OHM Remediation Services Corp.

1202 Kettner Boulevard
San Diego, California 92101

M60050.002519
MCAS EL TORO
SSIC #5090.3

Underground Storage Tank 297C and Oil-Water Separator 297B
Marine Corps Air Station
El Toro, California

SWDIV Contract No. N68711-93-D-1459 – Delivery Order No. 0070 – Revision 0
OHM Project No. 18609 – Document Control No. SW3616 – June 13, 1997

Tank Removal and Site Closure Report

Appendix A - Orange County Health Care Agency Modification Application and Approval Forms; Appendix B - Geophysical Survey Data; Appendix C - Laboratory Analytical Reports and Chain-of-Custody Record; Appendix D - Tank Disposal Waste Manifests; Appendix E - Site Activity Photographs; Appendix F - Land Surveying Report and Soil Sample Locations; Appendix G - Compaction Test Field Report

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El Toro, California

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Revision 0
June 13, 1997

OHM Remediation Services Corp.

1202 Kettner Boulevard
San Diego, California 92101

Prepared by:

Dhananjay B. Rawal
Project Engineer

Approved by:

William L. Sedlak, P.E.
Senior Project Manager

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OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

OHM TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N68711-93-D-1459 **DOCUMENT CONTROL NO: SW3616**

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

Date: 16-Jun-97

D.O.: 70

Location: MCAS EL TORO

FROM: Sam Frankl FOR
Stewart Bornhoft, Program Manager

Ginger James, Contracts Manager

DESCRIPTION OF ENCLOSURE: **Tank Removal and Site Closure Report, Underground Storage Tank 297C and Oil-Water Separator 297B, dated June 13, 1997**

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

VERSION: DRAFT **REVISION** 0

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

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Acronyms and Abbreviations

APCL	Applied Physics and Chemistry Laboratory
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CA LUFT	California Leaking Underground Fuel Tank
DO	Delivery Order
DCN	Document Control Number
EPA	United States Environmental Protection Agency
MCAS	Marine Corps Air Station
OCHCA	Orange County Health Care Agency
OHM	OHM Remediation Services Corp.
OWS	Oil-Water Separator
ppm	parts per million
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU	Solid Waste Management Unit
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
UST	underground storage tank
yd^3	cubic yards

Section 1
Introduction

This Tank Removal and Site Closure Report summarizes the field activities conducted in conjunction with the removal of one oil-water separator (OWS) 297B, and one underground storage tank (UST) 297C, at Marine Corps Air Station (MCAS), El Toro, California (herein after referred to as the Station). The report also summarizes the analytical results of samples collected at the UST site. This report is prepared by OHM Remediation Services Corp. (OHM) for Southwest Division Naval Facilities Engineering Command (SWDIV) under Contract No. N68711-93-D-1459, Delivery Order (DO) No. 0070.

The Station is located approximately 45 miles southeast of Los Angeles in Orange County, California, 1 mile north of the intersection of Interstate 5 and Interstate 405. The Station covers approximately 4,700 acres. The location of MCAS El Toro is shown on Figure 1-1, Facility Location Map.

1.1 Site Description and Scope of Work

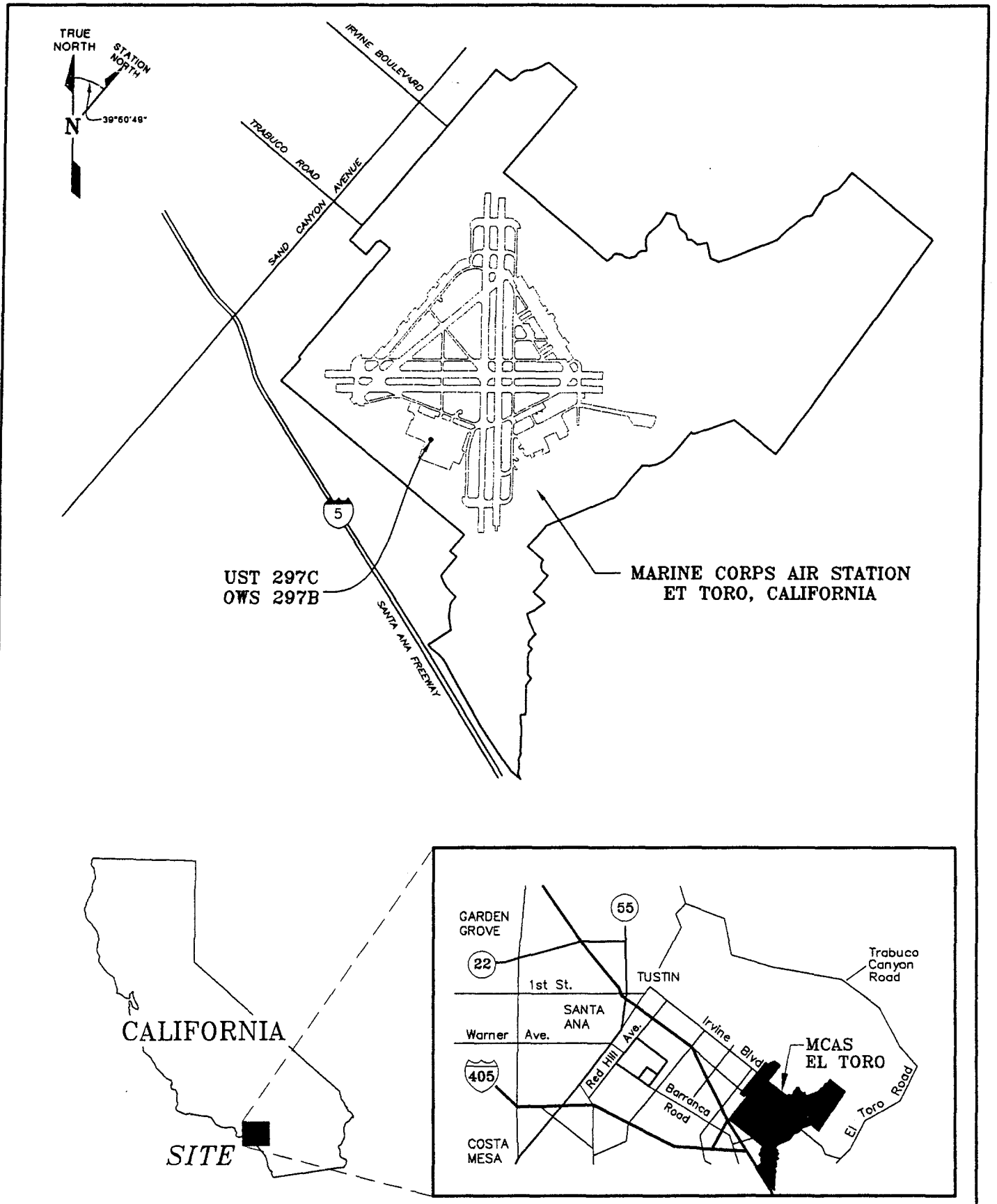
UST 297C and OWS 297B were investigated during the Resource Conservation and Recovery Act Facility Assessment and were assigned the following Solid Waste Management Unit (SWMU) identification numbers: SWMU 77 (UST 297C), SWMU 76 (OWS 297B).

UST 297C and OWS 297B are located in the southwest quadrant of the Station, west of the Agua Chinon Wash. The site area is paved with asphalt and concrete, and located approximately 220 feet west of Building No. 297, north of South Marine Way. The location is shown on Figure 1-2, Location Map - UST 297C and OWS 297B.

The depth to groundwater in the vicinity of UST 297C is based upon water level data available from monitoring well 07DGMW72 as shown on Figure 1-2. Based on this data, the depth to groundwater at UST 297C is approximately 102 feet (Camp Dresser, & McKee, Inc. Federal Programs Corporation, 1996).

The scope of work for this project included the following:

- tank gauging and laboratory analysis of contents
- removal and disposal of one steel OWS with contents and one UST
- collection of soil samples from the tank excavation and the stockpiles
- chemical analysis of collected samples by an off-site State of California Department of Health Services-certified and Naval Facilities Engineering Service Center-approved laboratory. Samples were analyzed for site-specific potential contaminants based on past and current contents of the UST



OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA	DRAWN BY R. PIRMORADIAN	DATE 06/02/97	FACILITY LOCATION MAP UST 297C AND OWS 297B				
	CHECKED BY	DATE					
	APPROVED BY	DATE					
CONTRACT NAME SWDIV	PROJECT MANAGER	DATE	MARINE CORPS AIR STATION EL TORO, CALIFORNIA				
AUTOCAD FILE No. 18609031.DWG	PLOT SCALE 1=1	SHEET 1	OF 1	SCALE NONE	DOCUMENT CONTROL No. SW3616	OHM PROJECT No. 18609	FIGURE No. FIG 1-1	REVISION 0

