OHM Remediation
Services Corp.
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Aerial Photograph Anomaly Area 5
APHO 31, APHO 43, APHO 66, APHO 67, and APHO 68
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. SW9704 – May 9, 2001

Addendum to Summary Report

Appendix A - November 2000 Summary Report;
Appendix B - Letter from RWQCB and DTSC and Response to Comments;
Appendix C - Geophysical Survey;
Appendix D - Laboratory Analytical Reports; and
Appendix E - Land Survey

Addendum to Summary Report

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APHO 31, APHO 43, APHO 66, APHO 67, and APHO 68
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OHM Remediation Services Corp.
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San Diego, California 92101

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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: SW9704**

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Michelle Crook, 02R1.MC
1220 Pacific Highway
San Diego, California 92132-5190

Date: 10-May-01

DO: 70

Location: MCAS EL TORO

FROM: James J. Franklin, Program Manager

Edwin G. Bond, Contracts Manager

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SUMMARY REPORT
AERIAL PHOTOGRAPH ANOMALY AREA 5
APHO 31, APHO 43, APHO 66, APHO 67 AND
APHO 68, REVISION 2

DATED 01 NOVEMBER 2000

IS ENTERED IN THE DATABASE AND FILED AT
ADMINISTRATIVE RECORD NO. **M60050.000565**

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Abbreviations and Acronyms

BRAC	Base Realignment and Closure Act
BTEX	benzene, toluene, ethylbenzene and total xylenes
CA LUFT	California Leaking Underground Fuel Tank
CAM	California Assessment Metals
CDM	Camp, Dresser & McKee, Inc.
DCN	Document Control Number
DO	Delivery Order
EPA	U.S. Environmental Protection Agency
ft/ft	foot per foot
gpm	gallons per minute
GPR	ground-penetrating radar
JEG	Jacobs Engineering Group Inc.
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
msl	mean sea level
MTBE	methyl tert-butyl ether
OHM	OHM Remediation Services Corp.
PRG	preliminary remediation goals, EPA Region 9
ROICC	Resident Officer In Charge of Construction
RWQCB	California Regional Water Quality Control Board
Station	Marine Corps Air Station El Toro
SWDIV	Southwest Division Naval Facilities Engineering Command
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

Section 1
Introduction

The purpose of this Addendum is to provide additional information pertaining to the Aerial Photograph, Anomaly Area 5 (hereinafter referred to as Anomaly Area 5), at the Marine Corps Air Station El Toro, California (hereinafter referred to as the Station). Field sampling was conducted at the Anomaly Area 5 site in response to comments received from the California Regional Water Quality Control Board (RWQCB) Santa Ana Region dated January 17, 2001 and from the Department of Toxic Substances Control (DTSC) Southern California Branch dated February 8, 2001. OHM Remediation Services Corp. (OHM) performed the work under Delivery Order (DO) 0070 for the Southwest Division Naval Facilities Engineering Command (SWDIV) under Remedial Action Contract No. N68711-93-D-1459.

In December 1999, OHM conducted verification drilling and sampling activities in the vicinity of Anomaly Area 5. A total of 5 soil borings were advanced to approximate total depths of 15 feet below ground surface (PHA5 SB-01 through PHA5 SB-05). TPH analytes (extractable or purgeable) were not detected in concentrations equal to or exceeding the laboratory reporting limits in any of the soil samples. No volatile organic compound (VOC) analytes, including methyl tert-butyl ether (MTBE), were detected at or exceeding the laboratory reporting limits in the soil samples collected from borings. OHM submitted *Summary Report, Aerial Photograph Anomaly Area 5 (APHO 31, APHO 43, APHO 66, APHO 67 and APHO 68), Marine Corps Air Station, El Toro* in November 2000 (Appendix A).

The DTSC and the RWQCB responded to the summary report in letters dated February 8 and January 17, 2001, respectively. The DTSC inquired about the presence of disturbed soils during sampling activities and a copy of geophysical survey results. The RWQCB also inquired about geophysical survey results and also soil boring locations near APHO 43, APHO 67 and APHO 68 of Anomaly Area 5 site. A copy of the letters from RWQCB and DTSC and response to comments are included in Appendix B.

OHM advanced three hand auger borings (APHO5-43, APHO5-67 and APHO5-68) near photograph anomalies APHO 43, APHO 67 and APHO 68 as requested by the RWQCB. Approximately 6 inches of road base was noted directly under the concrete pad, and the soil under the 6 inches of road base appeared to be native, undisturbed soil. TPH as gas, diesel and JP-5 were not detected at or exceeding the laboratory reporting limits in soil samples collected from all three borings. No volatile organic compound (VOC) analytes, including benzene, toluene, ethylbenzene and total xylenes (BTEX) and methyl tert-butyl ether (MTBE), were detected at or exceeding the laboratory reporting limits in the soil samples collected from three borings. Metals were not detected above background levels for the station.

The Anomaly Area 5 is located in the southeast quadrant of the Station, immediately east of the former "Desert Storm" temporary staging area (MSC D1), located northeast of the

intersection of East Marine Way and "Z" Street. Anomaly Area 5 includes five aerial photograph (APHO) anomalies identified by Science Applications International Corporation (SAIC) on aerial photographs taken from 1967 to 1988.

Section 2
Field Activities

The RWQCB noted that no borings were advanced near anomalies APHO-43, APHO-67, and APPO-68 in the concrete pad in Anomaly Area 5. Therefore, OHM advanced three (3) soil borings in February 2001, (APHO5-43, APHO5-67 and APHO5-68) under the concrete pad near the three anomalies at Anomaly Area 5. Locations of these soil borings were selected and placed using historical and geophysical survey data and are shown on Figure 2-1. A summary of field activities is provided in this section.

Hand Auger Borings and Soil Sampling Techniques

On February 8 and February 15, OHM advanced soil borings APHO5-43, APHO5-67 and APHO5-68, using hand auger techniques. Eight soil samples were collected from 3 soil borings that were advanced in the vicinity of anomaly areas APHO 43, APHO 67 and APHO 68 in the concrete pad area of Anomaly Area 5. The sampling equipment was decontaminated between each boring location and between each sample interval. Soil samples were collected at approximate depths of 2, 5 and 10 feet below ground surface for boring APHO5-43; 0, 5, and 9 feet below ground surface for boring APHO5-67; and 5 and 10 feet below ground surface for boring APHO5-68. A total of 8 soil samples were collected from three borings. Soil samples collected from the borings were submitted for laboratory analysis. Following the completion of sampling activities, the soil borings were back-filled with cement-bentonite grout.

Sample Tracking and Analytical Methods

Sample handling, chain-of-custody documentation, and packaging was conducted in accordance with the procedures described in the approved *Final Work Plan* (OHM, 1995).

The soil samples were analyzed for:

- Total petroleum hydrocarbons (TPH-extractable and purgeable) as JP-5, diesel and gasoline using CA LUFT Method 8015 Modified
- California Assessment Metals (CAM) by U.S. Environmental Protection Agency (EPA) Method 6010B
- Mercury by EPA Method 7471A
- VOCs, including MTBE, using EPA Method 8260A.

Subsurface Soil Investigation

Hand Auger Techniques were employed to determine the presence of disturbed soil at the APHO5-43, APHO5-67 and APHO5-68 locations. APHO5-43 was advanced to approximately 10 feet below ground surface, APHO5-67 was advanced to approximately 9 feet below ground surface and APHO5-68 was advanced to approximately 10 feet below

ground surface. Upon visual inspection of the soil lithology, an IT field registered geologist noted approximately 6 inches of road base directly under the concrete pad, and native soil under the 6 inches of road base. Both construction debris and disturbed soil were not encountered at all three boring locations.

Geophysical Survey

GEOVision conducted a geophysical survey at Anomaly Area 5 in order to determine if there was a presence of disturbed soil or subsurface fill material. The geophysical survey revealed the presence of two large buried metallic objects suspected to be associated with the station's underground utility system. The survey did not reveal indications of subsurface construction debris or subsurface fill material. A copy of the geophysical survey is included in Appendix C.

Analytical Results

TPH as gas, diesel and JP-5 were not detected at or exceeding the laboratory reporting limits. VOC analytes, including MTBE were not detected at or exceeding the laboratory reporting limits in the soil samples collected from borings APHO5-43, APHO5-67 and APHO5-68. CAM metals were detected at concentrations less than the established background levels (BNI, 1997) for the Station. Laboratory reporting limits for several CAM metal analytes exceeded the established background values. Arsenic was detected in soil samples at concentrations ranging from an estimated 0.779J mg/kg to a maximum concentration of 4.81 mg/kg (sample number 18609-4214A), which exceeds the industrial PRG levels (2.7 mg/kg) however, the concentrations of detected arsenic are less than the established background concentration levels of 6.86 mg/kg (BNI, 1996) for the station.

These results do not indicate that a release has occurred from the Anomaly Area 5 site to the vadose zone. A summary of the analytical results of the soil samples collected from the verification borings, the background concentrations and PRGs are included in Table 2-1 and summarized in Figure 2-1. Laboratory analytical reports are included in Appendix D.

Land Surveying

After completing the soil sampling at APHO 5, the hand auger soil boring locations were surveyed by Cal Vada Surveying Inc., a California-licensed land surveyor. The surveyed locations were measured to +0.01 foot horizontally and tied to the California State Plan Coordinate Systems, North American Datum 1983. The surveyed elevations were measured to +0.01 foot vertically and tied to mean sea level datum. The land survey data for APHO 5 are included in Appendix E.

Section 3
Findings and Recommendations

The following observations and conclusions are based upon information from the OHM *Summary Report, Aerial Photograph Anomaly Area 5 (APHO 31, APHO 43, APHO 66, APHO 67 and APHO 68), Marine Corps Air Station, El Toro* and soil sampling data from the three verification soil borings:

- In response to RWQCB and DTSC comments, OHM collected soil samples from three hand-augered borings and examined the cuttings for evidence of distrubed soils or fill materials.
- Upon visual inspection of the soil lithology, an IT field registered geologist noted approximately 6 inches of road base directly under the concrete pad, and native soil under the 6 inches of road base down to 10 feet below ground surface. Construction debris was not encountered under the concrete pad during hand augering activities.
- TPH as gas, TPH as diesel, VOC analytes, including MTBE were not detected at or exceeding laboratory reporting limits in all of the 8 soil samples collected from the three borings.
- With the exception of arsenic, CAM metals were detected at concentrations below the current EPA Region 9, PRG values. Arsenic was detected at a maximum concentration of 4.81 mg/kg (sample number 18609-4214A), which is less than the established background concentration levels of 6.86 mg/kg (BNI, 1996) for the Station.
- The geophysical survey revealed the presence of two large buried metallic objects suspected to be associated with the Station's underground utility system. The survey did not reveal indications of subsurface construction debris.

Based upon information included in the *Summary Report, Aerial Photograph Anomaly Area 5 (APHO 31, APHO 43, APHO 66, APHO 67 and APHO 68), Marine Corps Air Station, El Toro* dated November 2000 and the results of the field sampling activities that were conducted in January 2001, it is recommended that *no further action status* (NFA) be designated for Anomaly Area 5 (APHO 31, APHO 43, APHO 66, APHO 67, and APHO 68).

Section 4
References

BNI, see Bechtel National Inc.

Bechtel National Inc., 1996, Final Technical Memorandum Background and Reference Levels, Remedial Investigation, MCAS El Toro, October 1996 [Navy Contract N68711-92-D-4670, CTO 79].

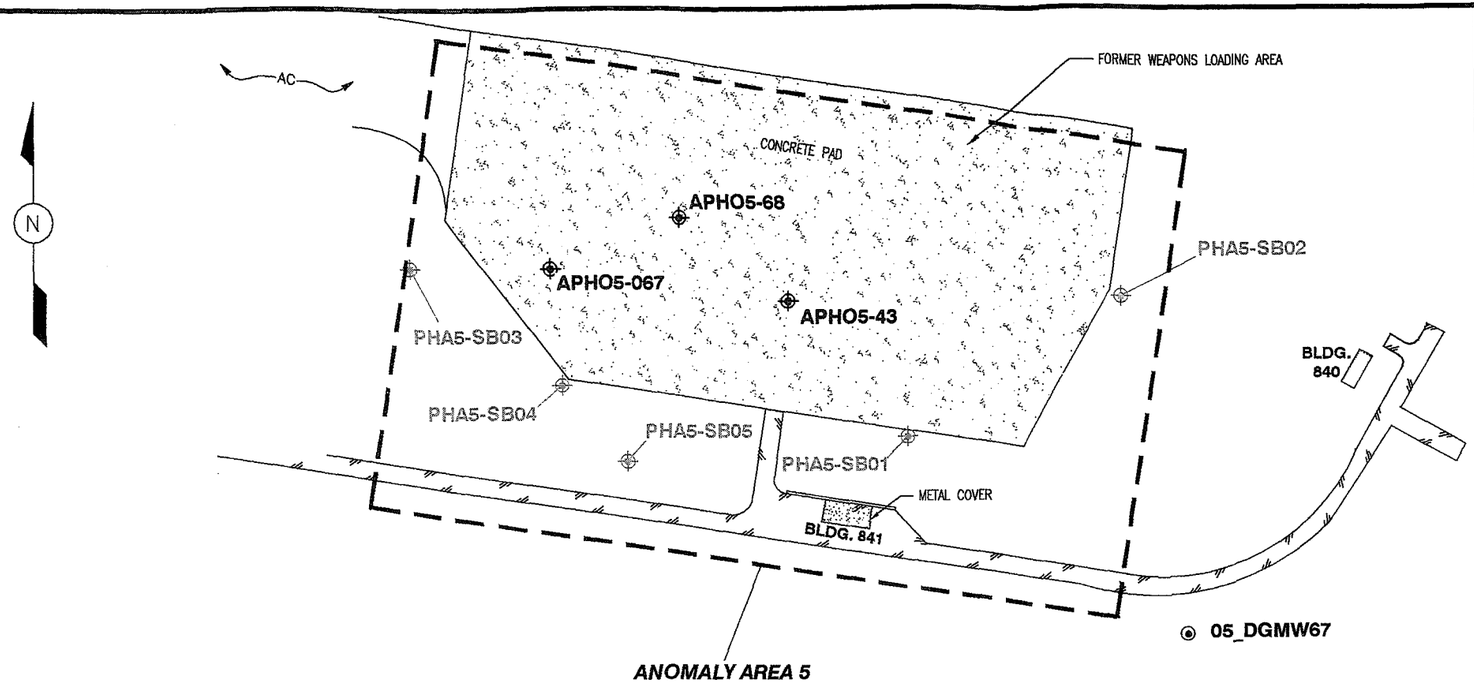
OHM, see OHM Remediation Services Corp.

OHM Remediation Services Corp., 1995, *Final Work Plan, Remediation of Various Underground Storage Tanks at the Marine Corps Air Station El Toro, California.*

OHM Remediation Services Corp., 2000, *Site Assessment Report, Aerial Photograph Anomaly Area 5; APHO 31, APHO 43, APHO 66, APHO 67, and APHO 68, Marine Corps Air Station El Toro, California. 1 November.*

U.S. Environmental Protection Agency 2000, Region 9 Preliminary Remediation Goals (PRGs) 1 November.

Figures



EXPLANATION:

PHA5-SB01	SOIL BORINGS IN DECEMBER 1999
APHO5-43	SOIL BORINGS IN FEBRUARY 2001
05_DGMW67	MONITORING WELL
	EDGE OF PAVEMENT
	APPROXIMATE SITE BOUNDARY OF ANOMALY AREA 5

Summary of Select Analytes

Location	Northing (NAD 83)	Easting (NAD 83)	Elevation (ft amsl)	Sample Number	Depth ft bgs	TPH as Diesel mg/kg	TPH as Gasoline mg/kg	Benzene µg/kg	Ethylbenzene µg/kg	MTBE µg/kg	Toluene µg/kg	Xylenes (total) µg/kg
APH05-43	2189547.47	6117152.21	416.88	**18609-4163**	2.0	11 U	1.09 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U
APH05-43	2189547.47	6117152.21	416.88	**18609-4164**	5.0	11 U	1.13 U	5.7 U	5.7 U	11 U	5.7 U	5.7 U
APH05-43	2189547.47	6117152.21	416.88	**18609-4165**	10.0	10 U	1.01 U	5.1 U	5.1 U	10 U	5.1 U	5.1 U
APH05-67	2189590.26	6116838.36	412.3	**18609-4213A**	0.0	11 U	1.1 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U
APH05-67	2189590.26	6116838.36	412.3	**18609-4214A**	5.0	13 U	1.28 U	6.4 U	6.4 U	13 U	6.4 U	6.4 U
APH05-67	2189590.26	6116838.36	412.3	**18609-4215A**	9.0	11 U	1.08 U	5.4 U	5.4 U	11 U	5.4 U	5.4 U
APH05-68	2189656.41	6117007.78	414.92	**18609-4160**	5.0	11 U	1.1 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U
APH05-68	2189656.41	6117007.78	414.92	**18609-4161**	10.0	10 U	1.03 U	5.1 U	5.1 U	10 U	5.1 U	5.1 U

Sampled on February 8 and February 15 2001

Explanation:
NAD 83 - North American Datum 1983
ft bgs - feet below ground surface
EPA - US Environmental Protection Agency
mg/kg - milligrams per kilogram
TPH - Total petroleum hydrocarbons
U - not detected at or above the stated reporting limits
ug/kg - Micrograms per kilogram
MTBE - Methyl tertiary butyl ether

GRAPHIC SCALE
0 100 200 300
(IN FEET)

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
01	97102PH-5.DWG BY CALVADA SURVEYING, INC.	12/14/99	

CONTRACT NAME	SWDIV
DRAWN BY	R. PIRMORADIAN
DATE	4/10/01
CHECKED BY	
DATE	5/8/01
APPROVED BY	
DATE	
PROJECT MANAGER	
DATE	
AUTOCAD FILE No.	18609293A.DWG

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
IRVINE, CA

SITE PLAN
ANOMALY AREA 5

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=200'	1	1	SW9704	18609	FIG 2-1

Apr 10, 2001 - 09:56:37 I:\OHM CORP\PROJECTS\18609\18609293A.dwg

M60050.002532
MCAS EL TORO
SSIC # 5090.3

TABLE D-1 – SUMMARY OF ANALYTICAL RESULTS – APHO 5
TABLE D-2 – SUMMARY OF ANALYTICAL RESULTS FOR QC SAMPLE – APHO 5

PER RPM (L. HORNECKER), THE ABOVE LISTED TABLES WERE INCORRECTLY LABELED AS TABLES D-1 AND D-2. THESE TABLES ARE INCLUDED IN APPENDIX A AS TABLES 4-1 AND 4-2, RESPECTIVELY.

