input type="checkbox"/> _____
HOURS: <input type="checkbox"/> Footings _____ <input type="checkbox"/> Piles _____ <input type="checkbox"/> Slot Cuts _____ <input type="checkbox"/> Shoring _____ <input checked="" type="checkbox"/> Fill Comp. _____ <input checked="" type="checkbox"/> Bottom _____ <input type="checkbox"/> Saturation _____ <input type="checkbox"/> Other: _____	Minimum Straight Time <u>5 1/2</u> Over Time _____ Travel Time <u>2 1/2</u> Total Time <u>8</u> Mileage _____ Inspector <u>B. Collyar</u> Confirmed by <u>[Signature]</u> Representing <u>DHM</u>



OHM Remediation Services Corp.

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OHM TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N68711-93-D-1459

DOCUMENT CONTROL NO: SW4693

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Mr. Dave Jespersen, Code 57CS1.DJ
Building 131
1220 Pacific Highway
San Diego, California 92132-5101

Date: 05-Jan-98

D.O.: 70

Location: MCAS EL TORO

FROM:

Stewart Bornhoft FOR
Stewart Bornhoft, Program Manager

Ginger James, Contracts Manager

DESCRIPTION Tank Removal and Site Closure Report for Underground Storage Tank (UST) OF 386A at Marine Corps Air Station El Toro, California dated December 30, 1997 ENCLOSURE:

TYPE: Contract Deliverable () D. O. Deliverable (X) Request for Change () Other ()
(S) (Tech)

VERSION: FINAL

REVISION 0

ADMIN RECORD: Yes (X) No () Category () Confidential ()

SCHEDULED DELIVERY DATE: 06-Jan-98 **ACTUAL DELIVERY DATE:** 05-Jan-98

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J. Neuhaus, Irv (1C/1E)

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To: Kelly Even
San Diego PMO Office

Date: December 3, 1997

Submitted by: Dhananjay Rawal

Office Location: Irvine San Diego Pleasanton Other

Phone/Extension Number: 303

REGARDING: DO No.: 70 Project No.: 18609 CERCLA (verify with PM if Admin copies are required)
WBS Code No. for Kelly's time: 2100837 Document Control No.: SW 4693

DOCUMENT DESCRIPTION: Tank Removal & Site Closure Report UST 386A

Preliminary Draft Draft Final Other:

Contractual Delivery Date: (SOW or verbally dictated, please do not leave blank) Jan 6, 98

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