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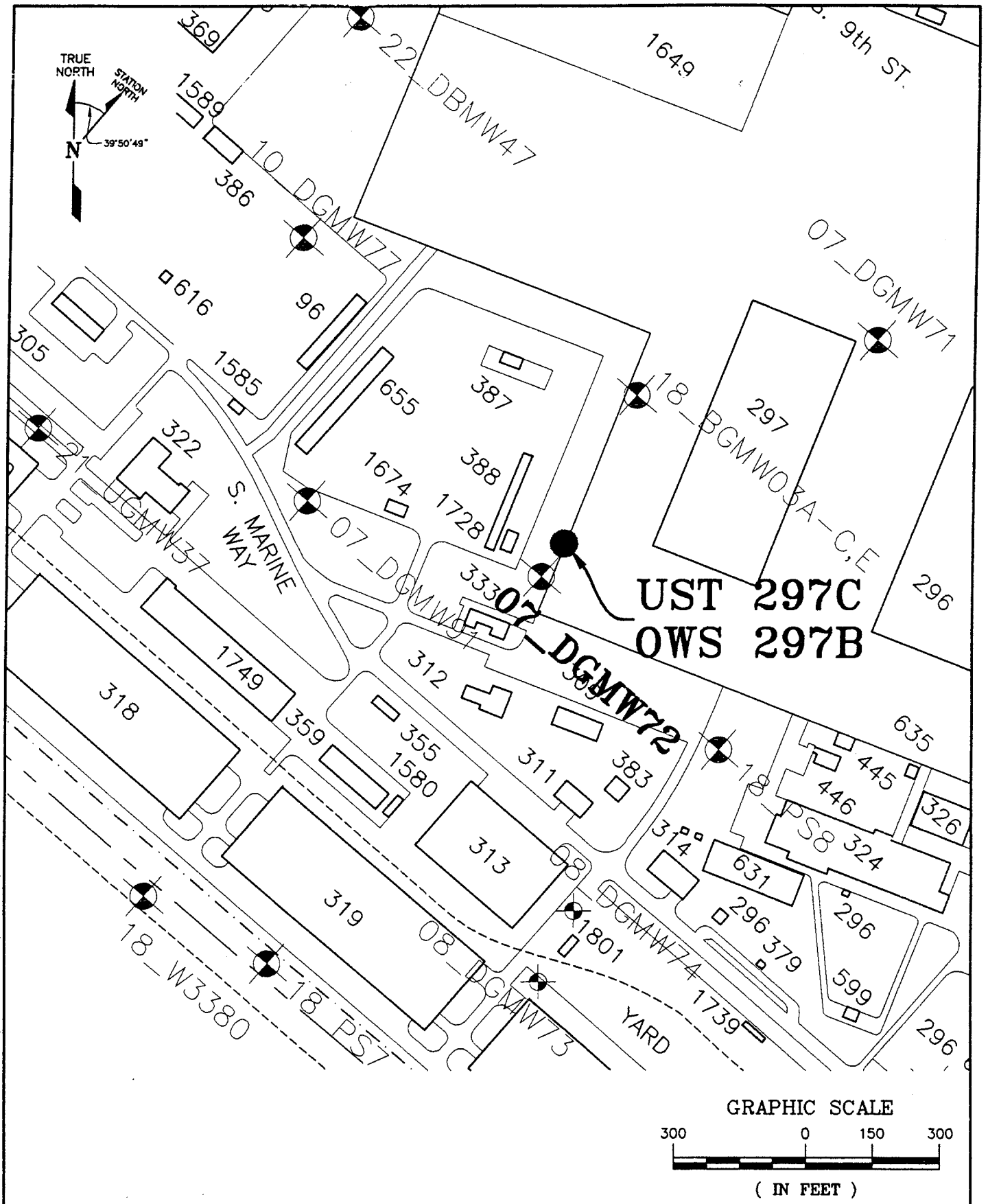
1-2



GRAPHIC SCALE

300 0 150 300

(IN FEET)

OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA	DRAWN BY R. PIRMORADIAN	DATE 06/02/97	LOCATION MAP UNDERGROUND STORAGE TANK UST 297C AND OWS 297B
	CHECKED BY	DATE	
	APPROVED BY	DATE	
CONTRACT NAME SWDIV	PROJECT MANAGER	DATE	MARINE CORPS AIR STATION EL TORO, CALIFORNIA

AUTOCAD FILE No.	PLOT SCALE	SHEET	OF	SCALE	DOCUMENT CONTROL No.	OHM PROJECT No.	FIGURE No.	REVISION
18609029.DWG	1=1	1	1	AS NOTED	SW3616	18609	FIG 1-2	0

R0 1:22:54:52 6/2/97 9:01:40 K:\PROJECTS\18609\18609029

The soil cleanup levels at the site are based on the Leaching Potential Analysis in the California Leaking Underground Fuel Tank (CA LUFT) Field Manual - General Risk Appraisal Method (State of California Water Resources Control Board, 1989). Table 1-1, Soil Cleanup Levels for UST 297C and OWS 297B using Leaching Potential Analysis from CA LUFT Field Manual, summarizes the evaluation results and cleanup levels for UST 297C.

Table 1-1
Soil Cleanup Levels for UST 297C and OWS 297B using Leaching Potential Analysis from CA LUFT Field Manual

Site Feature	Score	Score 10 pts if Condition is Met	Score	Score 9 pts if Condition is Met	Score	Score 5 pts if Condition is Met
Minimum depth to groundwater from the soil sample (feet)[1, 2]	10	>100	--	51 - 100	--	25 - 50
Fractures in subsurface (applies to foothills or mountain ranges)	10	None	--	Unknown	--	Present
Average annual precipitation (inches)[3]	--	<10	9	10 - 25	--	26 - 40
Manmade conduits which increase vertical migration of leachate	10	None	--	Unknown	--	Present
Unique site features: recharge area, coarse soil, nearby wells, etc.	10	None	--	At lease one	--	More than one
Column Totals Total Points	40	+	9	+	--	= 49
Range of Total Points	49 pts or more		41 - 48 pts		40 pts or less	
Maximum Allowable BTEX Levels (ppm)	1/50/50/50		.3/.3/1/1		Not applicable[4]	
Maximum Allowable TPH Levels (ppm)	Gasoline	1,000	100		10	
	Diesel	10,000	1,000		100	

Explanation:
[1] - If depth is greater than 5 feet and less than 25 feet, score 0 points. If depth is 5 feet or less, this table should not be used.
[2] - Monitoring well 07_DGMW72 groundwater depth 102 feet was used as reference for the depth to groundwater at this site.
[3] - If precipitation is over 40 inches, score 0 points.
[4] - Levels for BTEX are not applicable at a TPH concentration of 10 ppm (gasoline) or 100 ppm (diesel). (For explanation, see Step 6, page 27 of California Leaking Underground Fuel Tank (CA LUFT) Manual.
BTEX - benzene, toluene, ethylbenzene, and total xylenes
ppm - parts per million
pts - points
TPH - total petroleum hydrocarbons
Source: California Leaking Underground Fuel Tank (CA LUFT) Manual, October, 1989

Based upon the CA LUFT Field Manual, this site falls within the category of low leaching potential. The maximum allowable levels of petroleum hydrocarbon compounds which may be left at this site without posing a threat to groundwater quality are as follows:

- benzene - .1 parts per million (ppm)
- toluene - .50 ppm
- ethylbenzene 50 - ppm
- total xylenes - 50 ppm
- total petroleum hydrocarbons (TPH) as gasoline - 1,000 ppm
- TPH as diesel - 10,000 ppm

Note: 1 ppm is equivalent to 1 milligram per kilogram.

Section 2
Summary of Field Activities

Prior to initiating field activities, OHM completed an Orange County Health Care Agency (OCHCA) facility modification application and received approval (Permit No.: 96PC-195) for the removal of UST 297C and OWS 297B. OCHCA Facility Modification Application And Approval Forms are provided in Appendix A, Orange County Health Care Agency Modification Application and Approval Forms.

2.1 Geophysical Survey

A geophysical survey was conducted at the UST site by OHM subcontractor, GeoVision Services, to locate the underground utilities in the area. The survey employed analog electromagnetic methods for the utility detection survey and ground penetrating radar and electromagnetic induction metal detection methods for the pit delineation work. The Geophysical Survey Data is provided as Appendix B.

2.2 Tank Gauging and Sampling

OWS 297B was identified as a 150-gallon steel OWS and gauged on December 6, 1996. The separator contained approximately 110 gallons of free liquid with the appearance of clear water. One sample of the liquid (Sample Identification No. 18609-010) was collected on December 6, 1997 for laboratory analysis. The sample was analyzed for TPH using CA LUFT Method 8015 Modified; benzene, toluene, ethylbenzene, and total xylenes (BTEX) compounds using United States Environmental Protection Agency (EPA) Method 8020; and ignitability using EPA Method 1010.

TPH and BTEX were not detected in the sample of the liquid from the OWS. Certified laboratory analytical reports provided by Columbia Analytical Services, Inc., Canoga Park, California are included in Appendix C, Laboratory Analytical Reports and Chain-of-Custody Record. The liquid product was pumped out of the OWS on December 6, 1996. UST 297C was identified as a 185-gallon steel tank. Based on tank gauging conducted on December 6, 1996, the UST was empty.

2.3 Tank Removal and Disposal

UST 297C and OWS 297B were excavated on April 2, 1997 using a track excavator. The tank and separator were exposed and removed in the presence of the OCHCA inspector. About 5 feet of polyvinyl chloride piping was also excavated and removed. No noticeable

stains or odors were observed during tank and piping exposure and removal. The bottom of the tank was at a depth of approximately 16 feet below ground surface. Approximately, 610 cubic yards (yd^3) of soil were excavated to remove UST 297C and OWS 297B.

The excavated UST 297C and OWS 297B were not visibly damaged and no tie down concrete pad was discovered during tank removal. The tank and separator were decontaminated on March 31, 1997 using steam with Alconox™, tested to verify the absence of any flammable vapors, and then transported by OHM to Defense Reutilization and Marketing Office for recycling. The tank and separator were certified clean by Marine Chemist prior to transportation. The Tank Transportation Record and Marine Chemist Certificate are provided as Appendix D.

2.4 Soil Sampling, Analyses, and Results

Following the excavation of UST 297C and OWS 297B, on April 2, 1997 one soil sample was collected from the bottom of the excavation (Sample Identification No. 18609-297C-243). No soil samples were collected from the side walls of the excavation due to the depth of the excavation, the slope of the side walls and because there were no visible signs of contamination.

Sampling, including sample handling and packaging, was conducted in accordance with the procedures described in the approved *Draft Project Plans Remediation of Various Underground Storage Tanks, Marine Corps Air Station, El Toro, California* (OHM, 1995). The soil sample was collected in a 2- by 6-inch brass sleeve directly from the excavator bucket, with no tools, to minimize the need for decontamination. The soil sample was analyzed for volatile organic compounds using EPA Method 8240, and for total recoverable petroleum hydrocarbons (TRPH) using EPA Method 418.1.

The analytical results of the soil sample collected from the excavation pit are presented in Table 2-1, UST 297C and OWS 297B Confirmation Samples. TRPH and BTEX were not detected in the soil sample. Based on the analytical results of the soil sample and the observed nonimpacted excavated soil condition, no further excavation was required.

Photographs of the field activities are provided in Appendix E, Site Activity Photographs. Certified laboratory analytical reports provided by Applied Physics and Chemistry Laboratory, are included in Appendix C; and a schematic cross section of the excavation showing analytical results and depths of the soil samples collected during the tank removal is presented in Figure 2-1, Excavation Cross Section UST 297C and OWS 297B.

2.5 Waste Management

The 150-gallon steel OWS contained approximately 110 gallons of liquid which was sampled on December 6, 1996 and identified as water with no detectable amounts of hydrocarbons.