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
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SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
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TELEPHONE: (619) 532-3676

Appendix A
November 2000 Summary Report

Summary Report

Aerial Photograph Anomaly Area 5
APHO 31, APHO 43, APHO 66, APHO 67, and APHO 68
Marine Corps Air Station
El Toro, California

SWDIV Contract No. N68711-93-D-1459, Delivery Order No. 070
OHM Project No. 18609
Document Control No. SW7997
Revision 2
November 1, 2000

OHM Remediation Services Corp.

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Abbreviations and Acronyms

APHO	aerial photograph anomaly
BTEX	benzene, toluene, ethylbenzene, and total xylenes
BRAC	Base Realignment and Closure Act
CA LUFT	California Leaking Underground Fuel Tank
CDM	Camp, Dresser & McKee, Inc.
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
DCN	Document Control Number
DG	disturbed ground
DO	Delivery Order
DRMO	Defense Reutilization and Marketing Office
EPA	U.S. Environmental Protection Agency
EX	excavation
ft/ft	feet per foot
FS	feasibility study
gpm	gallons per minute
GPR	ground penetrating radar
GR	graded
HM/HWMP	Hazardous Material/Hazardous Waste Management Plan
IRP	Installation Restoration Program
JEG	Jacobs Engineering Group Inc.
LOX	liquid oxygen
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MMDT	mounded material disturbed ground
MSC	miscellaneous site of concern
msl	mean sea level
MTBE	methyl tert-butyl ether
NPDES	National Pollution Discharge Elimination System
OCHCA	Orange County Health Care Agency
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	remedial investigation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SAIC	Science Applications International Corporation
Station	Marine Corps Air Station El Toro
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU	solid waste management unit
TAA	Temporary Accumulation Area
TPH	total petroleum hydrocarbons
TR	trench

Abbreviations and Acronyms (Cont.)

UO	unidentified object
UST	underground storage tank
VOC	volatile organic compound
µg/kg	micrograms per kilogram
µg/L	micrograms per liter

Section 1
Introduction

The purpose of this Summary Report is to present information pertaining to aerial photograph anomalies, designated as Aerial Photograph Anomaly Area 5 in the vicinity of east end of the east-west runway in the eastern portion of the Marine Corps Air Station (MCAS), El Toro (herein after referred to as Station), California. OHM Remediation Services Corp (O+HM) performed the work under Delivery Order (DO) 0070 for the Southwest Division Naval Facilities Engineering Command (SWDIV) under Remedial Action Contract No. N68711-93-D-1459.

Anomaly Area 5 includes five aerial photograph (APHO) anomalies identified by Science Applications International Corporation (SAIC) on aerial photographs taken from 1967 to 1988. These site numbers are listed with their associated photograph dates: APHO 66 [SAIC 161 (1967)], APHO 31 [SAIC 215 (1971)], APHO 43 [SAIC 287 (1974)], APHO 67 [SAIC 314 (1975)], and APHO 68 [SAIC 542 (1988)].

Site Location

The MCAS comprises of approximately 4,700 acres (Figure 1-1) and is located in eastern Orange County approximately 45 miles southeast of Los Angeles, California. The Anomaly Area 5 is located in the southeast quadrant of the Station, immediately east of the former "Desert Storm" temporary staging area (MSC D1), located northeast of the intersection of East Marine Way and "Z" Street, Figure 1-2.

Station officially closed on July 2, 1999 in accordance with the Base Realignment and Closure Act of 1993 (BRAC III). Anomaly Area 5 is located within a parcel designated as Recreation Golf Area according to Preferred Land Use Plan (Concept B) as published by the County of Orange in September 1999, as shown in Figure 1 of Appendix A.

Anomaly Area 5 encompasses an area of approximately 250 feet by 450 feet adjacent to the east end of the east-west runway in the vicinity of miscellaneous site of concern (MSC)-D1 and Solid Waste Management Unit (SWMU) 264, Defense Reutilization and Marketing Office Yard 3.

This Summary Report includes a description of information collected during the investigation of nearby Environmental Locations of Concern, results of the historical records, results from the field verification activities and visual inspection of the Anomaly Area 5. The field sampling analytical results indicate that no petroleum hydrocarbons and Volatile Organic Carbons (VOCs) were released to the ground surface at this site. Some metals were detected above the stated laboratory-reporting limit however; concentrations detected were below the established background levels for MCAS El Toro. Based upon the review of the field data and historical documentation, it is recommended that *"no further action status"* designated for Anomaly Area 5 (APHO 66, APHO 31, APHO 43, APHO 67, and APHO 68) in the next Base Realignment and Closure Business Plan update.

Section 2
Field Inspections and Historical Records

Anomaly Area 5 includes the following five anomaly sites: Anomaly Descriptions were derived from the following source document; Final Report, Aerial Photograph Assessment (SAIC, 1993) are presented in italics:

APHO 31(SAIC 215-date of photograph: 1971): *There is disturbed ground (DG) about 250 by 350 feet in area, dark-toned mounded material (MMDT), and a probable trench (TR), all about 1600 feet westerly of West Marine Road and Magazine Road. There is also a possible light-toned unidentified object (UO). Additional investigation of the site as a possible disposal or storage site is recommended.*

APHO 43(SAIC 287-date of photograph: 1974): *There is an excavation (EX) about 1,600 feet west of the Perimeter Road and Magazine Road intersection. The purpose of the excavation is unknown, and investigation of the site history as a possible disposal area is recommended.*

APHO 66 (SAIC 161-date of photograph: 1967): *Disturbed ground (DG) and probable backfilled trenches (TR) are noted in the western corner of Perimeter Road and Magazine Road, and about 1,400 feet westerly of the intersection. Additional investigation of the purpose of these sites is recommended. The northeasterly-oriented, backfilled trench (TR) adjacent to Perimeter Road is the Perimeter Road Landfill (Site 5). No Additional investigation of Site 5 is recommended at this time. The present IR program field investigation Site 5 appears to be adequate, relative to the features noted here.*

APHO 67(SAIC 314-date of photograph: 1975): *Disturbed ground (DG) can be seen about 1000 feet northeast of Building 673, near North/East Marine and N 3rd Street. The cause of the disturbance is unknown. Investigation of the site's history as a possible disposal area is recommended.*

APHO 68 (SAIC 542-date of photograph: 1988): *A light-colored pad, possibly concrete, was constructed west of Perimeter Road and Magazine Road. The purpose of the pad is unknown, but the area was probably graded (GR). No additional investigation is recommended at this time.*

2.1 Field Inspections

OHM conducted a visual inspection, including taking photographs of Anomaly Area 5 on December 1, 1999. Photographs of Anomaly Area 5 and the checklist forms for the visual inspection of APHO 66, APHO 31, APHO 43, APHO 67, and APHO 68, are presented in Appendix B.

Anomaly Area 5 is relatively flat with most of the area covered with grass, however some of the individual anomalies appear to be located beneath the end of the runway. OHM

inspected the site on December 1, 1999. No apparent soil stains or evidence of waste materials or petroleum hydrocarbon releases were observed during the site inspection. Also, no evidence of disturbed ground, mounted materials, or trenches was observed during OHM's visual inspections of Anomaly Area 5. Building 841 former Liquid Oxygen (LOX) facility with concrete pad is within the Anomaly Area 5 site boundary. A grass-covered area surrounds Anomaly Area 5 to the west and northwest, and IRP Site 5 is located southeast side of Anomaly Area 5. MSC-D1, the Desert Storm Staging area is located southwest of the site.

2.2 Environmental Program Records

The records from petroleum and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) investigations in the vicinity of Anomaly Area 5 were acquired and reviewed along with other environmental program records. Ground water conditions at Anomaly Area 5 have been investigated during the investigation of nearby IRP Site 5 during the CERCLA investigations. The depth to ground water is approximately 163 feet below ground surface and the gradient is northwest.

Brief descriptions of the sites that are located near Anomaly Area 5 is presented in Table 2-1 and are shown in Figure 1-2.

Underground Storage Tank (UST) Program

UST 442 is located approximately 800 feet northwest of Anomaly Area 5. OHM removed UST 442 in 1996 and site was closed by Orange County Health Care Agency (OCHCA) in December 1996.

Resource Conservation and Recovery Act Facility Assessment (RFA)

Three Solid Waste Management Units (SWMUs), SWMU 225, 181, and 264 were identified in the vicinity of Anomaly Area 5 during the RFA by Jacobs Engineering Group (JEG, 1993). Soil samples were collected at all three SWMUs during the RFA Sampling Visit. The results of the field inspection and Sampling Visit are published in the *Installation Restoration Program, Final Resource Conservation and Recovery Act Facility Assessment for Marine Corps Air Station, El Toro, California* (Jacobs Engineering Group, 1993).

Miscellaneous Site of Concern (MSC) D1

MSC D1 is a former staging area used to stage materials for embarkation to *Operation Desert Storm* in the Middle East during August to November 1991. OHM collected a total of 24 soil samples from 8 soil borings to evaluate the subsurface soil conditions at the MSC D1 site. Laboratory analytical results did not indicate a release of petroleum hydrocarbons and/or volatile organic compounds to the vadose zone beneath MSC D1 (OHM, 2000).

Temporary Accumulation Area (TAA) 772

TAA 772 (identified as SWMU 225) is located adjacent to Anomaly Area 5. Seven soil samples were collected by JEG from one 60-foot angle boring during the RFA Sampling Visit. Subsurface soil consists primarily of clays, clayey sand and sandy clays. TPH, VOCs, SVOCs, pesticide and PCB compounds were not detected from all seven soil samples. TAA 772 was taken out of service several years ago and final closure activities are in progress as of December 1999.

Excerpts from the RFA documentation, including laboratory test results and boring log are presented in Appendix C.

Adjacent Installation Restoration Program (IRP) Sites

IRP Site 5, the Perimeter Road Landfill, is located approximately 400 feet southeast of Anomaly Area 5. Soil and ground water samples were collected at IRP Site 5 – Perimeter Road Landfill – during the Phase I and Phase II Remedial Investigations (RI).

Storm Water Pollution Prevention Plan

The Station's environmental compliance program management plans were acquired and reviewed in order to identify any locations at or near Anomaly Area 5 that may have been designated for storage or usage of hazardous materials or hazardous wastes. The Storm Water Pollution Prevention Plan (SWPPP) was reviewed and the SWPPP does not identify storage or usage of hazardous substances at Anomaly Area 5. Excerpts from the SWPPP are presented in the Appendix D.

Surface water runoff in the vicinity of Anomaly Area 5 discharges to Borrego Canyon Wash. Borrego Canyon Wash and other surface drainage channels were investigated during the RI of IRP Site 25. Sediment and water samples were collected from the drainage channels, human health and ecological risks were assessed, and a Record of Decision for No Action at IRP Site 25 was signed in September 1997.

Surface water quality in Borrego Canyon Wash is monitored under the Station's National Pollutant Discharge Elimination System (NPDES) Permit for Storm Water. The permit was issued by the California Regional Quality Control Board (RWQCB), Santa Ana Region.

Hazardous Materials and Hazardous Waste Management Plan

The Station's Hazardous Material and Hazardous Waste Management Plan (HM/HWMP) was reviewed, and the nearest hazardous waste temporary accumulation area is TAA 772 located adjacent to MSC D1, Desert Storm Staging Area. Extracts from HM/HWMP are presented in the Appendix E.

Section 3
Environmental Setting

This section summarizes the general physiographic, geologic, and hydrogeologic setting in the vicinity of Anomaly Area 5.

3.1 Physiography and Topography

The Station is located on the southeastern edge of the Tustin Plain and extends into the Santa Ana Mountains. The Tustin Plain slopes gently toward the west-southwest with land surface elevations ranging from approximately 215 feet above mean sea level (msl) at the western corner to approximately 410 feet msl at the eastern edge of the Station. Elevations within the portion of the Station in the Santa Ana Mountains extend upward to 800 feet msl near the northeast corner of the Station. The topography in the area of Area 5 gently slopes to the west, with elevations ranging from 408 to 421 feet above msl datum.

3.2 Geology

The Station is situated on alluvial materials derived mainly from the Santa Ana Mountains. These Holocene materials consist of coarse-grained stream channel deposits and fine-grained overbank deposits that are up to 300 feet thick (Herndon and Reilly, 1989).

The Holocene alluvial materials conformably overlie Pleistocene sediments predominantly composed of interlayered fine-grained lagoonal and near-shore marine deposits. These materials become increasingly mixed with beach sands, terrace deposits, and stream channel deposits in the eastern portion of the Tustin Plain and along the eastern plain edges. The Quaternary deposits form a heterogeneous mixture of silts and clays, with interbedded sands and fine gravels up to 500 feet thick in the western portion of the Tustin Plain (Singer, 1973).

Review of the OHM verification soil boring logs at the Anomaly Area 5 indicate that the site is underlain by a shallow sand (SP, SW, and SM) extending from the surface to approximately 15 feet depth. Underlying the shallow sand unit is interbedded silt (ML) and silty fine sand (SM). These units appear typical of the channel and overbank deposits in comprising the Holocene deposits of the Tustin Plain.

3.3 Hydrogeology

The Station is situated within the Irvine Groundwater Subbasin, which comprises the southeast segment of the Main Orange County Groundwater Basin. Regional groundwater flow in the subbasin has been to the west and northwest since the 1940s and is controlled locally by large groundwater withdrawal depressions. From 1969 to 1982, an average gradient of 0.0046 foot per foot (ft/ft) to the northwest was reported in the principal aquifer zone of the Irvine area (Banks, 1984). Phase I remedial investigation data indicated a similar

groundwater flow direction in the shallower groundwater zone, with a slightly higher gradient of 0.008 ft/ft (JEG, 1993).

The depth to groundwater beneath the Station ranges from approximately 45 feet below ground surface in the foothills to 240 feet below ground surface in the deepest portion of the Irvine Subbasin. The depth to groundwater in the vicinity of Anomaly Area 5 is estimated to be approximately 170 feet below ground surface, based on extrapolated groundwater elevation data and surveyed topographic elevation of the site. These data are presented in the Groundwater Monitoring Report (Camp Dresser & McKee, Inc. [CDM] Federal Programs, 1997) and summarized in Table 3-1. The well locations are shown in Figure 1-2 (CDM, 1997).

3.3.1 Groundwater Conditions

Groundwater conditions have been investigated in the vicinity of Anomaly Area 5 during the investigations of IRP Site 5. The nearest well 05_DGMW67 is located 250 feet southeast of Anomaly Area 5. Based upon measurement from this well, groundwater is located approximately 170 feet below ground surface and the gradient is 0.009 foot/foot towards the northwest.

A total of five groundwater wells (05_DGMW67, 05_DBMW41, 05_UGMW27, 05_DGMW68 and 05NEW1) have been monitored at IRP Site 5. Excerpts from the CDM groundwater monitoring report (CDM, 1997) showing the water levels at IRP Site 5 wells are presented in Appendix F.

Section 4
Field Verification Activities

OHM collected shallow soil samples on December 10, 1999 at five locations in the vicinity of Anomaly Area 5 in order to ascertain whether a release had occurred. Sampling activities were conducted in accordance with the strategy identified by the SWDIV Navy in the facsimile transmittal of June 1999, DTSC comments dated June 22, 1999 on the SWDIV Navy facsimile sampling strategy of May 1999, and Supplemental Sampling Strategy, Aerial Photograph Areas 4 and 5 issued by OHM in November 1999(OHM, 1999). Copies of June and November 1999 Sampling Strategy are included in Appendix G. Field activities included: a site inspection; a geophysical survey; verification soil sampling; and a land survey.

Sampling activities were conducted in accordance with the following documents: 1) Agency approved Preliminary Draft DO 0024 documents: Work Plan, Contractor Quality Control Plan Addendum, Waste Management Plan, Chemical Data Acquisition Plan (OHM, 1995a), and Site-Specific Health and Safety Plan (OHM, 1995b); 2) DO 0070 Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine corps Air Station (MCAS), El Toro (OHM 1997).

4.1 Utility Clearance and Geophysical Survey

The utility clearance consisted of reviewing site-specific utility maps obtained from the Station, reviewing the site inspection log, performing a geophysical survey of the site, and notifying Underground Service Alert of the intent to drill.

On December 6, 1999, Geovision conducted a geophysical survey at Anomaly Area 5 using a utility locator and ground-penetrating radar (GPR), to locate the presence of underground utilities in the vicinity of proposed drilling areas.

4.2 Verification Drilling Activities

On December 10, 1999, OHM conducted verification drilling and sampling activities at Anomaly Area 5 to evaluate the sub surface conditions. A total of 5 soil borings were advanced (PHA5 SB-01 through PHA5 SB-05) to approximate total depths of 15 feet below ground surface. These boring locations were selected based on field visit. The soil boring locations are shown in Figure 4-1.

Drilling and Soil Sampling Techniques

BC^2 Environmental Corporation, an OHM subcontractor, advanced a total of five soil borings with a tractor mounted CME 75 mobile drilling rig using hollow-stem auger drilling techniques. A total of 10 soil samples including, a duplicate sample, were collected using a California-modified split-spoon sampler. Soil samples were collected from depths of 5 and

10 feet below ground surface and submitted for laboratory analyses. Following the completion of sampling activities, the soil borings were backfilled with a cement-bentonite grout.

To minimize the potential for cross-contamination, drilling and sampling equipment was decontaminated before initiating work at the site, between each soil boring, and at the completion of the work at the site. Decontamination was accomplished by using a pressure washer and/or scrubbing with a non-phosphate detergent and water solution, rinsing with tap water, and rinsing with deionized water.

Soil Lithology

Based on the soil samples collected from borings PHA5 SB-01 through SB-05, soil conditions appeared consistent throughout the investigated area. The boring logs indicate that the subsurface soil in the vicinity of Anomaly Area 5 primarily consists of silt, silty-sand, and fine- grained sand mixtures. The field boring logs, describing soils underlying the site and indicating soil sample collection intervals are presented in Appendix H.

Sample Tracking and Analytical Methods

Sample handling, documentation, and packaging, was conducted in accordance with the procedures described in the approved draft work plan (OHM, 1995a). The soil samples were analyzed for:

- Total petroleum hydrocarbons (TPH-extractable and purgeable) as JP-5 using CA LUFT Method 8015 Modified
- Volatile organic compounds (VOCs), including methyl tert-butyl ether (MTBE) using EPA Method 8260A
- Metals by EPA 6010A and EPA 7471A.

Analytical Results

TPH as gas or diesel was not detected in concentrations equal to or exceeding the stated laboratory reporting limits in the soil samples collected from borings PHA5 SB01 through SB05. No benzene, MTBE, or other VOC compounds were detected, except for the suspected laboratory contaminants; acetone (18J μg/kg) and methylene chloride (2J μg/kg) detected in the soil sample 18609-2522 from boring PHA5-SB03 at 5-feet depth. Acetone and Methylene chloride, chemicals commonly used for cleaning laboratory glassware, and are common laboratory contaminants.

Metal analytes such as barium, beryllium, chromium, cobalt, copper, lead, manganese, nickel, vanadium, and zinc were detected above the stated laboratory reporting limits; however, the concentrations were significantly less than the EPA PRGs for Residential use and MCAS El Toro background levels established during the RI (BNI, 1996). However, thallium was detected (at 1.19 mg/kg and 1.41 mg/kg) in two samples (sample numbers 18609-2514 from boring SB-02 at 5 feet bgs and 18609-2520 from boring SB-04 at

5 feet bgs, respectively) above the MCAS El Toro established background concentration of 0.42 mg/kg. The residential PRG for thallium is 5.5 mg/kg.

Arsenic was detected at levels exceeding the PRG, but below the MCAS El Toro established background level. Therefore, risk caused by arsenic at Anomaly Area 5 appears to be attributable to background conditions rather than to a release of hazardous substances.

Analytical results of the soil samples collected from the verification borings are summarized in Figure 4-1, and are listed with the background concentrations and PRGs in Table 4-1. Laboratory analytical reports with chain of custody are provided in Appendix I, Laboratory Analytical Reports.

Quality Assurance/Quality Control

Field quality assurance/quality control (QA/QC) samples were collected during sampling activities to evaluate the consistency and accuracy of the analytical data. Field QC samples for the Anomaly Area 5 consisted of equipment rinsate, soil sample duplicate, and trip blank samples as follows:

- Equipment rinsate samples were collected at a frequency of 1 per day.
- One duplicate soil sample was collected (sample number 18609-2523).
- Trip blank samples were collected at a frequency of 1 blank for each cooler containing samples for VOC analysis.

Analytical results of the trip blank and equipment rinsate samples are summarized in Table 4-2.

4.3 Land Surveying

After completing the verification drilling, the soil boring locations were surveyed on December 14, 1999 by Cal Vada Surveying, Inc., a California-registered land surveyor. The surveyed locations were measured to ± 0.01 ft/ft horizontally and tied to the California State Plane Coordinate Systems, North American Datum 1983. The surveyed elevations were measured to ±0.01 foot vertically and tied to mean sea level datum. The surveyed plan for Anomaly Area 5 is presented as Appendix J, Land Survey Plan.

Section 5
Findings and Recommendations

The following findings are based upon information collected from existing records, visual inspections and soil sampling data from verification soil borings at Anomaly Area 5:

- Anomaly Area 5 (APHO 66, APHO 31, APHO 43, APHO 67, and APHO 68) contains part of the end of the east-west runway where munitions were formerly placed into aircraft. The anomalies were identified on photographs taken during the time period from 1967 through 1988.
- OHM visually inspected Anomaly Area 5 vicinity in December 1999 and no visual evidence of surface stains, waste materials, disturbed ground, mounded materials or trenches was observed. Also, historical documentation did not identify the storage or usage of hazardous substances at Anomaly Area 5.
- Anomaly Area 5 is located near SWMU 225 (also known as TAA 772) and MSC D1 (Desert Storm Staging area) site. Soil samples were collected for SWMU 225 during the RFA Sampling Visit and OHM performed MSC D1 site soil sampling in 1999.
- The depth to groundwater at Anomaly Area 5 is estimated to be approximately 170 feet bgs.
- Verification soil sampling data from five shallow soil borings indicated that TPH analytes (extractable or purgeable) were not detected in concentrations equal to or exceeding the laboratory reporting limits in any of the soil samples. No benzene, MTBE, or other VOCs were detected, except for acetone and methylene chloride, suspected laboratory contaminants. Some metal analytes were detected above the stated laboratory reporting limit; however, for most of the detected metal analytes the concentrations were less than established background levels for MCAS El Toro and EPA PRGs. Arsenic was detected at levels exceeding the EPA PRGs; however, arsenic was not detected at or above the established background levels for MCAS El Toro. Thallium was detected above the established background levels for MCAS El Toro in two samples at 1.19 mg/kg and 1.41 mg/kg, respectively, but below the residential PRG of 5.5 mg/kg.

Based on results of the field verification sampling data at Anomaly Area 5, the results of the record search activities, and the results of the visual inspection, it is recommended *that no further action (NFA)* status be designated for Anomaly Area 5 (APHO 66, APHO 31, APHO 43, APHO 67, and APHO 68) and that *NFA* status be documented in the next BRAC Business Plan update.

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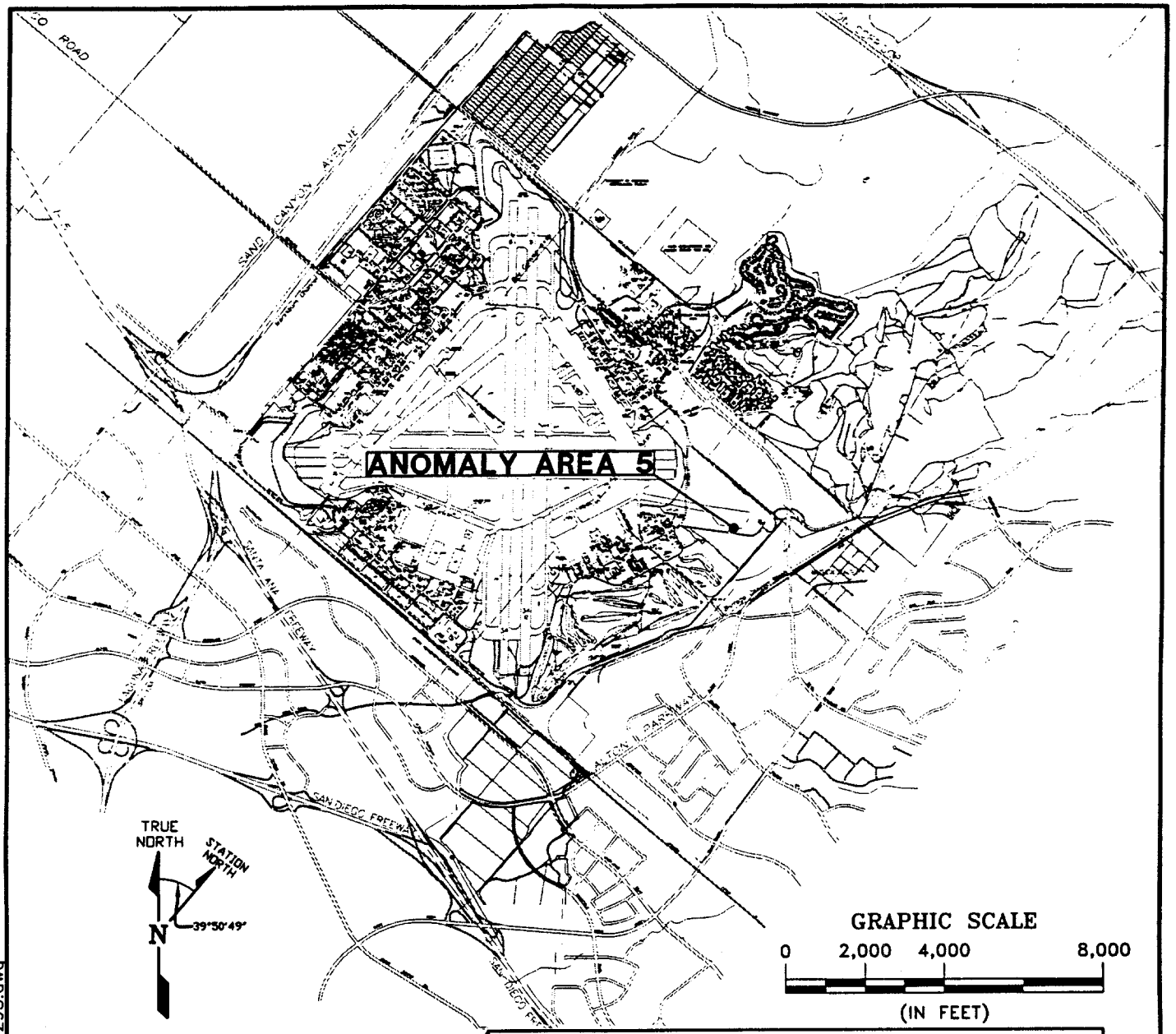

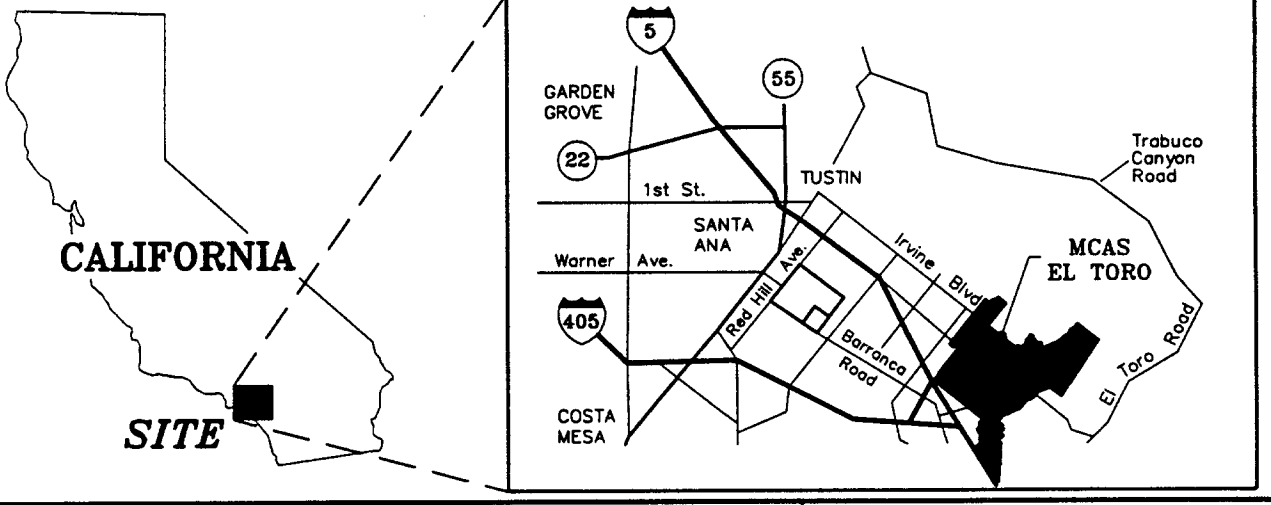

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	CHECKED BY	DATE						
	APPROVED BY DR	DATE 8/11/00						
CONTRACT NAME SWDIV	PROJECT MANAGER	DATE	MARINE CORPS AIR STATION EL TORO, CALIFORNIA					
AUTOCAD FILE No. 18609295.DWG	PLOT SCALE 1=1	SHEET 1	OF 1	SCALE 1"=4,000'	DOCUMENT CONTROL No. SW7997	OHM PROJECT No. 18609	FIGURE No. FIG 1-1	REVISION 0

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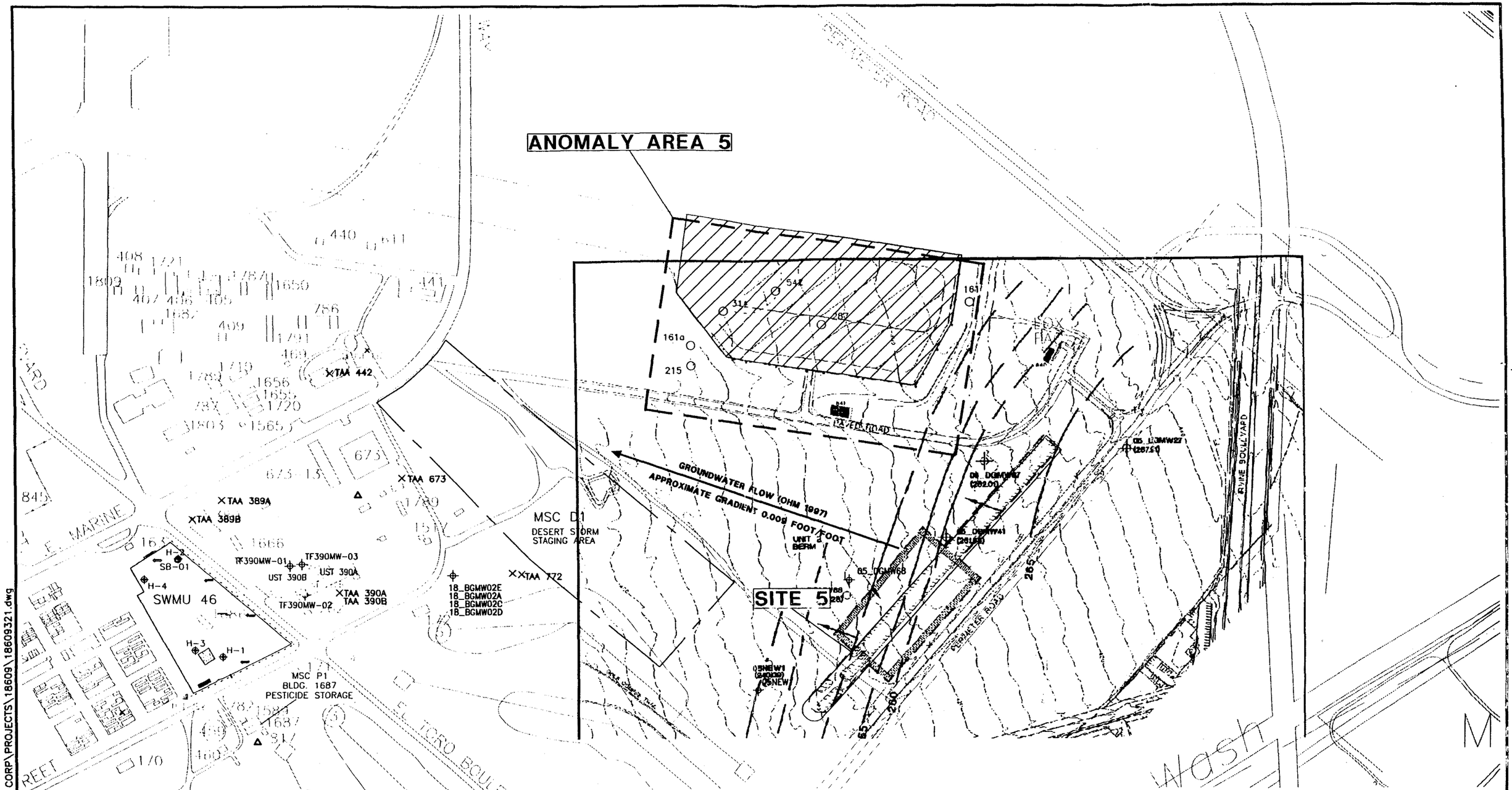
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SITE 5
SWMU 46
MSC D1
DESERT STORM
STAGING AREA
MSC P1
BLDG. 1687
PESTICIDE STORAGE
GROUNDWATER FLOW (OHM 1997)
APPROXIMATE GRADIENT 0.008 FOOT/FOOT
EL TORO BOULEVARD
MARINE
REET
Wash
TAA 442
TAA 673
TAA 389A
TAA 389B
TAA 772
TAA 390A
TAA 390B
TF390MW-01
TF390MW-02
TF390MW-03
UST 390B
UST 390A
SB-01
H-1
H-2
H-3
H-4
18_BGMW02E
18_BGMW02A
18_BGMW02C
18_BGMW02D
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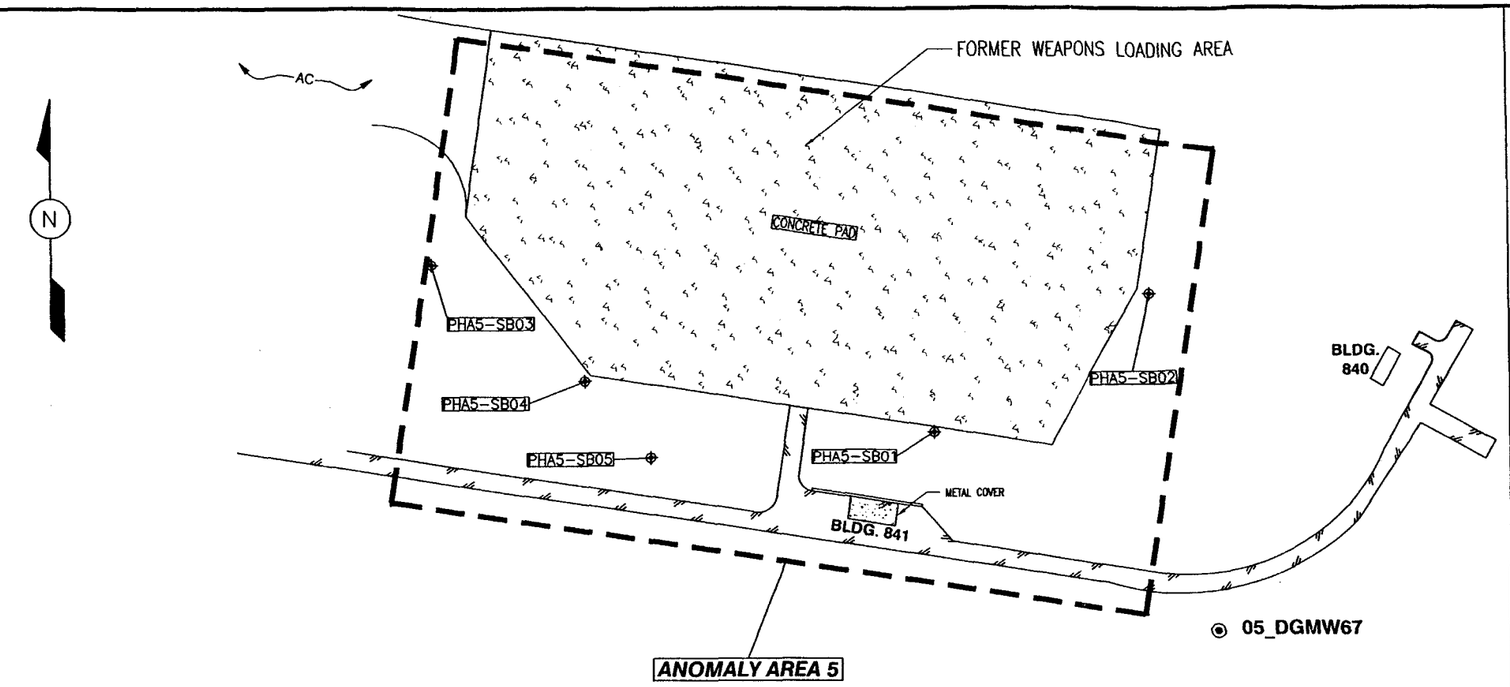