Table 2-1
UST 297C and OWS 297B Confirmation Samples

OHM Sample Identification		18609-297C-243
Sample Description		UST North East Side
Sample Date		04/02/97
Depth (below ground surface)		18.5
	Unit	
ASTM D 2216		
Percent Moisture	Percent	3.7
EPA 418.1		
Total Recoverable Petroleum Hydrocarbon	mg/kg	10 U
EPA 8240		
1,1,1-Trichloroethane	µg/kg	5.2 U
1,1,2,2-Tetrachloroethane	µg/kg	5.2 U
1,1,2-Trichloroethane	µg/kg	5.2 U
1,1-Dichloroethane	µg/kg	5.2 U
1,1-Dichloroethene	µg/kg	5.2 U
1,2,3-Trichloropropane	µg/kg	5.2 U
1,2-Dichloroethane	µg/kg	5.2 U
1,2-Dichloroethene (Total)	µg/kg	5.2 U
1,2-Dichloropropane	µg/kg	5.2 U
2-Butanone (MEK)	µg/kg	100 U
2-Chloroethyl vinyl ether	µg/kg	52 U
2-Hexanone	µg/kg	52 U
4-Methyl-2-Pentanone (MIBK)	µg/kg	52 U
Acetone	µg/kg	100 U
Acrolein	µg/kg	100 U
Acrylonitrile	µg/kg	52 U
Benzene	µg/kg	5.2 U
Bromodichloromethane	µg/kg	5.2 U
Bromoform	µg/kg	5.2 U
Bromomethane	µg/kg	10 U
Carbon Disulfide	µg/kg	5.2 U
Carbon Tetrachloride	µg/kg	5.2 U
Chlorobenzene	µg/kg	5.2 U
Chloroethane	µg/kg	10 U
Chloroform	µg/kg	5.2 U
Chloromethane	µg/kg	10 U
cis-1,2-Dichloroethene	µg/kg	5.2 U
cis-1,3-Dichloropropene	µg/kg	5.2 U
Dibromochloromethane	µg/kg	5.2 U
Dibromomethane	µg/kg	5.2 U

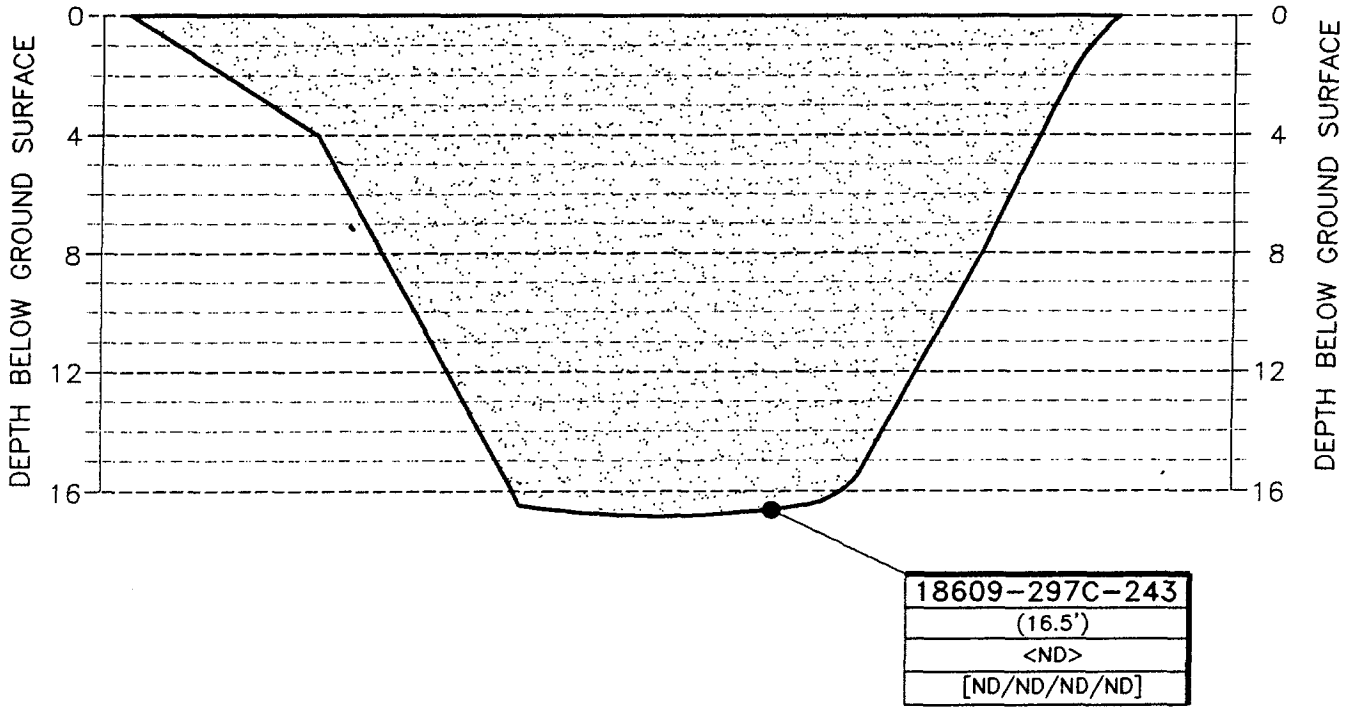
Table 2-1
UST 297C and OWS 297B Confirmation Samples

OHM Sample Identification		18609-297C-243
Sample Description		UST North East Side
Sample Date		04/02/97
Depth (below ground surface)		18.5
	Unit	
Dichlorodifluoromethane	µg/kg	5.2 U
Ethyl Methacrylate	µg/kg	10 U
Ethylbenzene	µg/kg	5.2 U
Iodomethane	µg/kg	5.2 U
m/p-Xylene	µg/kg	5.2 U
Methylene Chloride	µg/kg	21 U
o-Xylene	µg/kg	5.2 U
Styrene	µg/kg	5.2 U
Tetrachloroethene	µg/kg	5.2 U
Toluene	µg/kg	5.2 U
trans-1,2-Dichloroethene	µg/kg	5.2 U
trans-1,3-Dichloropropene	µg/kg	5.2 U
Trichloroethene	µg/kg	5.2 U
Trichlorofluoromethane	µg/kg	5.2 U
Vinyl Acetate	µg/kg	52 U
Vinyl Chloride	µg/kg	10 U

Notes:
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
NA = not analyzed
U = not detected above or equal to the stated limit

SOUTHWEST
A

NORTHEAST
A'



A / — CROSS SECTION
SEE APPENDIX F

EXPLANATION:

mg/kg	MILLIGRAMS PER KILOGRAM
µg/kg	MICROGRAMS PER KILOGRAM
●	CONFIRMATION SOIL SAMPLE LOCATION
TRPH	TOTAL RECOVERABLE PETROLEUM HYDROCARBONS
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND TOTAL XYLENES
ND	NOT DETECTED ABOVE LABORATORY REPORTING LIMITS
▒	APPROXIMATE LIMITS OF UST 297C EXCAVATION

18609-297C-243	SAMPLE IDENTIFIER
(16.5')	(SAMPLE DEPTH IN FEET)
<ND>	<TRPH CONCENTRATION mg/kg>
[ND/ND/ND/ND]	[BTEX CONCENTRATION µg/kg]

NOTE: ALL DIMENSIONS AND LOCATIONS ARE APPROXIMATE

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

CONTRACT NAME: SWDIV

DRAWN BY: R. PIRMORADIAN DATE: 06/05/97
CHECKED BY DATE
APPROVED BY DATE
PROJECT MANAGER DATE

EXCAVATION CROSS SECTION
UST 297C AND OWS 297B

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

AUTOCAD FILE No.	PLOT SCALE	SHEET	OF	SCALE	DOCUMENT CONTROL No.	OHM PROJECT No.	FIGURE No.	REVISION
18609030.DWG	1=1	1	1	NONE	SW3616	18609	FIG 2-1	0

2-5

RO 4:10:03:52 6/5/97 13:37:53 K:\PROJECTS\18609\18609030

The contents were pumped out on March 31, 1997 and delivered to the Station's central treatment facility for treatment through the OHM carbon absorption system. The rinse water generated by the decontamination process was also delivered to the central treatment facility for treatment through the OHM carbon absorption system and treated water was transferred to the El Toro Golf Course holding tank for reuse.

2.6 Land Surveying

After completing the excavation and soil sampling activities, all sample locations and the limits of excavation at UST 297C and OWS 297B were surveyed by Towill, Inc., a State of California-registered land surveyor. The surveyed locations were measured to ±0.1 feet horizontally and tied to the California State Plan Coordinate Systems, North American Datum 1983. The surveyed elevations were measured to ±0.01 feet vertically and tied to mean sea level datum. A copy of the land surveying data for this site is included in Appendix F, Land Surveying Report and Soil Sample Locations.

2.7 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 April 3, 1997 using the nonimpacted excavated soil stockpile, and approximately 25 yd^3 of nonimpacted import soil.

Compaction was accomplished using a dual steel drum vibratory roller. Backfill soil was placed in 6- to 12-inch lifts and all compaction tests were performed by R. T. Frankian and Associates as specified in the work plan (OHM, 1995), all test results indicated compaction above 90 percent. The paved area was restored to the original grade with crushed aggregate base and asphalt paving on April 10, 1997. A copy of the Compaction Test Field Report for UST 297C and OWS 297B is included in Appendix G, Compaction Test Field Report.

Section 3
Conclusions and Recommendation

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

- Post removal investigation of the OWS 297B and the UST 297C showed no deterioration in the material of the tanks.
- There was no evidence of spillage or areas of heavy stains observed in the excavations or in the stockpiles.
- The depth to groundwater is estimated to be approximately 102 feet.
- There was no groundwater encountered in the excavation.
- TRPH and BTEX were not detected in the confirmation soil samples.
- The potential for the petroleum hydrocarbons at UST 297C and OWS 297B to impact groundwater has been evaluated using the California LUFT Field Manual - General Risk Appraisal Method. Referring to Table 2-1 (CA LUFT-Field Manual) and from the data obtained during UST removal, UST can be categorized as having a low leaching potential. The maximum allowable levels of petroleum hydrocarbons are: diesel (10,000 ppm); gasoline (1,000 ppm); benzene (1 ppm); toluene (50 ppm); ethylbenzene (50 ppm); and total xylenes (50 ppm) for the referenced category.

Based on the information provided in this report, OHM, on behalf of the MCAS, El Toro, recommends that no further action status be granted by OCHCA for UST 297C (SWMU 77) and OWS 297B (SWMU 76).