EXPLANATION:

- PHA5-SB01 — SOIL BORING
- 18_BGMW02A — MONITORING WELL
- EDGE OF PAVEMENT
- APPROXIMATE SITE BOUNDARY OF ANOMALY AREA 5

Summary of Selected Analytes

Analyte / Unit / Location	Northing (NAD 83)	Easting (NAD 83)	Elevation (ft amsl)	Sample Number	Depth (ft bgs)	TPH as Diesel mg/kg	TPH as Gasoline mg/kg	Benzene µg/kg	Ethylbenzene µg/kg	MTBE µg/kg	Toluene µg/kg	Xylenes (total) µg/kg
PHA5-SB01	2189369.693	6117308.753	415.70	18609-2516	5.0	10 U	1 U	5.1 U	5.1 U	10 U	5.1 U	5.1 U
PHA5-SB01	2189369.693	6117308.753	415.70	18609-2517	10.0	12 U	1.2 U	6.1 U	6.1 U	12 U	6.1 U	6.1 U
PHA5-SB02	2189552.054	6117593.411	420.09	18609-2514	5.0	12 U	1.2 U	5.8 U	5.8 U	12 U	5.8 U	5.8 U
PHA5-SB02	2189552.054	6117593.411	420.09	18609-2515	10.0	11 U	1.1 U	5.7 U	5.7 U	11 U	5.7 U	5.7 U
PHA5-SB03	2189590.811	6116654.147	405.63	18609-2522	5.0	11 U	1.1 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U
PHA5-SB03	2189590.811	6116654.147	405.63	18609-2523 (Dup)	5.5	12 U	1.2 U	5.8 U	5.8 U	12 U	5.8 U	5.8 U
PHA5-SB03	2189590.811	6116654.147	405.63	18609-2524	10.0	10 U	1 U	5.1 U	5.1 U	10 U	5.1 U	5.1 U
PHA5-SB04	2189437.804	6116853.192	409.00	18609-2520	5.0	11 U	1.1 U	5.6 U	5.6 U	11 U	5.6 U	5.6 U
PHA5-SB04	2189437.804	6116853.192	409.00	18609-2521	10.0	11 U	1.1 U	5.3 U	5.3 U	11 U	5.3 U	5.3 U
PHA5-SB05	2189336.962	6116938.700	409.49	18609-2518	5.0	10 U	1 U	5.2 U	5.2 U	10 U	5.2 U	5.2 U
PHA5-SB05	2189336.962	6116938.700	409.49	18609-2519	10.0	11 U	1.1 U	5.5 U	5.5 U	11 U	5.5 U	5.5 U

Sampled on 12/10/99

Explanation:

NAD 83 - North American Datum 1983
ft bgs - feet below ground surface
EPA - US Environmental Protection Agency
mg/kg - milligrams per kilogram
TPH - Total petroleum hydrocarbons
U - not detected at or above the stated reporting limits
ug/kg - Micrograms per kilogram
MTBE - Methyl tertiary butyl ether

GRAPHIC SCALE
0 100 200 300
(IN FEET)

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
01	97102PH-5.DWG BY CALVADA SURVEYING, INC.	12/14/99	

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
IRVINE, CA

DRAWN BY: R. PIRMORADIAN DATE: 11/1/00
CHECKED BY: DATE: 11/1/00
APPROVED BY: DATE: 11/1/00
PROJECT MANAGER: DATE: 11/1/00
AUTOCAD FILE No.: 18609293.DWG

SITE PLAN
ANOMALY AREA 5

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=200'	1	1	SW7997	18609	FIG 4-1

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Tables

Table 2-1
Sampling Activities at Tank Sites or other Environmental Locations of Concern near Anomaly Area 5.

Site Identification Number	Status	Comments
South of Anomaly Area 5		
UST 442	No Further Action, Site was closed by Orange County Health Care Agency (OCHCA) in December 1996	Confirmation sampling was conducted with the oversight by OCHCA
RCRA Permitted Facility 673-T3	No Further Action, Building 673-T3 was closed by California Department of Toxic Substance Control (DTSC) on March 8, 1996	Sampling was conducted during decontamination of Building 673-T3 structure
TAA 772	Field work completed and Closure Report submitted to DTSC with recommendation for No Further Action	5 shallow hand auger borings during the RFA
SWMU 225	TAA 772 was investigated as SWMU 225.	Soil sampling was conducted during the RFA
MSC D1	Pending Recommendation for No Further Action status	Soil sampling was conducted during the RFA and 8 soil borings were drilled by OHM in 1999
SWMU 181	NFA for former land farming area	Soil sampling was conducted during the RFA
SWMU 264	NFA for former DRMO Storage Yard No.3	Soil sampling was conducted during the RFA
IRP Site 5	RI, FS, and Proposed Plan (PP) complete. Draft ROD submitted in 1999. Awaiting results of radiological survey	VOCs, SVOCs, petroleum hydrocarbons, herbicides, metals and Gross alpha, beta have been detected in the groundwater from 3 wells at IRP Site 5 located southeast of Anomaly Area 5

Table 3-1
Groundwater Monitoring Well Data Summary – Anomaly Area 5

Monitoring Well Identification Number	Approximate Distance from Anomaly Area 5 (feet)	Direction from Anomaly Area 5	Top of Casing (feet, msl)	Screened Interval (feet, bgs)	Depth to Water (feet TOC)	Well Total Depth (feet, bgs)	Depth to Groundwater (feet, msl)
18_BGMW02E	950	Southeast	391.72	198-233	163.64	238	228.08
05_DGMW67	240	Southeast	429	177-227	163.20	232	265.70
05_DGMW68	600	Southeast	417	190-210	164.22	215	252.78

bgs – below ground surface
MSC – miscellaneous site of concern
TOC – top of casing
msl – mean sea level

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Sample Identification					18609-2516	18609-2517	18609-2514	18609-2515	18609-2522
Location Code					PHA5-SB01	PHA5-SB01	PHA5-SB02	PHA5-SB02	PHA5-SB03
Date Sampled					12/10/99	12/10/99	12/10/99	12/10/99	12/10/99
Depth (feet below ground surface)					5.0	10.0	5.0	10.0	5.0
	Unit	Background	Residential PRG	Industrial PRG					
CA LUFT 8015M									
TPH as Diesel	mg/kg	NE	NE	NE	10 U	12 U	12 U	11 U	11 U
TPH as Gasoline	mg/kg	NE	NE	NE	1 U	1.2 U	1.2 U	1.1 U	1.1 U
EPA 8260A									
1,1,1-Trichloroethane	µg/kg	NE	770000	1400000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
1,1,2,2-Tetrachloroethane	µg/kg	NE	380	900	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
1,1,2-Trichloroethane	µg/kg	NE	840	1900	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
1,1-Dichloroethane	µg/kg	NE	590000	2100000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
1,1-Dichloroethene	µg/kg	NE	54	120	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
1,2-Dichloroethane	µg/kg	NE	350	760	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
1,2-Dichloropropane	µg/kg	NE	350	770	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
2-Butanone (MEK)	µg/kg	NE	7300000	28000000	51 U	61 U	58 U	57 U	55 U
2-Chloroethyl vinyl ether	µg/kg	NE	NE	NE	51 U	61 U	58 U	57 U	55 U
2-Hexanone	µg/kg	NE	NE	NE	51 U	61 U	58 U	57 U	55 U
4-Methyl-2-pentanone (MIBK)	µg/kg	NE	790000	2900000	51 U	61 U	58 U	57 U	55 U
Acetone	µg/kg	NE	1600000	6200000	51 U	61 U	58 U	57 U	18 J
Benzene	µg/kg	NE	670	1500	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Bromodichloromethane	µg/kg	NE	1000	2400	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Bromoform	µg/kg	NE	62000	310000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Bromomethane	µg/kg	NE	3900	13000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Carbon disulfide	µg/kg	NE	360000	720000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Carbon tetrachloride	µg/kg	NE	240	530	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Chlorobenzene	µg/kg	NE	150000	540000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Chloroethane	µg/kg	NE	3000	6500	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Chloroform	µg/kg	NE	240	520	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Chloromethane	µg/kg	NE	1200	2700	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
cis-1,2-Dichloroethene	µg/kg	NE	43000	150000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
cis-1,3-Dichloropropene	µg/kg	NE	82	180	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Dibromochloromethane	µg/kg	NE	1100	2700	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Ethylbenzene	µg/kg	NE	230000	230000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Methyl tert-butyl ether (MTBE)	µg/kg	NE	NE	NE	10 U	12 U	12 U	11 U	11 U
Methylene chloride	µg/kg	NE	8900	21000	3.1 U	6.1 U	5.8 U	5.7 U	2 J
Styrene	µg/kg	NE	1700000	1700000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Sample Identification					18609-2516	18609-2517	18609-2514	18609-2515	18609-2522
Location Code					PHA5-SB01	PHA5-SB01	PHA5-SB02	PHA5-SB02	PHA5-SB03
Date Sampled					12/10/99	12/10/99	12/10/99	12/10/99	12/10/99
Depth (feet below ground surface)					5.0	10.0	5.0	10.0	5.0
	Unit	Background	Residential PRG	Industrial PRG					
Tetrachloroethene	µg/kg	NE	5700	19000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Toluene	µg/kg	NE	520000	520000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
trans-1,2-Dichloroethene	µg/kg	NE	63000	210000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
trans-1,3-Dichloropropene	µg/kg	NE	82	180	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Trichloroethene	µg/kg	NE	2800	6100	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Vinyl acetate	µg/kg	NE	430000	1400000	51 U	61 U	58 U	57 U	55 U
Vinyl chloride	µg/kg	NE	22	49	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
Xylenes (total)	µg/kg	NE	210000	210000	5.1 U	6.1 U	5.8 U	5.7 U	5.5 U
EPA 6010A									
Antimony	mg/kg	3.06	31	820	10.2 U B	12.2 U B	11.6 U B	11.4 U B	11.1 U B
Arsenic	mg/kg	6.86	0.39	2.7	1.02 U Y	3.57 Y X	2.67 Y	2.57 Y	2.84 Y X
Barium	mg/kg	173	5400	100000	11.8	144	99.2	75.2	112
Beryllium	mg/kg	0.669	150	2200	.204 U	.618	.505	.419	.502
Cadmium	mg/kg	2.35	9.0	810	1.02 U	1.22 U	1.16 U	1.14 U	1.11 U
Chromium	mg/kg	26.9	210	450	1.02 U	13.5	12.2	9.81	11.1
Cobalt	mg/kg	6.98	4700	100000	1.02 U	5.45	5.22	2.67	4.55
Copper	mg/kg	10.5	2900	76000	1.02 U	8.25	7.48	4.86	6.89
Lead	mg/kg	15.1	400	1000	1.02 U	3.42	3.17	2.76	2.63
Manganese	mg/kg	291	1800	32000	31.7	239	233	75.4	214
Molybdenum	mg/kg	NE	390	10000	2.04 U	2.44 U	2.31 U	2.28 U	2.22 U
Nickel	mg/kg	15.3	150	41000	2.04 U	9.3	8.47	5.37	7.39
Selenium	mg/kg	0.32	390	10000	1.02 U B	1.22 U B	1.16 U B	1.14 U B	1.11 U B
Silver	mg/kg	0.539	390	10000	2.04 U B	2.44 U B	2.31 U B	2.28 U B	2.22 U B
Thallium	mg/kg	0.42	5.5	140	1.02 U B	1.22 U B	1.19 B	1.14 U B	1.11 U B
Vanadium	mg/kg	71.8	550	14000	3.27	36.2	30.3	23	28.7
Zinc	mg/kg	77.9	23000	100000	4.09	40	30.3	23.4	36
EPA 7471A									
Mercury	mg/kg	0.22	23	610	.102 U	.122 U	.116 U	.114 U	.111 U

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Sample Identification					18609-2523 (Dup)	18609-2524	18609-2520	18609-2521	18609-2518
Location Code					PHA5-SB03	PHA5-SB03	PHA5-SB04	PHA5-SB04	PHA5-SB05
Date Sampled					12/10/99	12/10/99	12/10/99	12/10/99	12/10/99
Depth (feet below ground surface)					5.5	10.0	5.0	10.0	5.0
	Unit	**Background**	**Residential PRG**	**Industrial PRG**					
CA LUFT 8015M									
TPH as Diesel	mg/kg	NE	NE	NE	12 U	10 U	11 U	11 U	10 U
TPH as Gasoline	mg/kg	NE	NE	NE	1.2 U	1 U	1.1 U	1.1 U	1 U
EPA 8260A									
1,1,1-Trichloroethane	µg/kg	NE	770000	1400000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
1,1,2,2-Tetrachloroethane	µg/kg	NE	380	900	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
1,1,2-Trichloroethane	µg/kg	NE	840	1900	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
1,1-Dichloroethane	µg/kg	NE	590000	2100000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
1,1-Dichloroethene	µg/kg	NE	54	120	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
1,2-Dichloroethane	µg/kg	NE	350	760	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
1,2-Dichloropropane	µg/kg	NE	350	770	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
2-Butanone (MEK)	µg/kg	NE	7300000	28000000	58 U	51 U	56 U	53 U	52 U
2-Chloroethyl vinyl ether	µg/kg	NE	NE	NE	58 U	51 U	56 U	53 U	52 U
2-Hexanone	µg/kg	NE	NE	NE	58 U	51 U	56 U	53 U	52 U
4-Methyl-2-pentanone (MIBK)	µg/kg	NE	790000	2900000	58 U	51 U	56 U	53 U	52 U
Acetone	µg/kg	NE	1600000	6200000	58 U	51 U	56 U	53 U	52 U
Benzene	µg/kg	NE	670	1500	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Bromodichloromethane	µg/kg	NE	1000	2400	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Bromoform	µg/kg	NE	62000	310000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Bromomethane	µg/kg	NE	3900	13000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Carbon disulfide	µg/kg	NE	360000	720000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Carbon tetrachloride	µg/kg	NE	240	530	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Chlorobenzene	µg/kg	NE	150000	540000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Chloroethane	µg/kg	NE	3000	6500	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Chloroform	µg/kg	NE	240	520	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Chloromethane	µg/kg	NE	1200	2700	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
cis-1,2-Dichloroethene	µg/kg	NE	43000	150000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
cis-1,3-Dichloropropene	µg/kg	NE	82	180	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Dibromochloromethane	µg/kg	NE	1100	2700	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Ethylbenzene	µg/kg	NE	230000	230000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Methyl tert-butyl ether (MTBE)	µg/kg	NE	NE	NE	12 U	10 U	11 U	11 U	10 U
Methylene chloride	µg/kg	NE	8900	21000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Styrene	µg/kg	NE	1700000	1700000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Sample Identification					18609-2523 (Dup)	18609-2524	18609-2520	18609-2521	18609-2518
Location Code					PHA5-SB03	PHA5-SB03	PHA5-SB04	PHA5-SB04	PHA5-SB05
Date Sampled					12/10/99	12/10/99	12/10/99	12/10/99	12/10/99
Depth (feet below ground surface)					5.5	10.0	5.0	10.0	5.0
	Unit	Background	Residential PRG	Industrial PRG					
Tetrachloroethene	µg/kg	NE	5700	19000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Toluene	µg/kg	NE	520000	520000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
trans-1,2-Dichloroethene	µg/kg	NE	63000	210000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
trans-1,3-Dichloropropene	µg/kg	NE	82	180	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Trichloroethene	µg/kg	NE	2800	6100	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Vinyl acetate	µg/kg	NE	430000	1400000	58 U	51 U	56 U	53 U	52 U
Vinyl chloride	µg/kg	NE	22	49	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
Xylenes (total)	µg/kg	NE	210000	210000	5.8 U	5.1 U	5.6 U	5.3 U	5.2 U
EPA 6010A									
Antimony	mg/kg	3.06	31	820	11.5 U B	10.3 U B	11.2 U B	10.6 U B	10.5 U B
Arsenic	mg/kg	6.86	0.39	2.7	3.27 Y X	1.2 Y	2.37 Y	1.7 Y	1.87 Y
Barium	mg/kg	173	5400	100000	113	25.3	76	45.9	56.8
Beryllium	mg/kg	0.669	150	2200	.529	.206 U	.331	.212 U	.255
Cadmium	mg/kg	2.35	9.0	810	1.15 U	1.03 U	1.12 U	1.06 U	1.05 U
Chromium	mg/kg	26.9	210	450	12.2	3.38	7.43	5.32	5.68
Cobalt	mg/kg	6.98	4700	100000	4.34	1.32	3.05	1.77	2.01
Copper	mg/kg	10.5	2900	76000	6.9	1.82	4.42	3.02	3.23
Lead	mg/kg	15.1	400	1000	2.76	1.03 U	1.76	1.06 U	1.5
Manganese	mg/kg	291	1800	32000	223	76.4	163	87.7	132
Molybdenum	mg/kg	NE	390	10000	2.3 U	2.06 U	2.23 U	2.12 U	2.09 U
Nickel	mg/kg	15.3	150	41000	8.04	2.08	4.89	4.81	3.8
Selenium	mg/kg	0.32	390	10000	1.15 U B	1.03 U B	1.12 U B	1.06 U B	1.05 U B
Silver	mg/kg	0.539	390	10000	2.3 U B	2.06 U B	2.23 U B	2.12 U B	2.09 U B
Thallium	mg/kg	0.42	5.5	140	1.15 U B	1.03 U B	1.41 B	1.06 U B	1.05 U B
Vanadium	mg/kg	71.8	550	14000	32.3	8.97	22.8	15.2	17
Zinc	mg/kg	77.9	23000	100000	38.2	9.3	25.7	15.1	21.4
EPA 7471A									
Mercury	mg/kg	0.22	23	610	.115 U	.103 U	.112 U	.106 U	.105 U

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Sample Identification					18609-2519
Location Code					PHA5-SB05
Date Sampled					12/10/99
Depth (feet below ground surface)					10.0
	Unit	Background	Residential PRG	Industrial PRG	
CA LUFT 8015M					
TPH as Diesel	mg/kg	NE	NE	NE	11 U
TPH as Gasoline	mg/kg	NE	NE	NE	1.1 U
EPA 8260A					
1,1,1-Trichloroethane	µg/kg	NE	770000	1400000	5.5 U
1,1,2,2-Tetrachloroethane	µg/kg	NE	380	900	5.5 U
1,1,2-Trichloroethane	µg/kg	NE	840	1900	5.5 U
1,1-Dichloroethane	µg/kg	NE	590000	2100000	5.5 U
1,1-Dichloroethene	µg/kg	NE	54	120	5.5 U
1,2-Dichloroethane	µg/kg	NE	350	760	5.5 U
1,2-Dichloropropane	µg/kg	NE	350	770	5.5 U
2-Butanone (MEK)	µg/kg	NE	7300000	28000000	55 U
2-Chloroethyl vinyl ether	µg/kg	NE	NE	NE	55 U
2-Hexanone	µg/kg	NE	NE	NE	55 U
4-Methyl-2-pentanone (MIBK)	µg/kg	NE	790000	2900000	55 U
Acetone	µg/kg	NE	1600000	6200000	55 U
Benzene	µg/kg	NE	670	1500	5.5 U
Bromodichloromethane	µg/kg	NE	1000	2400	5.5 U
Bromoform	µg/kg	NE	62000	310000	5.5 U
Bromomethane	µg/kg	NE	3900	13000	5.5 U
Carbon disulfide	µg/kg	NE	360000	720000	5.5 U
Carbon tetrachloride	µg/kg	NE	240	530	5.5 U
Chlorobenzene	µg/kg	NE	150000	540000	5.5 U
Chloroethane	µg/kg	NE	3000	6500	5.5 U
Chloroform	µg/kg	NE	240	520	5.5 U
Chloromethane	µg/kg	NE	1200	2700	5.5 U
cis-1,2-Dichloroethene	µg/kg	NE	43000	150000	5.5 U
cis-1,3-Dichloropropene	µg/kg	NE	82	180	5.5 U
Dibromochloromethane	µg/kg	NE	1100	2700	5.5 U
Ethylbenzene	µg/kg	NE	230000	230000	5.5 U
Methyl tert-butyl ether (MTBE)	µg/kg	NE	NE	NE	11 U
Methylene chloride	µg/kg	NE	8900	21000	5.5 U
Styrene	µg/kg	NE	1700000	1700000	5.5 U

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Sample Identification					18609-2519	
Location Code					PHA5-SB05	
Date Sampled					12/10/99	
Depth (feet below ground surface)					10.0	
	Unit	Background	Residential PRG	Industrial PRG		
Tetrachloroethene	µg/kg	NE	5700	19000	5.5 U	
Toluene	µg/kg	NE	520000	520000	5.5 U	
trans-1,2-Dichloroethene	µg/kg	NE	63000	210000	5.5 U	
trans-1,3-Dichloropropene	µg/kg	NE	82	180	5.5 U	
Trichloroethene	µg/kg	NE	2800	6100	5.5 U	
Vinyl acetate	µg/kg	NE	430000	1400000	55 U	
Vinyl chloride	µg/kg	NE	22	49	5.5 U	
Xylenes (total)	µg/kg	NE	210000	210000	5.5 U	
EPA 6010A						
Antimony	mg/kg	3.06	31	820	11 U	B
Arsenic	mg/kg	6.86	0.39	2.7	2.33	Y
Barium	mg/kg	173	5400	100000	61.2	
Beryllium	mg/kg	0.669	150	2200	.275	
Cadmium	mg/kg	2.35	9.0	810	1.1 U	
Chromium	mg/kg	26.9	210	450	6.65	
Cobalt	mg/kg	6.98	4700	100000	2.91	
Copper	mg/kg	10.5	2900	76000	3.89	
Lead	mg/kg	15.1	400	1000	1.71	
Manganese	mg/kg	291	1800	32000	153	
Molybdenum	mg/kg	NE	390	10000	2.21 U	
Nickel	mg/kg	15.3	150	41000	4.33	
Selenium	mg/kg	0.32	390	10000	1.1 U	B
Silver	mg/kg	0.539	390	10000	2.21 U	B
Thallium	mg/kg	0.42	5.5	140	1.1 U	B
Vanadium	mg/kg	71.8	550	14000	20	
Zinc	mg/kg	77.9	23000	100000	22.4	
EPA 7471A						
Mercury	mg/kg	0.22	23	610	.11 U	

Table 4-1
Summary of Analytical Results — Anomaly Area 5

Explanation:
B - result exceeds established background limits
CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
J - estimated
M - Modified
MDL - method detection limit
mg/kg - milligrams per kilogram
NA - not analyzed
NE - not established
OHM - OHM Remediation Services Corp.
PRG - Preliminary Remediation Goal, EPA Region IX, October 1999
RL - reporting limit
SB - soil boring
TPH - total petroleum hydrocarbons
U - not detected above or equal to the stated reporting limit.
If the analyte had been detected bewteen the MDL and RL the actual value would have been reported and flagged with a "J" qualifier. For the samples in question, the laboratory did not detect analyte concentrations between the MDL and the RL. As a result, the samples are qualified as non-detect ("U").
X - result exceeds industrial PRGs
Y - result exceeds residential PRGs
µg/kg - micrograms per kilogram

Table 4-2
Summary of Analytical Results for QC Samples — Anomaly Area 5

Sample Identification Location Code Date Sampled	Unit	18609-2513 Trip Blank 12/10/99	18609-2525 Equipment Rinsate 12/10/99
CA LUFT 8015M			
TPH as Diesel	mg/L	NA	.098 U
TPH as Gasoline	mg/L	.1 U	.1 U
EPA 8260A			
1,1,1-Trichloroethane	µg/L	5 U	5 U
1,1,2,2-Tetrachloroethane	µg/L	5 U	5 U
1,1,2-Trichloroethane	µg/L	5 U	5 U
1,1-Dichloroethane	µg/L	5 U	5 U
1,1-Dichloroethene	µg/L	5 U	5 U
1,2-Dichloroethane	µg/L	5 U	5 U
1,2-Dichloropropane	µg/L	5 U	5 U
2-Butanone (MEK)	µg/L	50 U	50 U
2-Chloroethyl vinyl ether	µg/L	50 U	50 U
2-Hexanone	µg/L	50 U	50 U
4-Methyl-2-pentanone (MIBK)	µg/L	50 U	50 U
Acetone	µg/L	50 U	50 U
Benzene	µg/L	5 U	5 U
Bromodichloromethane	µg/L	5 U	5 U
Bromoform	µg/L	5 U	5 U
Bromomethane	µg/L	5 U	5 U
Carbon disulfide	µg/L	5 U	5 U
Carbon tetrachloride	µg/L	5 U	5 U
Chlorobenzene	µg/L	5 U	5 U
Chloroethane	µg/L	5 U	5 U
Chloroform	µg/L	5 U	5 U
Chloromethane	µg/L	5 U	5 U
cis-1,2-Dichloroethene	µg/L	5 U	5 U
cis-1,3-Dichloropropene	µg/L	5 U	5 U
Dibromochloromethane	µg/L	5 U	5 U
Ethylbenzene	µg/L	5 U	5 U
Methyl tert-butyl ether (MTBE)	µg/L	10 U	10 U
Methylene chloride	µg/L	5 U	5 U
Styrene	µg/L	5 U	5 U
Tetrachloroethene	µg/L	5 U	5 U
Toluene	µg/L	5 U	5 U

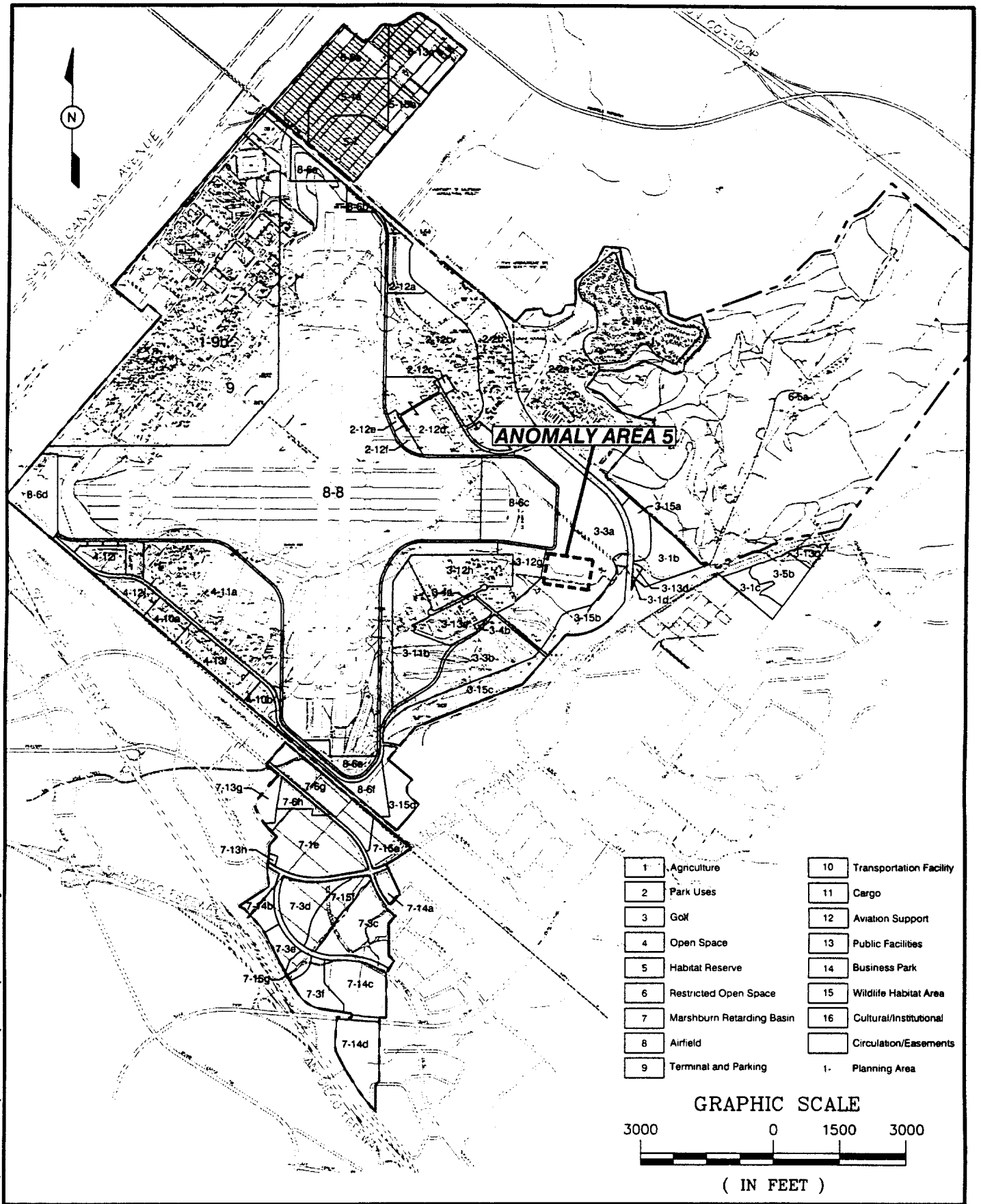
Table 4-2
Summary of Analytical Results for QC Samples — Anomaly Area 5

Sample Identification Location Code Date Sampled	Unit	18609-2513 Trip Blank 12/10/99	18609-2525 Equipment Rinsate 12/10/99
trans-1,2-Dichloroethene	µg/L	5 U	5 U
trans-1,3-Dichloropropene	µg/L	5 U	5 U
Trichloroethene	µg/L	5 U	5 U
Vinyl acetate	µg/L	50 U	50 U
Vinyl chloride	µg/L	5 U	5 U
Xylenes (total)	µg/L	5 U	5 U
EPA 6010A			
Antimony	µg/L	NA	500 U
Arsenic	µg/L	NA	10 U
Barium	µg/L	NA	100 U
Beryllium	µg/L	NA	10 U
Cadmium	µg/L	NA	10 U
Chromium	µg/L	NA	50 U
Cobalt	µg/L	NA	50 U
Copper	µg/L	NA	50 U
Lead	µg/L	NA	10 U
Manganese	µg/L	NA	20 U
Molybdenum	µg/L	NA	100 U
Nickel	µg/L	NA	150 U
Selenium	µg/L	NA	10 U
Silver	µg/L	NA	50 U
Thallium	µg/L	NA	400 U
Vanadium	µg/L	NA	100 U
Zinc	µg/L	NA	75.4
EPA 7470A			
Mercury	µg/L	NA	.2 U

Table 4-2
Summary of Analytical Results for QC Samples — Anomaly Area 5

Explanation:
CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
J - estimated
M - Modified
mg/L - milligrams per liter
OHM - OHM Remediation Services Corp.
TPH - total petroleum hydrocarbons
U - not detected above or equal to the stated reporting limit
µg/L - micrograms per liter

Appendix A
Preferred Land Use Plan Concept B



OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA				DRAWN BY R. PIRMORADIAN	DATE 07/14/00	PREFERRED LAND USE PLAN OF ANOMALY AREA 5		
				CHECKED BY	DATE 7/14/00			
				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
18609303.DWG	1=1	1	1	1"=3000'	SW7997	18609	FIG A-1	0

Jul 14, 2000 10:44:16 I:\OHM CORP\PROJECTS\18609\18609303.dwg

Appendix B
Field Inspection Checklist

CHECKLIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro
Anomaly Identification Information:
Date of Photograph: 19 May 1971

APHO (from BRAC Cleanup Plan)	SAIC	EPA
31	215	

Recommendation: *No Further Investigation Status*

Anomaly Description: From source document: Final Report, Aerial Photograph Assessment (SAIC, 1993):

SAIC 215: *There is disturbed ground (DG) about 250 feet by 350 feet in area, dark-toned mounded material (MMDT), and a probable trench (TR), all about 1600 feet westerly of West Marine Road and Magazine Road. There is also a possible light-toned unidentified object (UO). Additional investigation of the site as a possible disposal or storage site is recommended. [Comment by the writer of the summary report: The annotations on the 1971 photograph in the SAIC report point to the unpaved access road as a trench and the grass unpaved area as dark toned mounded material.]*

Visual Inspection Date (s): 1 December 1999.