Section 4
References

Camp Dresser & McKee, Inc. Federal Programs Corporation. 1996. *Groundwater Data Trends and Recommendations Report, Groundwater Monitoring Program for Marine Corps Air Station, El Toro, California.* Contract No. N68711-95-D-7530. DO 009. June.

Jacobs Engineering Group Inc. 1993. *Installation Restoration Program Final Resource Conservation and Recovery Act Facility Assessment Report for Marine Corps Air Station, El Toro, California.* Contract No. N68711-89-D-9296. July.

OHM. See OHM Remediation Services Corp.

OHM Remediation Services Corp. 1995. *Draft Project Plans, Remediation of Various Underground Storage Tanks at the Marine Corps Air Station, El Toro, California.* Contract Number 68711-93-D-1459, DO 0024.

State of California Water Resources Control Board. 1989. *Leaking Underground Fuel Tank Field Manual: Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure.* October.

Appendix A
Orange County Health Care Agency Modification Application and Approval Forms

COUNTY OF ORANGE

TOM URAM
DIRECTOR

HUGH F. STALLWORTH, M.D.
HEALTH OFFICER

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

UST 297 C

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

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

DATE: 12/6/96

LITY INFORMATION

E: MARINE CORPS AIR STATION

EET ADDRESS: NEAR GATE NO. 2, (See attached Map)

: ELTORO, CA 92709

AL NUMBER OF TANKS (AFTER INSTALLATION/REMOVAL) HIS LOCATION: 0

BUSINESS:
- ☐ GASOLINE STATION
- ☒ GOVERNMENT
- ☐ FARM
- ☐ OTHER

K OWNER (NAME (CORP., INDIVIDUAL, PUBLIC AGENCY):

MCAS ELTORO A/C ENVIRONMENTAL & SAFETY

EET ADDRESS: P O BOX 95001

: SANTA ANA

TE: CA ZIP 92709-5001

EPHONE NO: 714-726-6607

ING ADDRESS INFORMATION

TO NAME: OHM REMEDIATION SERVICES CORP.

TO ADDRESS: 2031 MAIN STREET

: IRVINE

TE: CA ZIP 92714

EPHONE NO.: 714-263-1146

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)/RELINE(S) TO USTs
- ☒ CLOSURE(S)/REMOVAL(S) 10+4 = (14)
- ☐ SYSTEM MODIFICATION (E.G. REPIPE, REPAIR TO PIPING)
- ☐ OTHER (SPECIFY)

24 HOUR EMERGENCY CONTACT PERSON

DAYS: SCOTT KEHE 714-726-2506
NAME TELEPHONE

NIGHTS: OHM - 1-800-537-9540 (24 HR) ELTORO - 714-726-9911 | 2172
NAME TELEPHONE

APPLICANT

NAME: DHANANJAY RAWAL
PLEASE PRINT

SIGNATURE: [signature]

COMPANY NAME: OHM REMEDIATION SERVICES COR

TELEPHONE NO: 714-263-9124 x 303

FACILITY OPERATOR (CONTACT PERSON)

NAME: LT HOPE KACHARIAN, MCAS ENV. DEP

BUSINESS TELEPHONE NO.: 714-726-3386

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.

12/9/96

OFFICE USE ONLY

HSO # 141000

960-195 FEES PAID: 1024-1372 RCVD. BY: DJ CK # 836732/836733

OIL WATER SEP WITH UST

TANK INFORMATION

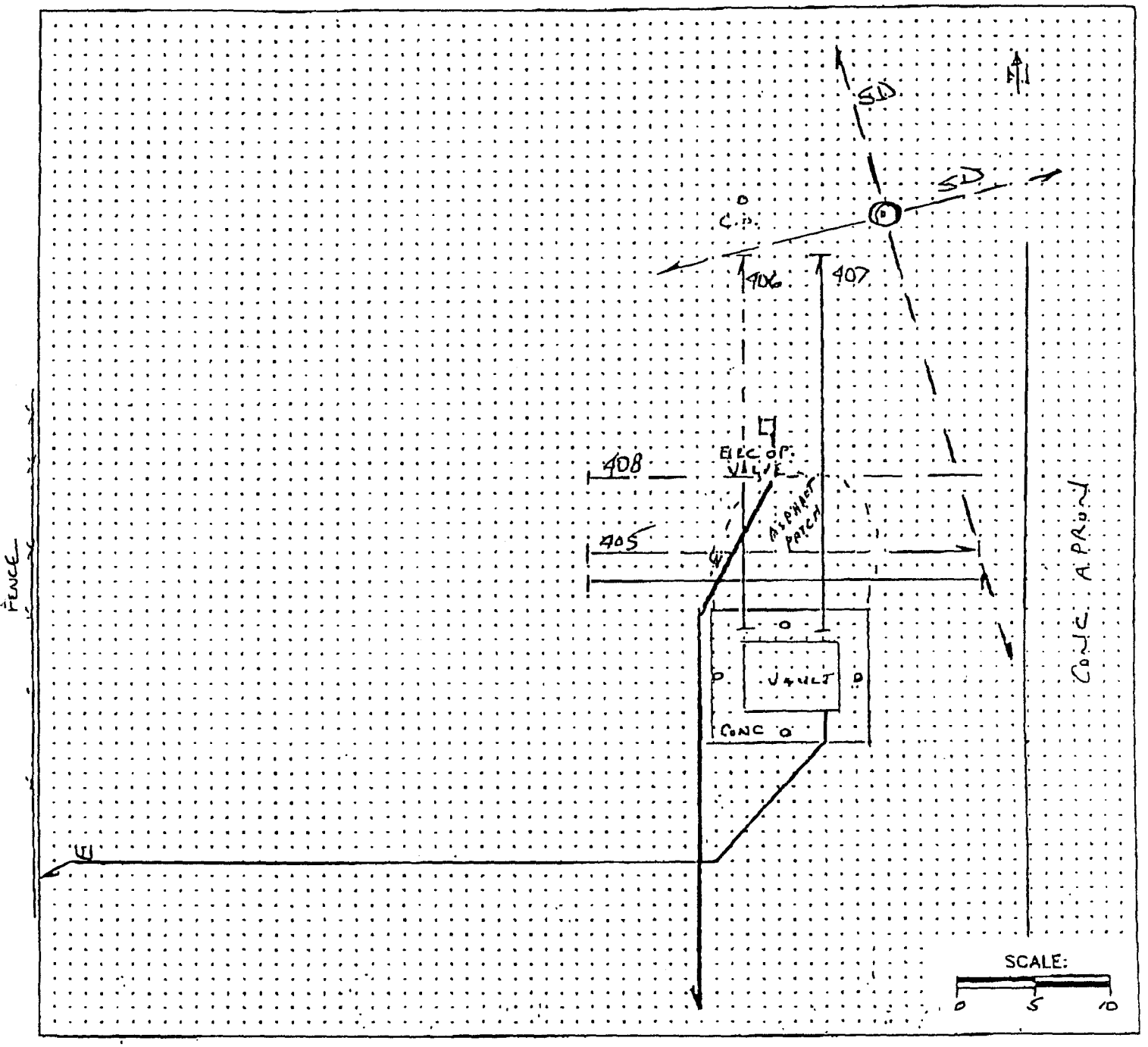
IDE THE INFORMATION BELOW FOR ALL TANKS AND PIPING SYSTEMS TO BE INSTALLED, REMOVED OR REPAIRED. ALSO INDICATE THE ADE/CHANGES TO BE MADE TO EACH TANK SYSTEM.

TANK I.D.			297 #1 C	244 #2	643 #3	762 #4 B
MATERIAL STORED	MATERIAL OR WASTE STORED	CURRENTLY	Water	Unknown	Unknown	Water
		PROPOSED	None	None	None	None
		PREVIOUSLY	Waste oil	Waste oil	Waste oil	Waste oil
	FUEL TYPE, I.E., UNLEADED		N/A	N/A		N/A
	TYPE (TANK, SUMP, OTHERS)		OWSep/Tank	Oil Water Sep w tank	Oil Water Sep with tank	Oil Water Sep with tank
	DOUBLE WALL/SINGLE WALL		N/A	N/A	N/A	N/A
	UL NUMBER					
	YEAR INSTALLED		None	None	None	None
	VAULTED/NOT VAULTED					
TANK	PRIMARY	MANUFACTURER	N/A	N/A	N/A	N/A
		CAPACITY (GALLONS)	185 gallon	185 gallons	185 gallon	185
		CONSTRUCTION MATERIAL	Steel	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				
		THICKNESS (UNITS)				
	CORROSION PROTECTION					
	TYPE OF LEAK DETECTION FOR USTs (LIQUID, PROBE, ETC.)		NA	NA	NA	NA
	MANUFACTURER OF LEAK DETECTOR					
PIPING	LOCATION (UNDER/ABOVE GROUND)		Underground	Underground	Underground	Underground
	SUCTION/PRESSURE GRAVITY/UNKNOWN		N/A	N/A	N/A	N/A
	PRIMARY	CONSTRUCTION MATERIAL				
		MANUFACTURER	N/A	N/A	N/A	N/A
	SECONDARY	CONSTRUCTION MATERIAL				
		MANUFACTURER	N/A	N/A	N/A	N/A
	TYPE OF LEAK DETECTION FOR PIPING (PRESSURE LOSS DEVICE, ETC.)					
	MANUFACTURER OF LEAK DETECTOR					
VERFILL PROTECTION (TYPE)			Unknown	Unknown	Unknown	Unknown
ILL CONTAINMENT (TYPE)			Unknown	Unknown	Unknown	Unknown

Appendix B
Geophysical Survey Data

297C

GEOPHYSICAL SURVEY MAP



LEGEND

405 |— — —| GEOPHYSICAL TRAVERSE w/ FILE No.

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

Appendix C
Laboratory Analytical Reports and Chain-of-Custody Record

OHM Remediation Services Corp.

CHAIN-OF-CUSTODY RECORD

LAB COPY
Form 0019
Field Technical Services
Rev. 08/89

186499

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: UST Sites
PROJECT LOCATION: M.C.A.S. EL TORO
PROJ. NO.: 8609
PROJECT CONTACT: Thizar Tintut-Williams
PROJECT TELEPHONE NO.: (714) 263-1140 X 620
CLIENT'S REPRESENTATIVE: Lynn Hornecker-SWDIV
PROJECT MANAGER/SUPERVISOR: Bill Sedlak - OHM

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): TPH full Range (*) (✓) — BTEX/~~EPA~~ (*) (✓) — PCB - Hold all (B) — Metals (✓) — Ignitability (✓) — Hold All (B)

C.A.S. Canoga Park, CA.

SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	TPH full Range (*)	BTEX (*)	PCB	Metals	Ignitability				REMARKS
18609-006	12/6/96	0800		X	Product Sample for standard	1									STANDARD - JP5
18609-007	12/6/96	0955		X	Liquid from UST 643A	6	X	X	X	X	X	X			
18609-008	12/6/96	0958		X	Liquid from UST 643A	6	X	X	X	X	X	X			
18609-009	12/6/96	1040		X	Liquid from UST 244	8	X	X	X	X	X	X			MS/MSD
18609-010	12/6/96	1145		X	Liquid from UST 297C	6	X	X	X	X	X	X			Hold until further notice (B)
18609-011	12/6/96	0730		X	Trip Blank for 12/6/96	1		X							14 DAY T.A.T.

Hold All Metals analysis until further notice (B)
Hold All PCB analysis until further notice. (B)

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-6	B / OHM	Kenneth McA	12/6/96	1500
2	L4	Kenneth McA		12/6/96	1905
3					
4					

REMARKS
1.) (*) = 48 hr T.A.T.
2.) (✓) = 5 DAY T.A.T.
3.) filter Metal upon ARRIVAL @ C.A.S.

SAMPLER'S SIGNATURE: B

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: OHM
Project: UST SITES/#18609
Sample Matrix: Water

Service Request: L9604824
Date Collected: 12/6/96
Date Received: 12/6/96

CCR Metals

Sample Name: 18609-010
Lab Code: L9604824-005
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Digested	Date Analyzed	Result	LAB Qualifier
Antimony, Total	3010	6010	0.5	1	12/11/96	12/16/96	0.5	U
Arsenic, Total	3020	7060	0.005	1	12/11/96	12/11/96	0.005	U
Barium, Total	3010	6010	0.1	1	12/11/96	12/16/96	0.1	U
Beryllium, Total	3010	6010	0.01	1	12/11/96	12/16/96	0.01	U
Cadmium, Total	3010	6010	0.005	1	12/11/96	12/16/96	0.005	U
Chromium, Total	3010	6010	0.05	1	12/11/96	12/16/96	0.05	U
Cobalt, Total	3010	6010	0.05	1	12/11/96	12/16/96	0.05	U
Copper, Total	3010	6010	0.05	1	12/11/96	12/16/96	0.05	U
Lead, Total	3010	6010	0.05	1	12/11/96	12/16/96	0.05	U
Mercury, Total	7470	7470	0.001	1	12/11/96	12/11/96	0.001	U
Molybdenum, Total	3010	6010	0.10	1	12/11/96	12/16/96	0.10	U
Nickel, Total	3010	6010	0.15	1	12/11/96	12/16/96	0.15	U
Selenium, Total	3020	7740	0.005	1	12/11/96	12/11/96	0.005	U
Silver, Total	3010	6010	0.05	1	12/11/96	12/16/96	0.05	U
Thallium, Total	3010	6010	0.4	1	12/11/96	12/16/96	0.4	U
Vanadium, Total	3010	6010	0.1	1	12/11/96	12/16/96	0.1	U
Zinc, Total	3010	6010	0.02	1	12/11/96	12/16/96	0.05	

Approved By: _____ Date: 1/23/97

1S44/071096
048241CP.IZ1 - Sample 1/17/97

6925 Canoga Avenue ▪ Canoga Park, CA 91303 ▪ (818) 587-5550 ▪ Fax (818) 587-5555

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	OHM	**Service Request:**	L9604824
Project:	UST SITES/#18609	**Date Collected:**	12/6/96
Sample Matrix:	Water	**Date Received:**	12/6/96

Ignitability

Sample Name:	18609-010	Units:	DEG F
Lab Code:	L9604824-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	Dilution Factor	Date Extracted	Date Analyzed	Result	LAB Qualifier
Ignitability	METHOD	1010	1	NA	12/10/96	>200	U

Approved By: [signature] Date: 1/23/97

309

1S22/052595

6925 Canoga Avenue ▪ Canoga Park, CA 91303 ▪ (818) 587-5550 ▪ Fax (818) 587-5555

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	OHM	**Service Request:**	L9604824
Project:	UST SITES/#18609	**Date Collected:**	12/6/96
Sample Matrix:	Water	**Date Received:**	12/6/96

BTEX

Sample Name:	18609-010	Units:	ug/L (ppb)
Lab Code:	L9604824-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	LAB Qualifier
Benzene	EPA 5030	8020	0.5	1	12/9/96	12/9/96	0.5	U
Toluene	EPA 5030	8020	0.5	1	12/9/96	12/9/96	0.5	U
Ethylbenzene	EPA 5030	8020	0.5	1	12/9/96	12/9/96	0.5	U
Total Xylenes	EPA 5030	8020	1.0	1	12/9/96	12/9/96	1.0	U

Approved By: EDWil Date: 1/29/97

1S22/052595

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	OHM	**Service Request:**	L9604824
Project:	UST SITES/#18609	**Date Collected:**	12/6/96
Sample Matrix:	Water	**Date Received:**	12/6/96

Hydrocarbon Scan / Fuel Characterization

Sample Name:	18609-010	Units:	mg/L (ppm)
Lab Code:	L9604824-005	Basis:	NA
Test Notes:	*		

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	LAB Qualifier
C4-C12 - GRO	EPA 3510M	8015M	0.5	1	12/9/96	12/9/96	0.5	U
C13-C22 - DRO	EPA 3510M	8015M	0.5	1	12/9/96	12/9/96	0.5	U
C23->C23 - HRO	EPA 3510M	8015M	0.5	1	12/9/96	12/9/96	0.5	U
Total Petroleum Hydrocarbons	EPA 3510M	8015M	0.5	1	12/9/96	12/9/96	0.5	U
Fuel Characterization	EPA 3510M	8015M		1	12/9/96	12/9/96	NA	

*	Quantified with diesel fuel
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
HRO	Heavy Oil Range Organics

Approved By: _____ Date: 1/23/97

1S22/052595

6925 Canoga Avenue ▪ Canoga Park, CA 91303 ▪ (818) 587-5550 ▪ Fax (818) 587-5555

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	OHM	**Service Request:**	L9604824
Project:	UST SITES/#18609	**Date Collected:**	12/6/96
Sample Matrix:	Water	**Date Received:**	12/6/96

Polychlorinated Biphenyls (PCBs)

Sample Name:	18609-010	Units:	ug/L (ppb)
Lab Code:	L9604824-005	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	PQL	Dilution Factor	Date Extracted	Date Analyzed	Result	LAB Qualifier
Aroclor 1016	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U
Aroclor 1221	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U
Aroclor 1232	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U
Aroclor 1242	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U
Aroclor 1248	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U
Aroclor 1254	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U
Aroclor 1260	EPA 3510B	8081	1	1	12/11/96	12/12/96	1	U

Approved By: _____ Date: 1/23/97

1S22/052595

6925 Canoga Avenue ▪ Canoga Park, CA 91303 ▪ (818) 587-5550 ▪ Fax (818) 587-5555

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

1. ALL SAMPLES ARE TO BE HANDLED AS COURT EVIDENCE, AND ARE TO BE PROPERLY STORED IN A SECURE LOCATION.

2. PLEASE WRITE LEGIBLY.

3. 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

LAB NO.: _____

DATE RECEIVED: _____

SAMPLE(S) CONDITION (PLEASE CHECK):

CHILLED: ____ COUNTY SEAL(S) INTACT: ____

CONTAINER IN GOOD CONDITION: ____

DATE ANALYSIS COMPLETED: _____

ANALYST: _____

5. TO BE COMPLETED BY SAMPLE COLLECTOR

SITE NAME/ADDRESS: MCAS El Toro Tank # 297C, Santa Ana

DATE OF COLLECTION: 4-2-97

SAMPLE COLLECTOR/COMPANY: N. Ng OHM Remediation

TELEPHONE NO.: _____

HCA REPRESENTATIVE: A. Rashidi-Fard

6.

SAMPLE NUMBER	DETERMINATION REQUESTED	SAMPLE DESCRIPTION/COMMENTS	TIME OF COLLECTION
18609 297C.243	TRPH (418.1),	8240	9:28 am

7. CHAIN OF CUSTODY

	SIGNATURE	COMPANY/AGENCY	INCLUSIVE DATES/TIMES
1.	Nighavan Rashidi-Fard	Haz. Waste	4-2-97 - 9:35 am
2.	Norm Ng	OHM	4-2-97 - 9:35 AM
3.	Matt Rivers	APCL	4-2-97 - 12:25
4.			-
5.			-
6.			-

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

F272-9.1531.1(R8/89) CRS

OHM Remediation Services Corp.

CHAIN-OF-CUSTODY RECORD

LAB COPY
Form 0019
Field Technical Services
Rev. 08/89

201813

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: UST 297C (Do 70)
PROJECT LOCATION: MCAS El Toro
PROJ. NO.: 8609
PROJECT CONTACT: Thizar tintut williams
PROJECT TELEPHONE NO.: 714 263 1146
CLIENT'S REPRESENTATIVE: Ryan Horlacker – SWDIV
PROJECT MANAGER/SUPERVISOR: Bill Sedlak – OHM

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): 8240, 418.1, APCL

SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	8240	418.1	APCL	REMARKS
18609-297C-242	4/2/97	0900		X	Trip Blank For 4/2/97	1	X			Level D
18609-297C-243	4/2/97	0920		X	Soil from UST 297C – (G) 18.5' NE Side		X	X		Level D
~~18609-297C-244~~	~~4/2/97~~				~~Soil from UST 297C –~~		X	X		

B 4/2/97

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-2	B / OHM	Martha Rivera	4/2/97	12:25
2					
3					
4					

REMARKS: 24 hr TAT
APCL courier pickup.

SAMPLER'S SIGNATURE: B

1998

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
OHM Remediation Services (Irvine)
Attention: Mary Schneider
2031 Main St.
Irvine CA 92714
Tel: (714)263-1146 Fax: (714)263-1147

Service ID #: 801-971993
Collected by: B.
Collected on: 04/02/97

Received: 04/02/97
Extracted: N/A
Tested: 04/03/97
Reported: 04/03/97

Sample Description: Water and Soil from MCAS El Toro
Project Description: 18609 UST 297C (D.O.70)

Analysis of Water and Soil Samples

I . Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	Analysis Result 18609-297C-242 97-01993-1
VOLATILE ORGANICS				
Dilution Factor	8240			1
ACETONE	8240	µg/L	100	< 100
ACROLEIN	8240	µg/L	100	< 100
ACRYLONITRILE	8240	µg/L	50	< 50
BENZENE	8240	µg/L	5	< 5
BROMODICHLOROMETHANE	8240	µg/L	5	< 5
BROMOFORM	8240	µg/L	5	< 5
BROMOMETHANE	8240	µg/L	10	< 10
2-BUTANONE (MEK)	8240	µg/L	100	< 100
CARBON DISULFIDE	8240	µg/L	5	< 5
CARBON TETRACHLORIDE	8240	µg/L	5	< 5
CHLOROBENZENE	8240	µg/L	5	< 5
DIBROMOCHLOROMETHANE	8240	µg/L	5	< 5
CHLOROETHANE	8240	µg/L	10	< 10
2-CHLOROETHYL VINYL ETHER	8240	µg/L	50	< 50
CHLOROFORM	8240	µg/L	5	< 5
CHLOROMETHANE	8240	µg/L	10	< 10
DIBROMOMETHANE	8240	µg/L	5	< 5
DICHLORODIFLUOROMETHANE	8240	µg/L	5	< 5
1,1-DICHLOROETHANE	8240	µg/L	5	< 5
1,2-DICHLOROETHANE	8240	µg/L	5	< 5
1,1-DICHLOROETHENE	8240	µg/L	5	< 5
CIS-1,2-DICHLOROETHENE	8240	µg/L	5	< 5
TRANS-1,2-DICHLOROETHENE	8240	µg/L	5	< 5
1,2-DICHLOROETHENE (TOTAL)	8240	µg/L	5	< 5
1,2-DICHLOROPROPANE	8240	µg/L	5	< 5
CIS-1,3-DICHLOROPROPENE	8240	µg/L	5	< 5
TRANS-1,3-DICHLOROPROPENE	8240	µg/L	5	< 5
ETHYL METHACRYLATE	8240	µg/L	10	< 10

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 18609-297C-242 97-01993-1
ETHYLBENZENE	8240	µg/L	5	< 5
2-HEXANONE	8240	µg/L	50	< 50
IODOMETHANE	8240	µg/L	5	< 5
4-METHYL-2-PENTANONE (MIBK)	8240	µg/L	50	< 50
METHYLENE CHLORIDE	8240	µg/L	10	< 10
STYRENE	8240	µg/L	5	< 5
1,1,2,2-TETRACHLOROETHANE	8240	µg/L	5	< 5
TETRACHLOROETHENE	8240	µg/L	5	< 5
TOLUENE	8240	µg/L	5	< 5
1,1,1-TRICHLOROETHANE	8240	µg/L	5	< 5
1,1,2-TRICHLOROETHANE	8240	µg/L	5	< 5
TRICHLOROETHENE	8240	µg/L	5	< 5
TRICHLOROFLUOROMETHANE	8240	µg/L	5	< 5
1,2,3-TRICHLOROPROPANE	8240	µg/L	5	< 5
VINYL ACETATE	8240	µg/L	50	< 50
VINYL CHLORIDE	8240	µg/L	10	< 10
O-XYLENE	8240	µg/L	5	< 5
M/P-XYLENE	8240	µg/L	5	< 5

II . Analysis of Soil Samples

Component Analyzed	Method	Unit	PQL	Analysis Result 18609-297C-243 97-01993-2
MOISTURE, PERCENT IN SOIL	ASTM-D2216	%Moisture	0.5	3.7
TRPH	418.1	mg/kg	10	< 10
VOLATILE ORGANICS				
Dilution Factor	8240			1
ACETONE	8240	µg/kg	100	< 100
ACROLEIN	8240	µg/kg	100	< 100
ACRYLONITRILE	8240	µg/kg	50	< 52
BENZENE	8240	µg/kg	5	< 5.2
BROMODICHLOROMETHANE	8240	µg/kg	5	< 5.2
BROMOFORM	8240	µg/kg	5	< 5.2
BROMOMETHANE	8240	µg/kg	10	< 10
2-BUTANONE (MEK)	8240	µg/kg	100	< 100
CARBON DISULFIDE	8240	µg/kg	5	< 5.2
CARBON TETRACHLORIDE	8240	µg/kg	5	< 5.2
CHLOROBENZENE	8240	µg/kg	5	< 5.2
DIBROMOCHLOROMETHANE	8240	µg/kg	5	< 5.2

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 18609-297C-243 97-01993-2
CHLOROETHANE	8240	µg/kg	10	< 10
2-CHLOROETHYL VINYL ETHER	8240	µg/kg	50	< 52
CHLOROFORM	8240	µg/kg	5	< 5.2
CHLOROMETHANE	8240	µg/kg	10	< 10
DIBROMOMETHANE	8240	µg/kg	5	< 5.2
DICHLORODIFLUOROMETHANE	8240	µg/kg	5	< 5.2
1,1-DICHLOROETHANE	8240	µg/kg	5	< 5.2
1,2-DICHLOROETHANE	8240	µg/kg	5	< 5.2
1,1-DICHLOROETHENE	8240	µg/kg	5	< 5.2
CIS-1,2-DICHLOROETHENE	8240	µg/kg	5	< 5.2
TRANS-1,2-DICHLOROETHENE	8240	µg/kg	5	< 5.2
1,2-DICHLOROETHENE (TOTAL)	8240	µg/kg	5	< 5.2
1,2-DICHLOROPROPANE	8240	µg/kg	5	< 5.2
CIS-1,3-DICHLOROPROPENE	8240	µg/kg	5	< 5.2
TRANS-1,3-DICHLOROPROPENE	8240	µg/kg	5	< 5.2
ETHYL METHACRYLATE	8240	µg/kg	10	< 10
ETHYLBENZENE	8240	µg/kg	5	< 5.2
2-HEXANONE	8240	µg/kg	50	< 52
IODOMETHANE	8240	µg/kg	5	< 5.2
4-METHYL-2-PENTANONE (MIBK)	8240	µg/kg	50	< 52
METHYLENE CHLORIDE	8240	µg/kg	20	< 21
STYRENE	8240	µg/kg	5	< 5.2
1,1,2,2-TETRACHLOROETHANE	8240	µg/kg	5	< 5.2
TETRACHLOROETHENE	8240	µg/kg	5	< 5.2
TOLUENE	8240	µg/kg	5	< 5.2
1,1,1-TRICHLOROETHANE	8240	µg/kg	5	< 5.2
1,1,2-TRICHLOROETHANE	8240	µg/kg	5	< 5.2
TRICHLOROETHENE	8240	µg/kg	5	< 5.2
TRICHLOROFLUOROMETHANE	8240	µg/kg	5	< 5.2
1,2,3-TRICHLOROPROPANE	8240	µg/kg	5	< 5.2

Applied P & Ch Laboratory
13760 Magnolia Ave. Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Component Analyzed	Method	Unit	PQL	Analysis Result 18609-297C-243 97-01993-2
VINYL ACETATE	8240	µg/kg	50	< 52
VINYL CHLORIDE	8240	µg/kg	10	< 10
O-XYLENE	8240	µg/kg	5	< 5.2
M/P-XYLENE	8240	µg/kg	5	< 5.2

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit

N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.

J: Reported between PQL and MDL.

† All results are reported on dry basis for soil samples.

Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & Ch Laboratory

Appendix D
Tank Transportation Record and Marine Chemist Certificate

ROICC
MCAS El Toro

Facsimile

# of pages: 3
Date: 1 May 97

From: Scott Kehe **Title:** Civil Engineer
Phone No.: (714) 726-2506 **Fax No.:** (714) 726-2255

To: LYNN HORNECKER **Company:** SWDIV
Phone No.: **Fax No.:** (619) 556-0248

Subject: DRMO RECEIPT FOR USTs

Transmitted for your information and for COTR Transmittal to OHM are the following:

-DD Form 1348 dated 30 April 1997 for USTs 47A, 47B, 56A, 297A and 297B totaling 8850 pounds of scrap metal.
-Receipt Document from MCAS El Toro Environmental Department dated 22 April 1997 for the above USTs.

The USTs and associated piping were transported by OHM from the Central Treatment Facility to the Building 326 recycling center on 22 April 1997 and then were transported by the station environmental department to DRMO on 30 April 1997.

Scott Kehe

SCRAP METAL

Site 47-A-B 297-S

DIOCENT	RI FROM	M&S	UNIST	QUANTITY	SER	SUPPLEMENTARY ADDRESS	SIG	FUND	DISTRIBUTION	PROJECT	PRI	RDD EEA OLT DE	ADV	RI	O/P	COND	MGT	UNIT PRICE DOLLARS	UNIT PRICE CTS	1. TOTAL PRICE DOLLARS	CTS

LBS 8850

2. SHIP FROM: Environmental, MCAS El Toro, PO 95001 CA, Santa Ana 92709

3. SHIP TO: S23169 DR-[illegible], MCAS El To[illegible], PO 21 CA, Irv. 9263[illegible]

4. MARK FOR

5. DOC DATE	6. NMFC	7. FRT RATE	8. TYPE CARGO
7120			

10. QTY. REC'D	11. UP	12. UNIT WEIGHT	13. UNIT CUBE	14. UFC	15. S
		8850			

16. FREIGHT CLASSIFICATION NOMENCLATURE: NON FERROUS METAL - SCRAP

17. ITEM NOMENCLATURE

18. TY CONT	19. NO CONT	20. TOTAL WEIGHT	21. TOTAL CUBE

22. RECEIVED BY: S Leigh

23. DATE RECEIVED: 4/30/97

24. DOCUMENT NUMBER & SUFFIX (28-44): M60050 - 7120-D106

25. NATIONAL STOCK NO. & ACT (8-22): SCLE/IABA

9680 - 00 - SCRAP METAL

26. RIC (4-6) UI (13-14) QTY (15-20) CON-CODE (31) DIST (35-38) UP (39-46)

DRMO
EL TORO

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORT ACCORDING TO APPLICABLE REGULATIONS FOR DOT AND EPA.