Participant(s) (with affiliation (s)) in inspection(s): Dhananjay Rawal
OHM Corporation, Project Engineer

Current Site Conditions: Anomaly Area 5 is relatively flat. Building 840/841, former LOX/Explosive Safety office, with concrete pad is within Anomaly Area 5. More than half of Anomaly Area 5 is former weapons loading area concrete pad. Anomaly Area 5 is surrounded by grass-covered area to the south, the edges of the runways to the north, and IRP Site 5 to the southeast. MSC-D1 remains southwest of Anomaly Area 5. No evidence of recent excavations or trenches was observed during the inspection. Also, no stains or discolored areas were observed on the unpaved and concrete pad area of Anomaly Area 5. [Comment: APHO 31, 43, 66,67 and 68 are grouped together]

Is there visual evidence of the anomaly identified in the photograph present at the site? *None, No construction debris, materials or other items were being stored at the site.*

Is there evidence of past releases? *No*

Description of photograph(s): *Photographs of Anomaly Area 5 (adjacent to the east-end of the east-west runway and IRP Site 5).*

Date of preparation of checklist: December 3, 1999

CHECKLIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro
Anomaly Identification Information:
Date of Photograph: 9 December 1974

APHO (from BRAC Cleanup Plan)	SAIC	EPA
43	287	

Recommendation: ***No Further Investigation Status***

Anomaly Description: (from source document): Final Report, Aerial Photograph Assessment (SAIC, 1993):

SAIC 287: *There is an excavation (EX) about 1600 feet west of the Perimeter Road and Magazine Road intersection. The purpose of the excavation is unknown, and investigation of the site history as a possible disposal area is recommended.*
[Comment by the writer of the summary report: The annotations on the 1974 photograph in the SAIC report point to a dark area that may have been a topographically low area that was filled with rainwater.]

Visual Inspection Date (s): 1 December 1999.

Participant(s) (with affiliation (s)) in inspection(s): Dhananjay Rawal
OHM Corporation, Project Engineer

Current Site Conditions: Anomaly Area 5 is relatively flat. Building 840/841, former LOX/Explosive Safety office, with concrete pad is within Anomaly Area 5. More than half of Anomaly Area 5 is former weapons loading area concrete pad and APHO 43 (SAIC 287) is located beneath the weapons loading pad. Anomaly Area 5 is surrounded by grass-covered area (which was mowed regularly to keep the grass from growing too high) and IRP Site 5 to the southeast. MSC-D1 is located southwest of Anomaly Area 5. No evidence of recent excavations or trenches was observed during the inspection. Also, no stains or discolored areas were observed on the unpaved and concrete pad area of Anomaly Area 5. [Comment: APHO 31, 43, 66,67 and 68 are grouped together]

Is there visual evidence of the anomaly identified in the photograph present at the site? *None, No construction debris, materials or other items were being stored at the site.*

Is there evidence of past releases? *No*

Description of photograph(s): *Photographs of Anomaly Area 5 (adjacent to the east-end of the east-west runway and IRP Site 5).*

Date of preparation of checklist: December 3, 1999

CHECKLIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro
Anomaly Identification Information:
Date of Photograph: 27 June 1967

APHO (from BRAC Cleanup Plan)	SAIC	EPA
66	161	

Recommendation: ***No Further Investigation Status***

Anomaly Description: (from source document): Final Report, Aerial Photograph Assessment (SAIC, 1993):

SAIC 161: *Disturbed ground (DG) and probable backfilled trenches (TR) are noted in the western corner of Perimeter Road and Magazine Road, and about 1400 feet westerly of the intersection. Additional investigation of the purpose of these sites is recommended. The northeasterly-oriented, backfilled trench (TR) adjacent to Perimeter Road is the Perimeter Road Landfill (Site 5). No Additional investigation of Site 5 is recommended at this time. The present IR program field investigation Site 5 appears to be adequate, relative to the features noted here. [Comment by the writer of the summary report: The annotations on the 1967 photograph in the SAIC report point to the unpaved area next to concrete pad as a trench.]*

Visual Inspection Date (s): 1 December 1999.

Participant(s) (with affiliation (s)) in inspection(s): Dhananjay Rawal
OHM Corporation, Project Engineer

Current Site Conditions: Anomaly Area 5 is relatively flat. More than half of Anomaly Area 5 is former weapons loading area concrete pad. Anomaly Area 5 is surrounded by grass-covered area, and IRP Site 5 to the southeast. MSC-D1 is located southwest of Anomaly Area 5. No evidence of disturbed ground was observed during the inspection. Also, no stains or discolored areas were observed on the unpaved and paved areas of Anomaly Area 5. [Comment: APHO 31, 43, 66,67 and 68 are grouped together]

Is there visual evidence of the anomaly identified in the photograph present at the site? *None, No construction debris, materials, trenches were observed and no waste items were being stored at the site.*

Is there evidence of past releases? *No*

Description of photograph(s): *Photographs of Anomaly Area 5 (adjacent to the east-end of the east-west runway and IRP Site 5).*

Date of preparation of checklist: December 3, 1999

CHECKLIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro
Anomaly Identification Information:
Date of Photograph: 13 January 1975

APHO (from BRAC Cleanup Plan)	SAIC	EPA
67	314	

Recommendation: No Further Investigation Status

Anomaly Description: (from source document): Final Report, Aerial Photograph Assessment (SAIC, 1993):

SAIC 314: *Disturbed ground (DG) can be seen about 1000 feet northeast of Building 673, near North/East Marine and N 3rd Street. The cause of the disturbance is unknown. Investigation of the site's history as a possible disposal area is recommended.*
[Comment by the writer of the summary report: The annotations on the 1975 photograph in the SAIC report point to the current concrete paved area as disturbed ground.]

Visual Inspection Date (s): 1 December 1999.

Participant(s) (with affiliation (s)) in inspection(s): Dhananjay Rawal
OHM Corporation, Project Engineer

Current Site Conditions: Anomaly Area 5 is relatively flat. Building 840/841, former LOX/Explosive Safety office, with concrete pad is within Anomaly Area 5. More than half of Anomaly Area 5 is former weapons loading area concrete pad. Anomaly Area 5 is surrounded by grass-covered area, and IRP Site 5 to the southeast. MSC-D1 remains southwest of Anomaly Area 5. No evidence of disturbed ground was observed. Also, no stains or discolored areas were observed on the unpaved and paved areas. [Comment: APHO 31, 43, 66,67 and 68 are grouped together]

Is there visual evidence of the anomaly identified in the photograph present at the site? *None, No construction debris, materials or other items were being stored at the site.*

Is there evidence of past releases? *No*

Description of photograph(s): *Photographs of Anomaly Area 5 (adjacent to the east-end of the east-west runway and IRP Site 5).*

Date of preparation of checklist: December 3, 1999

CHECKLIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro

Anomaly Identification Information:
Date of Photograph: 21 January 1988

APHO (from BRAC Cleanup Plan)	SAIC	EPA
68	542	

Recommendation: No Further Investigation Status

Anomaly Description: (from source document): Final Report, Aerial Photograph Assessment (SAIC, 1993):

SAIC 542: *A light-colored pad, possibly concrete, was constructed west of Perimeter Road and Magazine Road. The purpose of the pad is unknown, but the area was probably graded (GR). No additional investigation is recommended at this time.*
[Comment by the writer of the summary report: The annotations on the 1988 photograph in the SAIC report point to the current location of concrete pad.]

Visual Inspection Date (s): 1 December 1999.

Participant(s) (with affiliation (s)) in inspection(s): Dhananjay Rawal
OHM Corporation, Project Engineer

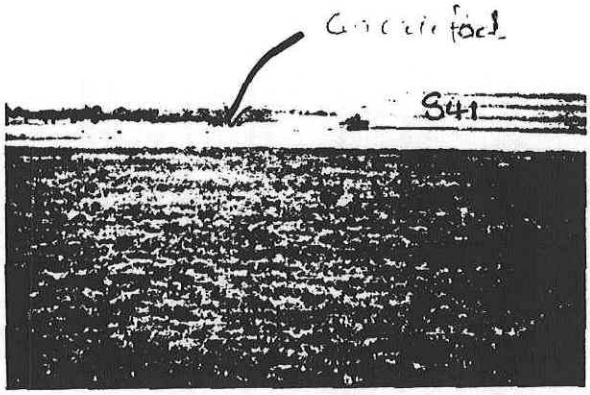
Current Site Conditions: Anomaly Area 5 is relatively flat. Building 840/841, former LOX/Explosive Safety office, with concrete pad is within Anomaly Area 5. More than half of Anomaly Area 5 is former weapons loading area concrete pad. Anomaly Area 5 is surrounded by grass-covered areas. MSC-D1 is located southwest of Anomaly Area 5. The concrete pad was observed during the inspection. Also, no stains or discolored areas were observed on the unpaved and concrete pad area of Anomaly Area 5. [Comment: APHO 31, 43, 66,67 and 68 are grouped together]

Is there visual evidence of the anomaly identified in the photograph present at the site? *None, No construction debris, materials or other items were being stored at the site.*

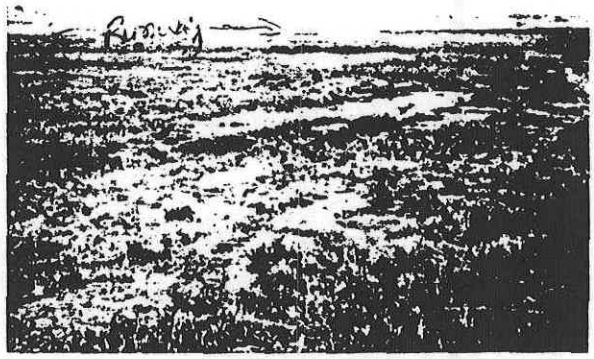
Is there evidence of past releases? *No*

Description of photograph(s): *Photographs of Anomaly Area 5 (adjacent to the east-end of the east-west runway and IRP Site 5).*

Date of preparation of checklist: December 3, 1999



APHO 5, Unpaved Area w. Concrete Pad



APHO-5, Part of Runway Unpaved area

APHO5 - IRP 5 VICNITY

APHO-5. IRP 5 VICINITY

Appendix C
Excerpts From JEG RFA Report

MARINE CORPS AIR STATION EL TORO
EL TORO, CALIFORNIA
INSTALLATION RESTORATION PROGRAM
FINAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) FACILITY ASSESSMENT REPORT

PREPARED BY:
Southwest Division, Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

THROUGH:
CONTRACT #N68711-89-D-9296
CTO #193
DOCUMENT CONTROL NO:
CLE-C01-01F193-S2-0001

WITH:
Jacobs Engineering Group, Inc.
3655 Nobel Drive, Suite 200
San Diego, California 92122

In association with:
International Technology Corporation
CH2M HILL

M. W. Arends 7/14/93

Mike Arends, P.E. Date
CLEAN Project Manager
CH2M HILL, Inc.

15 July 1993

Raoul Portillo Date
CLEAN Technical Reviewer
Jacobs Engineering Group Inc.

MARINE CORPS AIR STATION
EL TORO
EL TORO, CALIFORNIA
INSTALLATION RESTORATION PROGRAM
RCRA FACILITY ASSESSMENT
DRAFT PRELIMINARY REVIEW/
VISUAL SITE INSPECTION REPORT
VOLUME II

SWMU/AOC NUMBERS 145 THROUGH APPENDIX D

3 JULY 1991

PREPARED BY:
Southwest Division, Naval Facilities
Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

THROUGH:
CONTRACT #N68711-89-D-9296
CTO #099
DOCUMENT CONTROL NO:
CLE-C01-01F099-B2-0004

WITH:
Jacobs Engineering Group Inc.
3655 Nobel Drive, Suite 200
San Diego, California 92122

In association with:
International Technology Corporation
CH2M HILL

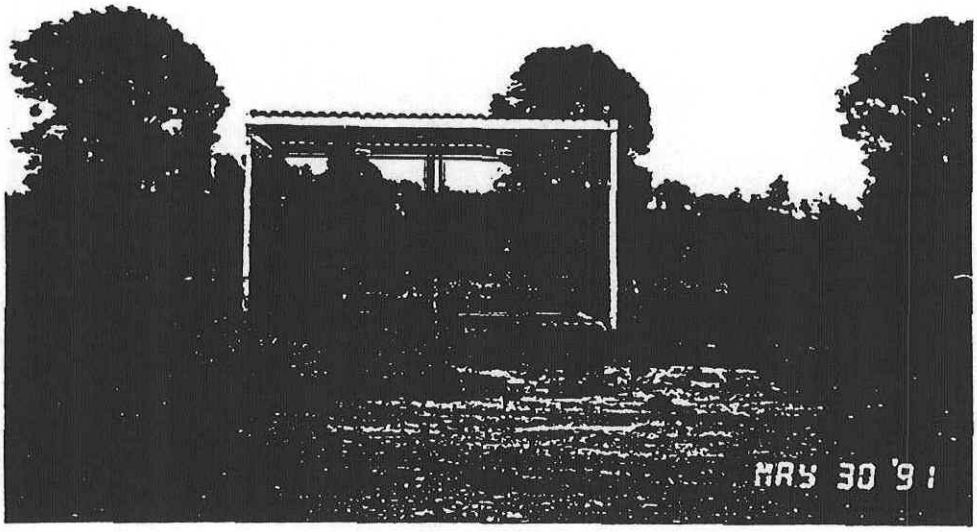
Evaluation Form
SWMU/Area of Concern
Number 225

Name: Hazardous Waste Storage Area 772

Location: South of DRMO Storage Yard #3

Size: Approximately 144 sq ft

Date of Site Visit: 02 May 1991



Period of Operation

Currently inactive

Evaluation Form
SWMU/Area of Concern
Number 225

Unit Characteristics

This HWSA is one of the six DHS-permitted HWSAs at MCAS El Toro. These six HWSAs (SWMU/AOC Numbers 222 through 227) are not planned for future use. Historically, these six HWSAs have had drums stored outside of the storage area. HWSA 772 is located approximately 100 ft south of DRMO Storage Yard #3. The HWSA consists of a concrete pad and berm, an aluminum roof, and a chain-link fence on all sides. An access ramp is located on the northern side of the HWSA. At the time of the visit, no drums were stored in the HWSA. The concrete pad is covered with approximately 2 to 3 in. of stagnant, green liquid. Due to the presence of the liquid, the condition of the concrete pad was not discernable. No significant cracks or stains were observed on the concrete berms. The HWSA is bordered on all sides by unpaved, sparsely vegetated soil. An apparently abandoned 500-gallon diesel fuel tank is located approximately 10 ft west of the HWSA. No evidence of release from the tank (i.e., soil stains) was observed.

Waste Characteristics

Unknown

Possible Migration Pathways

Soil

Evidence of Release

None observed

Exposure Potential

On-Station personnel

Recommendations

Although there was no evidence of a release during the site visit and hazardous waste was not currently stored in the area, the past and present HWSAs at MCAS El Toro are recommended for a sampling visit.