PROCEEDS FROM THE SALE OF RECYCLABLE WASTES AND MATERIALS TO BE CREDITED TO FUND CITE NUMBER:

17F3875.27RM/007/60050/000027/3C/000000/06005098004

27. ADDITIONAL DATA

USTs 47A, 47B, 56A, 297A, 297B

U.S. GOVERNMENT
RELEASE / RECEIPT DOCUMENT

ENVIRONMENTAL DEPT.
MCAS EL TORO
BLDG. 326-1 RECYCLING BR.

1. DOC DATE: Rec'd ENVIRO APR 2 2 1997

2. QTY REC'D: _____ / UNIT MEA /

3. FREIGHT CLASSIFICATION NOMENCLATURE: _____

4. IDENTIFICATION NUMBERS APR 2 2 1997

# 47A	CERT # 8275	
" # 47B	CERT # 8275	
" # 56A	CERT # 8274	
" # 297	CERT # 8261	
" # 297	CERT # 8261	
#	CERT #	
#	CERT #	
#	CERT #	
#	CERT #	
#	CERT #	

(Section 4 to be used for fuel tanks, UST's and Seperator's only)

COMMENTS:

(List locations where material was removed from)

4/22/97 - Various pipes etc. Scrap —

OHM CONTRACTOR

5. DOCUMENT NUMBER: DD-1349-1A 60050- D106

6. SHIP TO: SZ3169 DRMO
MCAS EL TORO
PO BOX 21
IRVINE, CA 92650

DATE SHIPPED: APR 3 0 1997

APR 3 0 1997

GOVERNMENT REPRESENTATIVE / DATE:

Thomas D. Beck & Assoc., Inc.
dba HARBOR TESTING LABORATORY
24 HOUR PHONE: (310) 492-9646

MARINE CHEMIST CERTIFICATE

Serial # 8261

OHM	USMC STA EL TORO	2 APR 97
Requested by	Vessel Owner or Agent	Date
SEE BELOW	CLARIFIER and HOLDING TK	EL TORO MCAS
Vessel	Type of Vessel	Specific Location of Vessel
WASTE WATER	LEL, O_2, VISUAL	1415
Last Cargo	Tests Performed	Time Survey Completed

WASTE WATER CLARIFIER and ASSOCIATED STORAGE TANK MARKED WITH YELLOW SPRAY PAINT

SITE 297

and

8261

TESTED: 0% LEL
20.8% O_2

SAFE FOR HOT WORK

TANK and CLARIFIER HAVE BEEN CLEANED

185 Gal Tank and Large Seperator

MSA MICROGARD S/N 2070 CALIBRATED 1345 HRS 2 APR 97

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 reissue 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 bilges, 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.

CHEMIST'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 on 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 [signature] 9476 OHM 4/2/97
Name Company Date

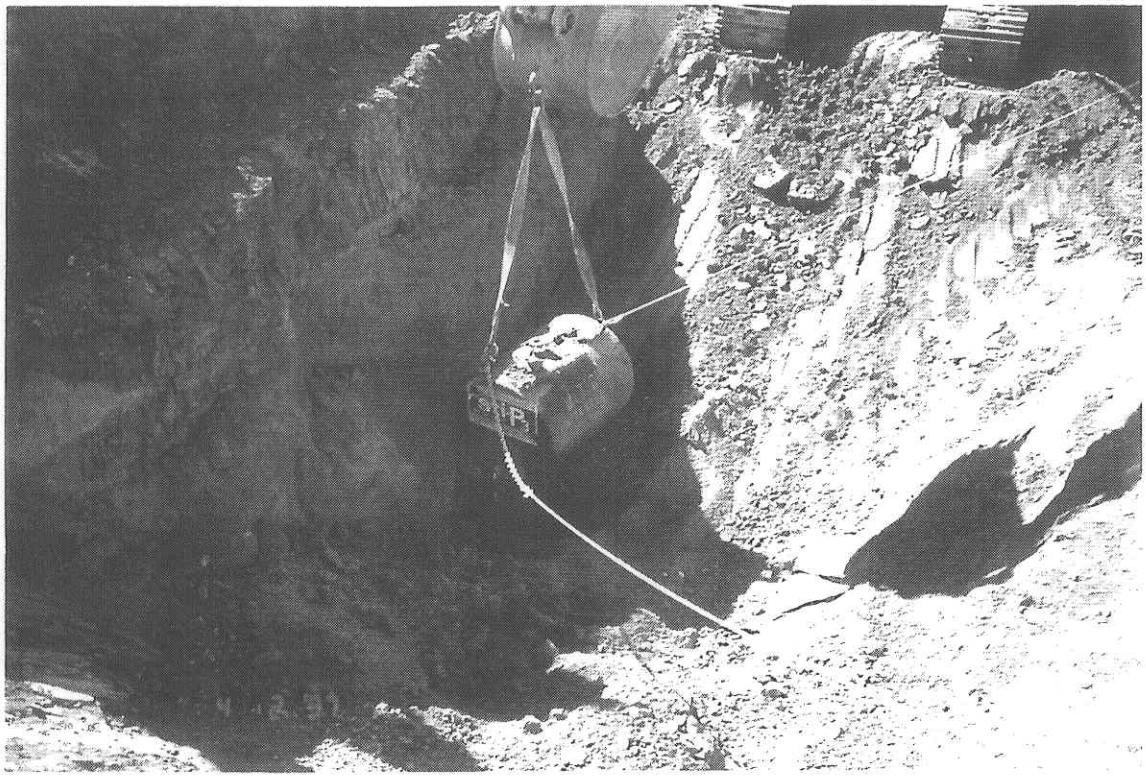
Signed [signature] 594
Marine Chemist Certificate No.

Appendix E
Site Activity Photographs

Photograph No. 1: UST 297C at Start of Excavation.

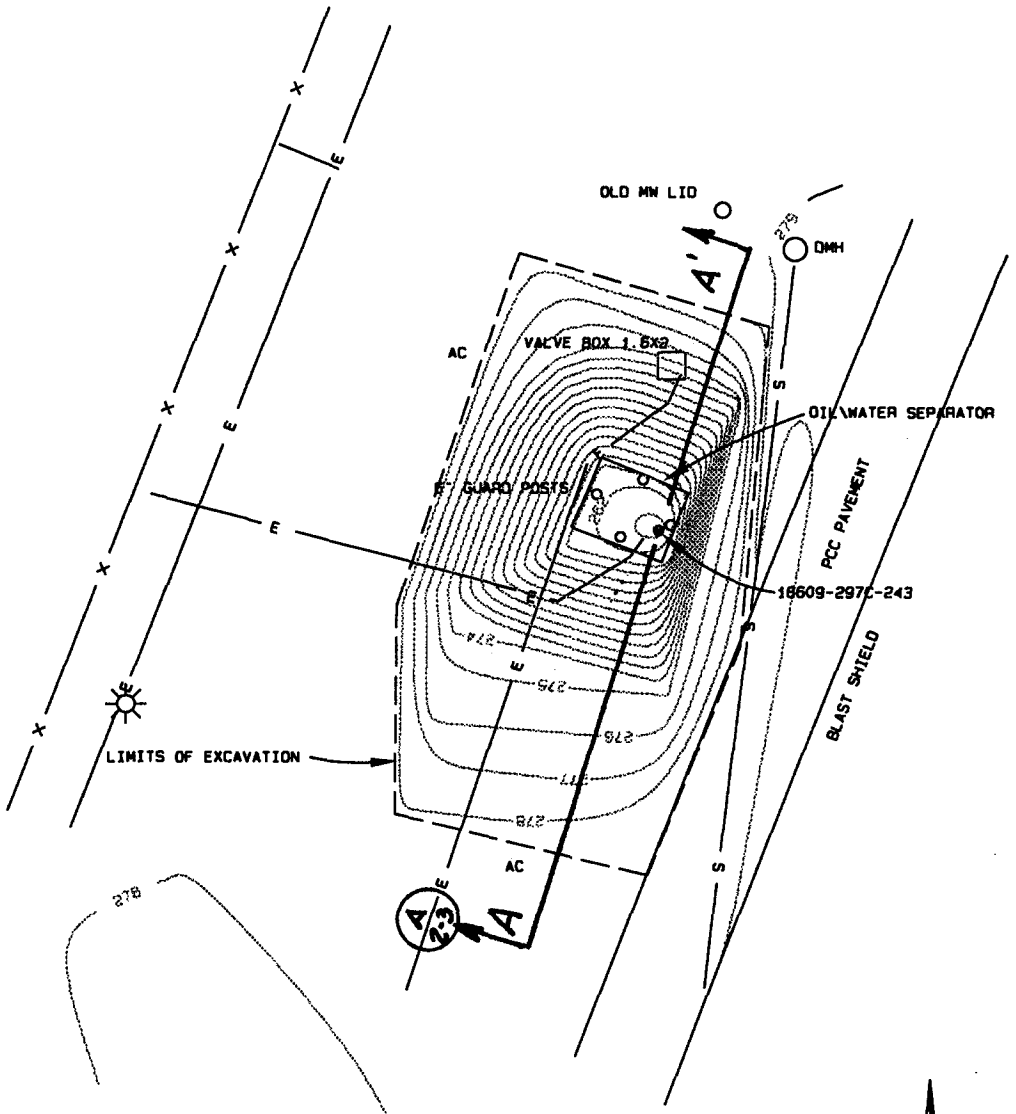
Photograph No. 2: Pressure Washing OWS 297B.

Photograph No. 3: Removing OWS 297B.



Photograph No. 4: Removing UST 297C.

Appendix F
Land Surveying Report and Soil Sample Locations

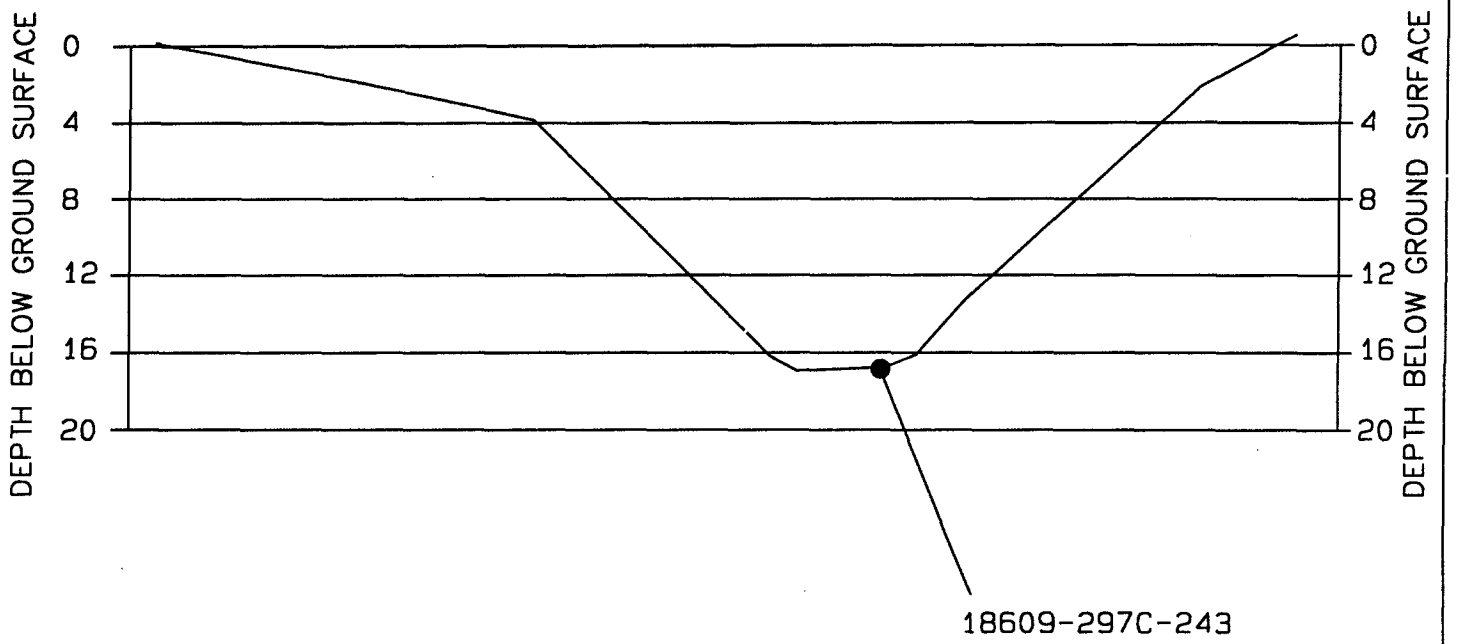


LICENSED LAND SURVEYOR
RUEL DEL CASTILLO
EXP. 6/30/00
L.S. 4212
STATE OF CALIFORNIA

THIS REPRESENTS A SURVEY DONE UNDER MY SUPERVISION.

RUEL DEL CASTILLO, L.S. 4212

JOB #: 96-5232	UST 297 C	Towill, inc.
DATE: 5/20/97		15405 Redhill Avenue, Suite A
SCALE: 1" = 20'		Tustin, CA. 92780 (714) 566-9280
SHEET 1 OF 1	MCAS EL TORO	



JOB #: 96-5232	UST 297 C	Towill, inc.
DATE: 5/20/97		15405 Redhill Avenue, Suite A
SCALE: 1" = 20'	MCAS EL TORO	Tustin, CA. 92780 (714) 566-9280
SHEET 1 OF 1		

Towill, Inc.
15405 Redhill, Suite A
Tustin, Ca 92780
(714) 566-9280
Thu May 22 14:06:23 1997

UST 297 C PROJECT: G:\SURV\965232\MAIN.PRO

Point Coordinates Listing

Point	North	East	Elev	Name
18644	2188473.347	6109308.575	278.66	% EPCC
18645	2188468.303	6109317.915	278.91	% BLAST SHIELD
18646	2188520.678	6109338.096	279.24	BLAST SHIELD
18647	2188556.729	6109352.337	279.45	! BLAST SHIELD
18648	2188523.441	6109328.126	278.91	EPCC
18649	2188521.584	6109333.306	279.08	PCC PAVEMENT
18650	2188560.455	6109342.597	279.14	! EPCC
18651	2188557.295	6109330.647	279.11	DMH
18652	2188555.624	6109330.627	279.07	% SD LINE
18653	2188480.507	6109321.986	278.95	! SD LINE
18654	2188480.202	6109290.955	278.26	% UG ELEC
18655	2188534.973	6109309.466	278.91	UG ELEC
18656	2188541.238	6109317.746	278.83	UG ELEC
18657	2188543.958	6109318.897	278.66	! UG ELEC
18658	2188527.058	6109315.276	278.85	% UG ELEC
18659	2188525.157	6109313.926	278.89	UG ELEC
18660	2188520.574	6109306.566	278.82	UG ELEC
18661	2188531.695	6109264.206	278.73	! UG ELEC
18662	2188545.078	6109318.107	278.70	VALVE BOX 1.6X2
18663	2188531.796	6109319.906	278.71	% SEP % CLS
18664	2188535.501	6109310.916	278.85	SEP
18665	2188528.248	6109307.886	278.85	SEP
18666	2188524.635	6109317.186	278.90	! SEP ! CLS
18667	2188528.493	6109318.086	278.82	GRD POST 6"
18668	2188527.227	6109312.936	278.89	GRD POST 6"
18669	2188531.686	6109310.416	278.86	GRD POST 6"
18670	2188533.166	6109315.196	278.76	GRD POST 6"
18671	2188490.306	6109268.685	277.94	AC
18672	2188497.043	6109256.125	278.23	% UG ELEC
18673	2188498.818	6109249.605	278.50	% FNC
18674	2188509.929	6109261.806	278.42	SL
18675	2188533.120	6109270.216	278.67	UG ELEC
18676	2188547.992	6109268.706	278.72	FNC
18677	2188549.547	6109291.756	278.66	AC
18678	2188575.906	6109302.457	278.13	AC
18679	2188582.357	6109282.097	278.94	! FNC
18680	2188565.713	6109283.266	278.59	UG ELEC TEE
18681	2188568.251	6109277.096	278.78	UG ELEC END
18682	2188580.469	6109288.457	278.67	! UG ELEC
18683	2188568.036	6109323.127	278.18	% ACBL
18684	2188548.695	6109317.377	278.62	ACBL
18685	2188557.980	6109328.927	279.04	ACBL
18686	2188565.266	6109332.827	278.95	! ACBL
18687	2188540.225	6109302.536	278.80	AC
18688	2188561.364	6109323.167	278.31	OLD MW ? LID
20999	2188527.940	6109316.876	260.39	18609-297C-243
21000	2188542.274	6109325.537	274.92	% GB
21001	2188515.933	6109325.416	278.82	% EXE % CLS
21002	2188549.209	6109328.077	279.05	EXE
21003	2188556.904	6109302.167	278.46	EXE
21004	2188520.106	6109289.766	278.53	EXE
21005	2188498.504	6109289.716	278.15	EXE
21006	2188492.163	6109316.026	278.69	! EXE ! CLS
21007	2188510.889	6109318.026	274.99	GB
21008	2188518.224	6109295.886	273.71	! GB
21010	2188524.383	6109317.826	262.08	% BOT % CLS
21011	2188526.859	6109308.356	262.08	BOTTOM
21012	2188533.785	6109311.336	262.15	BOTTOM

21013 2188531.886 6109319.656 262.15 ! BOT ! CLS

Appendix G
Compaction Test Field Report

R. T. FRANKIAN & ASSOCIATES

(213) 849-6876

Job No. 97-009-10
Date: 4/8/97

FIELD REPORT

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

Client: OHM	Job Address: El Toro MCAS	City: Irvine
Job Superintendent: Greg Early	General Contractor: OHM	Job Phone: n/a
Grading Contractor	Concrete Contractor	Other

Test No.	Location	Remarks	Elev.	Dry Den.	% Moist.	Max.	% Comp.
7	Site 297 - 0070		-2'	122	12.5	126	97

Returned to site 297 at 7:00a. Contractor will trench across the existing compacted fill for installation of electrical line. Trench depth will be approximately 18". Left site at 7:30a.

Returned to site at 10:30a. Electrical line is in & trench backfilled (compacted by wheel rolling w/ backhoe). Completed compaction of the last lift of native soil using the vibratory sheepsfoot roller. Ran sandcone test showing compaction at subgrade to be above 90% w/ moisture above optimum. Contractor will begin importing CAB and placing into excavation

Job # 18609
WBS 0300334

INSPECTION BY: ☑ Field Engineer ☐ Field Technician ☐ Deputy Grading Insp. (Staff Eng. or Supr. Field Eng.)	NEXT INSPECTION: ☐ Contractor to call 9075 ☐ [illegible]
HOURS: ☐ Footings ___ ☐ Piles ___ ☐ Slot Cuts ___ ☐ Shoring ___ ☑ Fill Comp. ___ ☐ Bottom ___ ☐ Saturation ___ ☐ Other: ___	Minimum Straight Time 2½ Over Time Travel Time 2½ Total Time 5 Mileage ___ Inspector B. Collyar Confirmed by ___ Representing OHM

Copies to ☑ Client ☐ Contractor ☐ Other (Specify): ___

Interim/Final Site Inspection Record

For use when conducting visual interim or final acceptance inspections of restored grounds after removal of an underground storage tank, hazardous waste storage pad, etc.

ROICC El Toro

Date: 14 Apr 97

Contract: 93-D-1459 Environmental RAC
Delivery Order Number: 70 **Site:** UST 297 B/C

Attendance:

Name	*Title*
Scott Kehe	ARDICC / NTR ROICC EL TORO
Greg Early	OHM Site Superintendent
M. L. Hingorani	F.M.D
Jesse Chapp	ROICC El Toro

Description of Work Inspected

RESTORATION OF GROUNDS AFTER REMOVAL OF UNDERGROUND STORAGE TANK AND OIL / WATER SEPARATOR. EXCAVATION WAS BACKFILLED AND PAVED WITH ASPHALT TO MATCH ORIGINAL CONDITIONS. CONDUIT AND WIRING FOR SEWER LIFT STATION ALSO REPLACED AS IT WAS REMOVED DURING EXCAVATION ACTIVITIES. SITE WORK COMPLETED ON 10 APR 97.

Punchlist Items Noted/Comments	*Date Item Corrected*
1. None	
2.	
3	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Site Acceptance Date: 14 Apr 97
Site work completed to satisfaction of ROICC/NTR/Station
ROICC/NTR Representative: Scott Kehe
Station Representative: M. L. Hingorani
SWDIV RPM (if applicable):