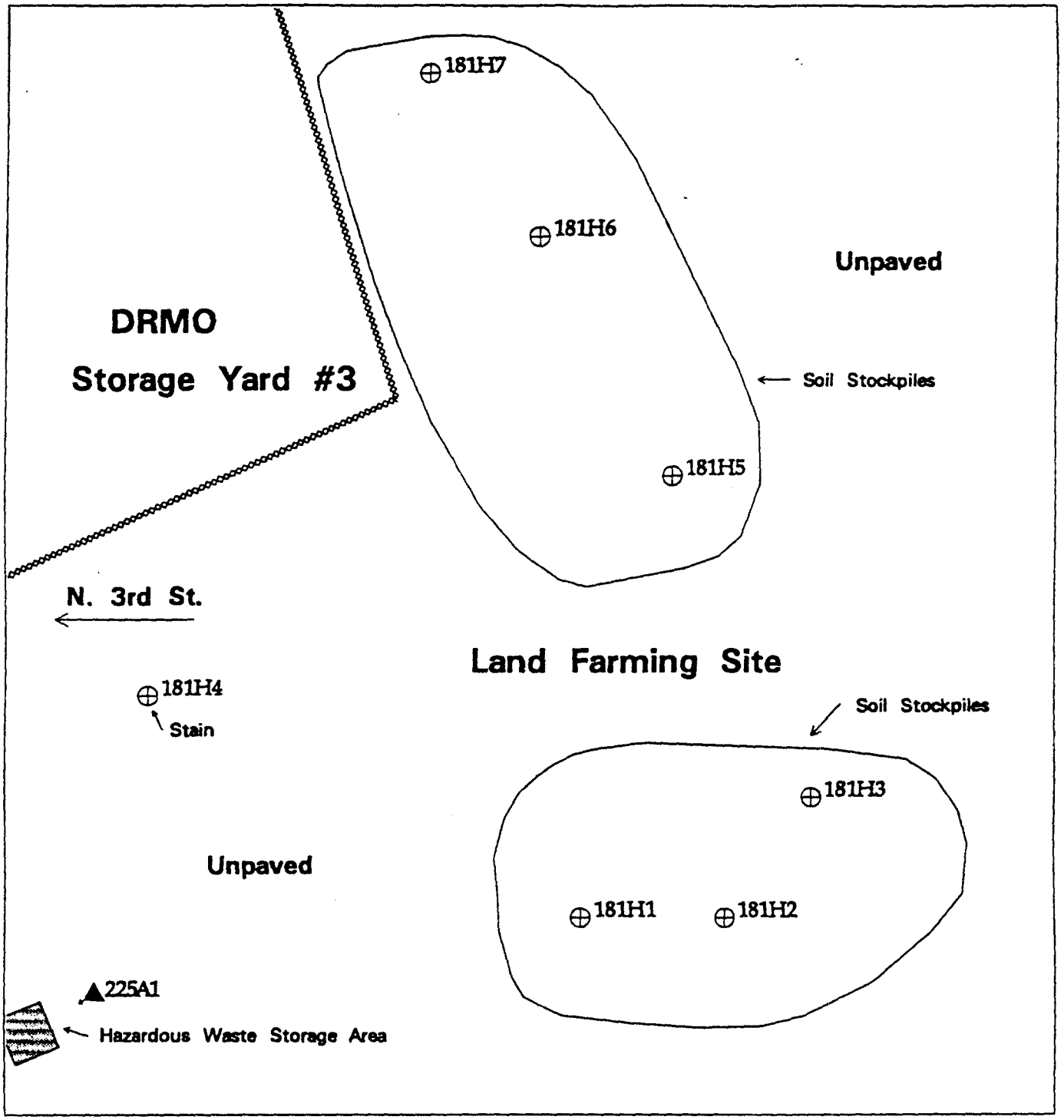


Figure 56 Sample Location Map

Boring Location and Number:

- ⊕ 123H4 5' Deep Boring
- ◒ 123B4 25' Deep Boring
- ▲ 123A4 60' Long, Angle Boring

Features:

- Building
- Concrete
- Fence
- Railroad

Scale

0 20 40 80 Feet

SWMU/AOC Number and Type:

181 - Landfarming Area

225 - Hazardous Waste Storage Area

MCAS El Toro
RCRA Facility Assessment

MCAS EL TORO RCRA FACILITY ASSESSMENT – SAMPLING VISIT RESULTS

SWMU/AOC NUMBER	SWMU/AOC TYPE (FIGURE)	BORING NUMBER	SAMPLE DEPTH (FEET)	ANALYTICAL TEST RESULTS							RECOMMENDATIONS	
				TPH (mg/kg)	TFH (mg/kg)		VOCs (ug/kg)	SVOCs (ug/kg)	PESTICIDES/PCBs (ug/kg)	METALS (mg/kg)	Action	Rationale
					Gasoline	Diesel						
225	Hazardous Waste Storage Area (56)	A1	10	ND	ND	ND	Methylene Chloride-6 BJ * Acetone-8 BJ * Toluene-1 J	Diethylphthalate-38 BJ *	ND	NAB	NFA	TPH/TFH < 1000 ppm VOCs < CRDL SVOCs < CRDL Pest/PCB < CRDL Metals < BGT CRDL - Contract Required Detection Limit BGT - Background Threshold Value
			10 (Duplicate)	176	ND	60 Z	Methylene Chloride-13 B * Acetone-30 B * Toluene-1 J	Diethylphthalate-22 BJ * Di-n-butylphthalate-22 J	ND	NAB		
			20	ND	ND	ND	Methylene Chloride-7 BJ * Acetone-6 BJ *	Diethylphthalate-44 BJ *	ND	NAB		
			30	ND	ND	ND	Methylene Chloride-9 BJ *	Diethylphthalate-21 BJ * Di-n-butylphthalate-22 BJ * Bis(2-Ethylhexyl)phthalate-47 J	ND	NAB		
			40	ND	ND	ND	Methylene Chloride-7 BJ *	ND	ND	NAB		
			50	ND	ND	ND	Methylene Chloride-7 BJ *	Diethylphthalate-29 BJ	ND	NAB		
			60	ND	ND	ND	Methylene Chloride-7 BJ * Acetone-9 BJ *	Diethylphthalate-76 BJ * Bis(2-Ethylhexyl)phthalate-54 J	ND	NAB		

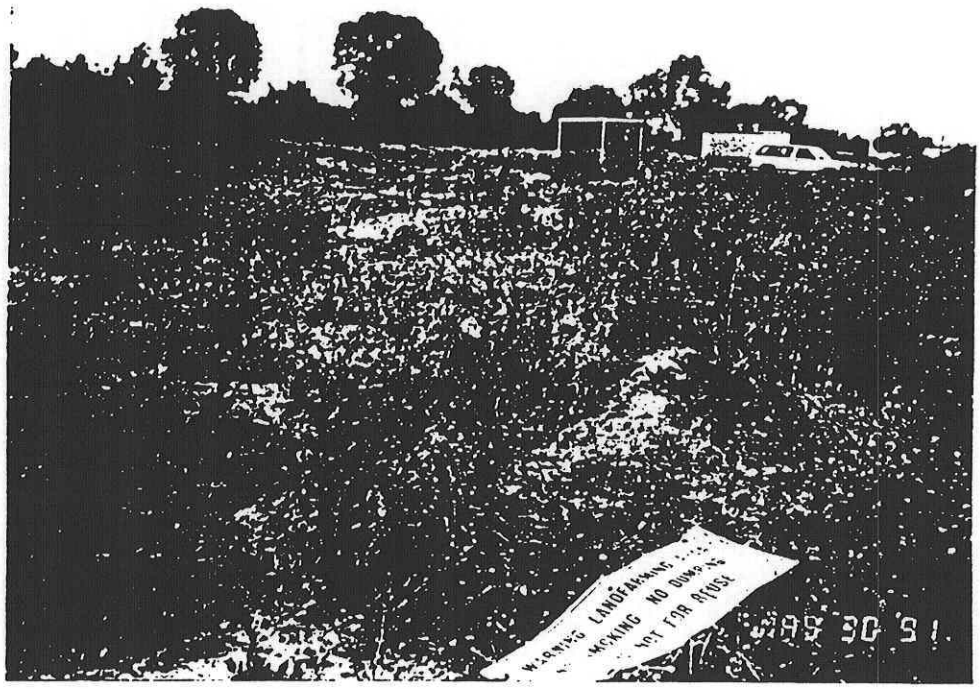
Evaluation Form
SWMU/Area of Concern
Number 181

Name: Landfarming Site

Location: Adjacent to DRMO Storage Yard #3, near Building 673

Size: Approximately 3 acres

Date of Site Visit: 02 May 1991



Period of Operation

Currently active

Evaluation Form
SWMU/Area of Concern
Number 181

Unit Characteristics

A landfarming area for remediating petroleum-contaminated soil was identified near Building 673 through interviews with current on-Station personnel. The landfarming area is located east of Building 673, adjacent to the southeastern corner of DRMO Storage Yard #3, and is paved. The landfarming area consists of various piles of soil, approximately 4 to 6 ft in height. There are two main piles, divided to the north and south by a dirt road extending east from "Z" Street. The piles consist of dirt, broken asphalt and concrete chunks, sand, and gravel. Miscellaneous garbage is also mixed in the soil piles. The piles support sparse vegetative growth.

Waste Characteristics

Petroleum-contaminated soil

Possible Migration Pathways

Surface soil

Evidence of Release

None observed

Exposure Potential

On-Station personnel

Recommendations

Although there is no current evidence of a release at the landfarming site, it is not known whether a release may have occurred in the past. A sampling visit is recommended for this site.

MCAS EL TORO RCRA FACILITY ASSESSMENT – SAMPLING VISIT RESULTS

SWMU/AOC NUMBER	SWMU/AOC TYPE (FIGURE)	BORING NUMBER	SAMPLE DEPTH (FEET)	ANALYTICAL TEST RESULTS							RECOMMENDATIONS	
				TPH (mg/kg)	TFH (mg/kg)		VOCs (ug/kg)	SVOCs (ug/kg)	PESTICIDES/PCBs (ug/kg)	METALS (mg/kg)	Action	Rationale
					Gasoline	Diesel						
181	Landfarming Site (56)	H1	2	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-8 BJ * Toluene-1 J	NA	NA	NA	NFA	TPH/TFH < 1000 ppm VOCs < CRDL
			5	NA	ND	ND	Methylene Chloride-4 BJ * Acetone-9 BJ *	NA	NA	NA		CRDL - Contract Required Detection Limit
		H2	2	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-12 B * Toluene-1 J	NA	NA	NA		
			5	NA	ND	ND	ND	NA	NA	NA		
			5 (Duplicate)	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-8 BJ *	NA	NA	NA		
		H3	2	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-16 B * Toluene-1 J	NA	NA	NA		
			5	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-23 B * Toluene-2 J	NA	NA	NA		
		H4	2	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-15 B * Toluene-2 J	NA	NA	NA		
			5	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-10 BJ *	NA	NA	NA		

MCAS EL TORO RCRA FACILITY ASSESSMENT – SAMPLING VISIT RESULTS

SWMU/AOC NUMBER	SWMU/AOC TYPE (FIGURE)	BORING NUMBER	SAMPLE DEPTH (FEET)	ANALYTICAL TEST RESULTS							RECOMMENDATIONS	
				TPH (mg/kg)	TFH (mg/kg)		VOCs (ug/kg)	SVOCs (ug/kg)	PESTICIDES/PCBs (ug/kg)	METALS (mg/kg)	Action	Rationale
					Gasoline	Diesel						
181	Landfarming Site (56)	H5	3	NA	ND	ND	Methylene Chloride-2 BJ * Acetone-26 B * Toluene-2 J	NA	NA	NA	NFA	TPH/TFH < 1000 ppm VOCs < CRDL
			7	NA	ND	ND	Acetone-15 B *	NA	NA	NA		
		H6	2	NA	ND	ND	Methylene Chloride-4 BJ * Acetone-14 B * Toluene-1 J	NA	NA	NA		CRDL - Contract Required Detection Limit
			5	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-11 B * Toluene-1 J Xylene-2 J	NA	NA	NA		
		H7	2	NA	300 Z	ND	Acetone-18 B * Toluene-2 J PCE-2 J Xylene-2 J	NA	NA	NA		
			5	NA	ND	ND	Methylene Chloride-1 BJ * Acetone-7 BJ * 2-Butanone-3 J	NA	NA	NA		

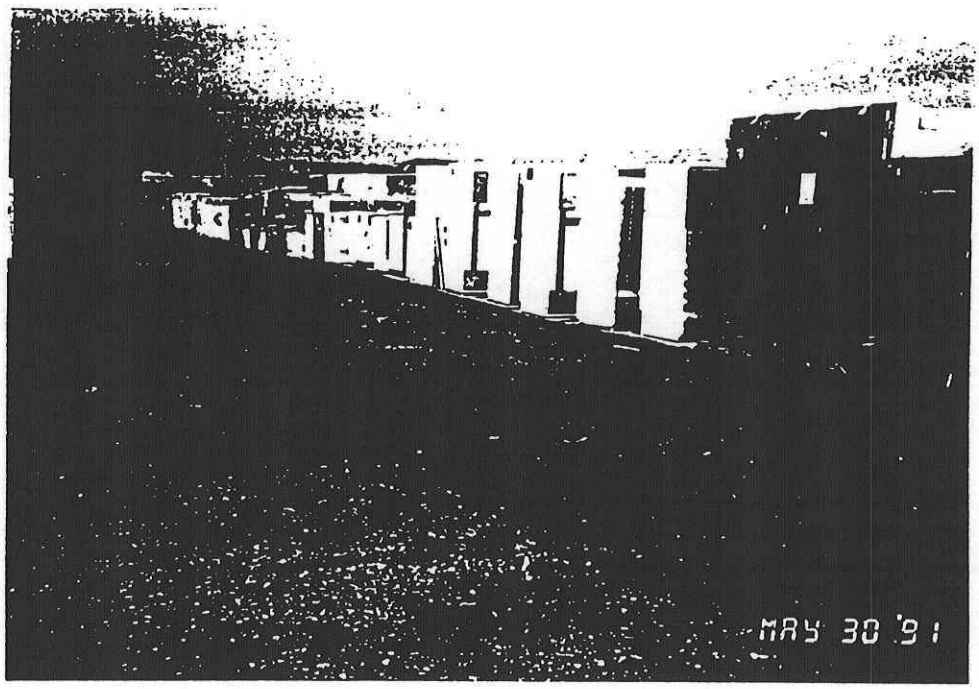
Evaluation Form
SWMU/Area of Concern
Number 264

Name: DRMO Storage Yard #3

Location: North 3rd St and East Marine Way

Size: Approximately 3 acres

Date of Site Visit: 02 May 1991



Period of Operation

Currently active

Evaluation Form
SWMU/Area of Concern
Number 264

Unit Characteristics

DRMO Storage Yard #3 is located on the southeast corner of North 3rd Street and East Marine Way. The entrance to the storage yard is located at the southern corner of the site. The storage yard is used to store miscellaneous items and equipment including tires, automobiles, refrigerators and other appliances. The entire area of the storage yard is unpaved with a thin layer of gravel over most of the surface. There is little or no vegetation within the lot. The perimeter of the lot is enclosed with chain-link fencing. The storage yard is bordered on the southwest side by North 3rd Street and on the remaining sides by unpaved areas.

Several areas of darkly stained soil were observed in the storage yard. The most significant stain was located in the central portion of the storage yard near the jeep storage area. Other stains were observed in the storage yard at the north corner, the west corner near the tire storage area, and the southeast side near the appliance storage area. The stains appeared to be crankcase oil.

Waste Characteristics

Waste oil

Possible Migration Pathways

Surface Soil

Evidence of Release

Areas of stained soil observed throughout the storage yard

Exposure Potential

Authorized on-Station personnel

Recommendations

A sampling visit is recommended for this storage yard.

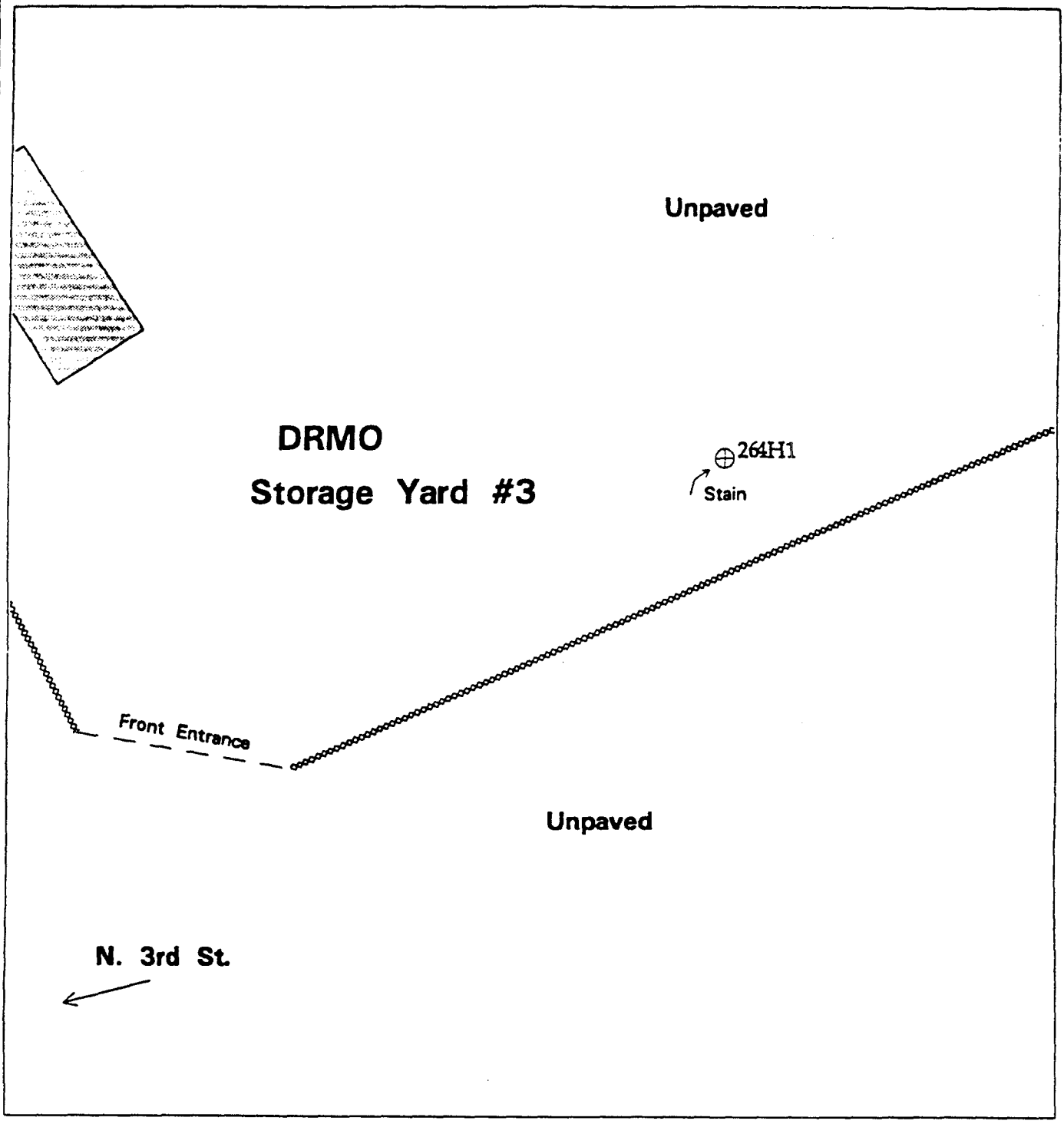


Figure 80 Sample Location Map

SWMU/AOC Number and Type:
264 - Equipment Storage Area

Boring Location and Number:

- ⊕ 123H4 5′ Deep Boring
- ◒ 123B4 25′ Deep Boring
- ▲ 123A4 60′ Long, Angle Boring

Features:

- Building
- Concrete
- Fence
- Railroad

Scale

0 10 20 40 Feet

MCAS El Toro
RCRA Facility Assessment

MCAS EL TORO RCRA FACILITY ASSESSMENT – SAMPLING VISIT RESULTS

SWMU/AOC NUMBER	SWMU/AOC TYPE (FIGURE)	BORING NUMBER	SAMPLE DEPTH (FEET)	ANALYTICAL TEST RESULTS							RECOMMENDATIONS	
				TPH (mg/kg)	TFH (mg/kg)		VOCs (ug/kg)	SVOCs (ug/kg)	PESTICIDES/PCBs (ug/kg)	METALS (mg/kg)	Action	Rationale
					Gasoline	Diesel						
264	Equipment Storage Area (80, 81)	H1	2	33	NA	NA	Toluene-1 J	NA	NA	NA	NFA	TPH/TFH < 1000 ppm VOCs < CRDL
			5	47	NA	NA	PCE-1 J Xylene-2 J	NA	NA	NA		
		H2	2	65	NA	NA	ND	NA	NA	NA		CRDL - Contract Required Detection Limit
			5	ND	NA	NA	ND	NA	NA	NA		
		H3	2	34	NA	NA	Methylene Chloride-5 BJ * Acetone-9 BJ * Toluene-1 J	NA	NA	NA		
			2 (Duplicate)	490	NA	NA	Methylene Chloride-5 BJ * Acetone-13 B *	NA	NA	NA		
			5	290	NA	NA	Acetone-10 BJ * Toluene-1 J	NA	NA	NA		
		H4	2	ND	NA	NA	Methylene Chloride-4 BJ * Acetone-5 BJ *	NA	NA	NA		
			5	ND	NA	NA	Methylene Chloride-5 BJ * Acetone-8 BJ * 2-Butanone-3 J	NA	NA	NA		

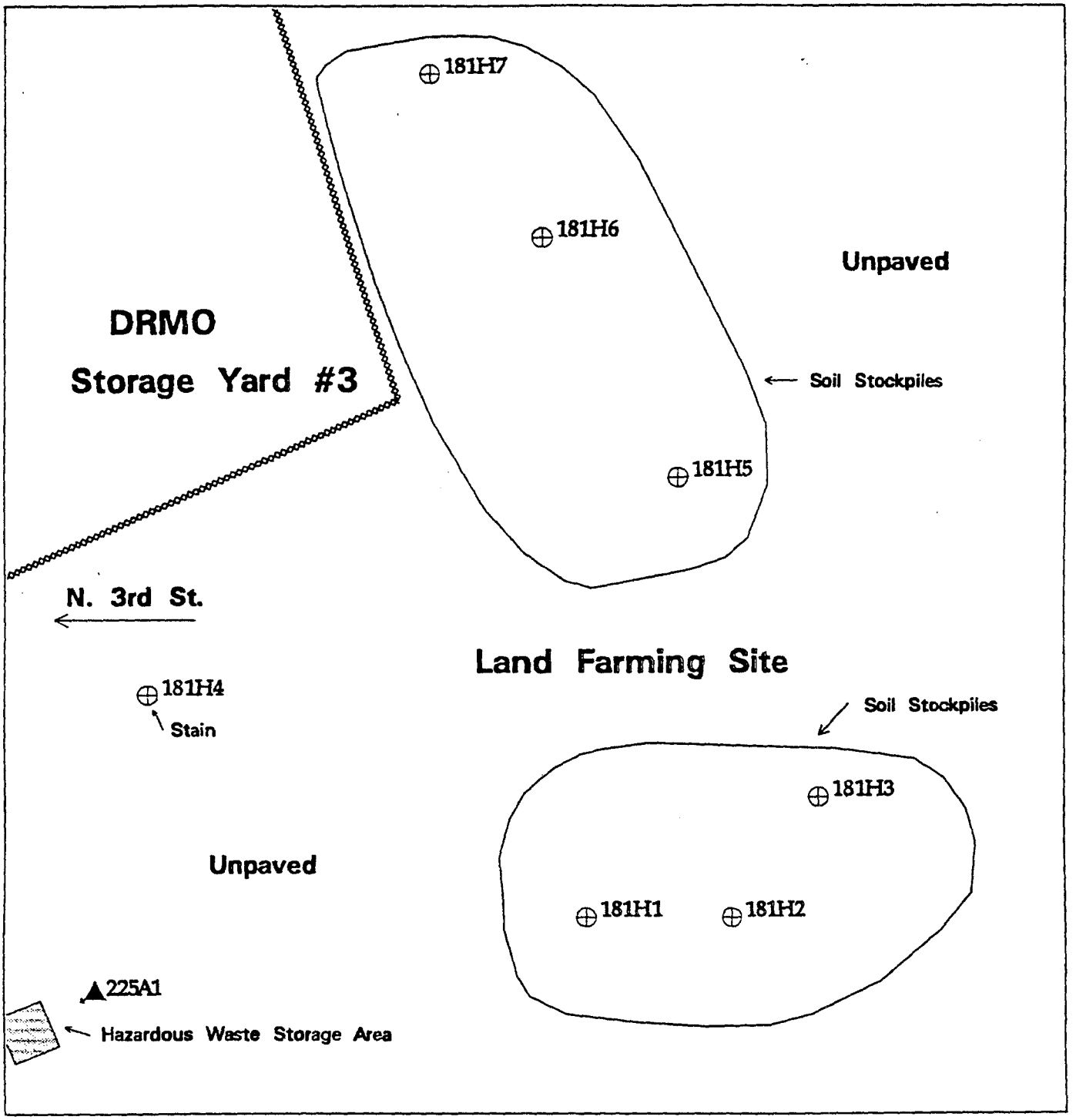


Figure 56 Sample Location Map

Boring Location and Number:

- 123H4 5' Deep Boring
- 123B4 25' Deep Boring
- 123A4 60' Long, Angle Boring

Features:

- Building
- Concrete
- Fence
- Railroad

Scale

0 20 40 80 Feet

SWMU/AOC Number and Type:

181 - Landfarming Area

225 - Hazardous Waste Storage Area

MCAS El Toro
RCRA Facility Assessment

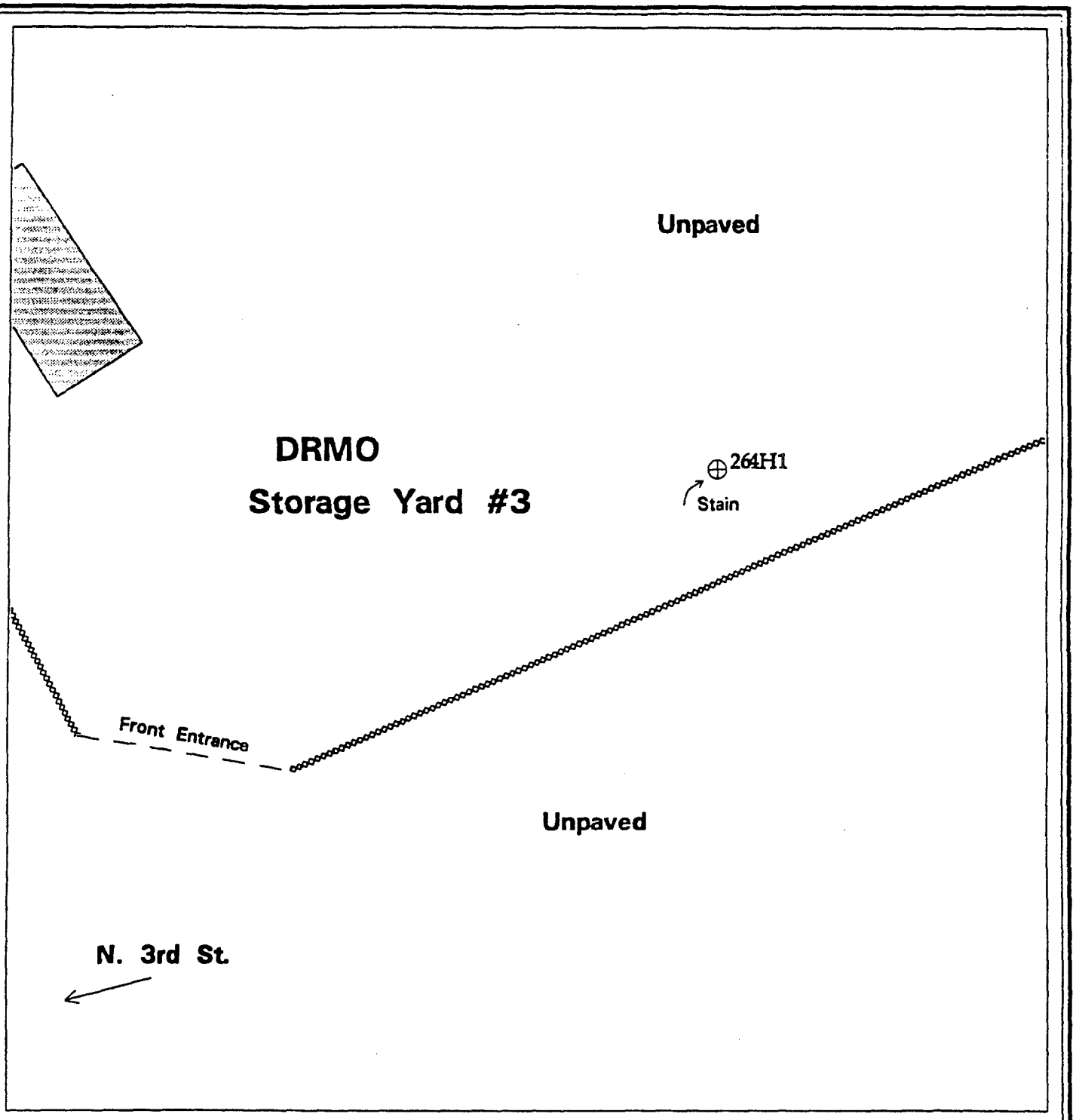


Figure 80 Sample Location Map

SWMU/AOC Number and Type:
264 - Equipment Storage Area

Boring Location and Number:

- 123H4 5′ Deep Boring
- 123B4 25′ Deep Boring
- 123A4 60′ Long, Angle Boring

Features:

- Building
- Concrete
- Fence
- Railroad

Scale

0 10 20 40 Feet

MCAS El Toro
RCRA Facility Assessment

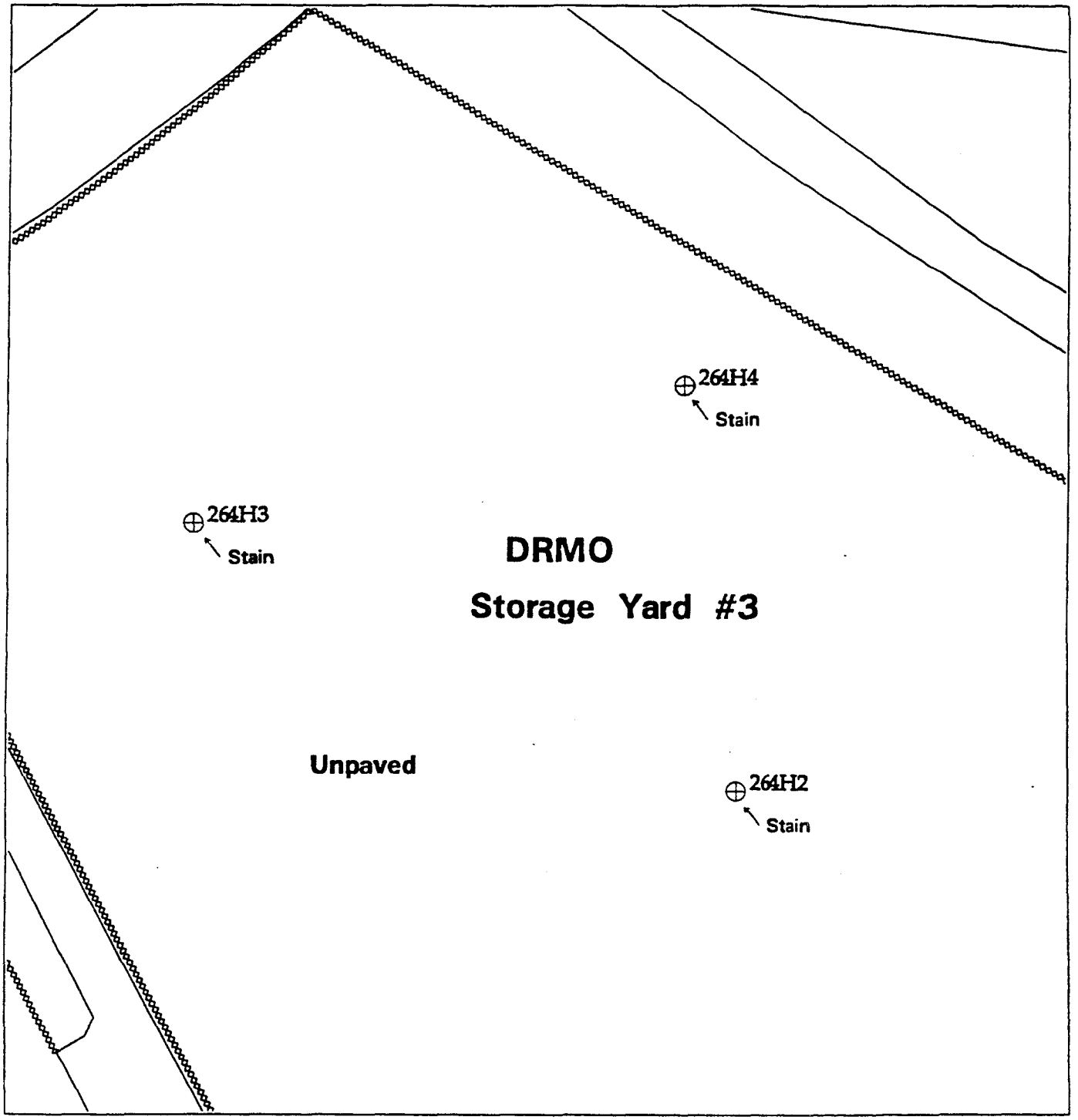


Figure 81 Sample Location Map

SWMU/AOC Number and Type:
264 - Equipment Storage Area

Boring Location and Number:

- 123H4 5' Deep Boring
- 123B4 25' Deep Boring
- 123A4 60' Long, Angle Boring

Features:

- Building
- Concrete
- Fence
- Railroad

Scale

0 20 40 80 Feet

MCAS El Toro
RCRA Facility Assessment

PROJECT NUMBER	BORING NUMBER
LA070022.S0.10	225A-1 SHEET 1 OF 2

SOIL BORING LOG

PROJECT NAVY CLEAN RCRA FACILITY ASSESSMENT LOCATION MCAS-EL TORO

ELEVATION _____ DRILLING CONTRACTOR BEYLIK DRILLING, INC., LA HABRA, CALIFORNIA

DRILLING METHOD AND EQUIPMENT HSA, 3-1/4" ID, 6-1/2" OD, GUS PECH BRAT-22

WATER LEVELS _____ START 10/19/92 FINISH 10/19/92 LOGGER K. HUCKRIEDE

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
						Start drilling at 0915
5.0					ELASTIC SILT WITH SAND (MH), brown, moist.	
10.0	10.0					
	12.0	1-MC	1.5	30-10-17-37	POORLY GRADED SAND (SP), light brown, dry, dense, fine grained.	Headspace reading 2 ppm on OVA
	14.0	1A-MC	1.4	33-16-40-53	SILT WITH SAND (ML), brown, moist, hard, fine to medium sand.	
15.0						
	20.0					
20.0	22.0	2-MC	1.5	30-36-41-111	POORLY GRADED SAND WITH SILT (SP-SM), brown, very dense, fine to medium grains, occasional nodules of gray clay.	Headspace reading 1 ppm on OVA.
25.0						
	30.0					
30.0	32.0	3-MC	1.5	41-43-34-40	POORLY GRADED SAND (SP), brown, moist, dense, fine grains, occasional thin layers of gray clay.	Headspace reading 0.5 ppm on OVA

PROJECT NUMBER	BORING NUMBER
140700.22.SS.10	225A-1 SHEET 2 OF 2

SOIL BORING LOG

PROJECT NAVY CLEAN RCRA FACILITY ASSESSMENT LOCATION MCAS-EL TORO

ELEVATION _____ DRILLING CONTRACTOR BEYLIK DRILLING, INC., LA HABRA, CALIFORNIA

DRILLING METHOD AND EQUIPMENT HSA, 3-1/4" ID, 6-1/2" OD, GUS PECH BRAT-22

WATER LEVELS _____ START 10/19/92 FINISH 10/19/92 LOGGER K. HUCKRIEDE

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE TYPE AND NUMBER	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION	COMMENTS
40.0	40.0					
	42.0	4-MC	1.6	34-32-39-47	POORLY GRADED SAND (SP), brown, moist, very dense, fine grains, trace silt.	Headspace reading 0.2 ppm on OVA.
45.0						
50.0	50.0					
	52.0	5-MC	1.5	47-91-90-101	POORLY GRADED SAND WITH SILT (SP-SM), brown, moist, very dense, fine to coarse grains.	Headspace reading 1.5 ppm on OVA.
55.0						
60.0	60.0					
	62.0	6-MC		32-60-106-120	POORLY GRADED SAND (SP), brown, dry to moist, very dense, fine grains, quartz particles up to 1 mm in diameter.	Headspace reading on OVA similar to background.
					Total Depth at 62.0 Feet.	
65.0						

Appendix D
Excerpts from Station's SWMPP

STORM WATER POLLUTION PREVENTION PLAN

(SWPPP)

FOR

MARINE CORPS AIR STATION EL TORO

EL TORO, CALIFORNIA

NOTE
ANNOTATION MADE BY THE WRITER OF THIS REPORT ARE IDENTIFIED WITH AN ARRROW

EXCERPTS

CONTRACT NO. N68711-96-D-2059
DELIVERY ORDER NO. 0002

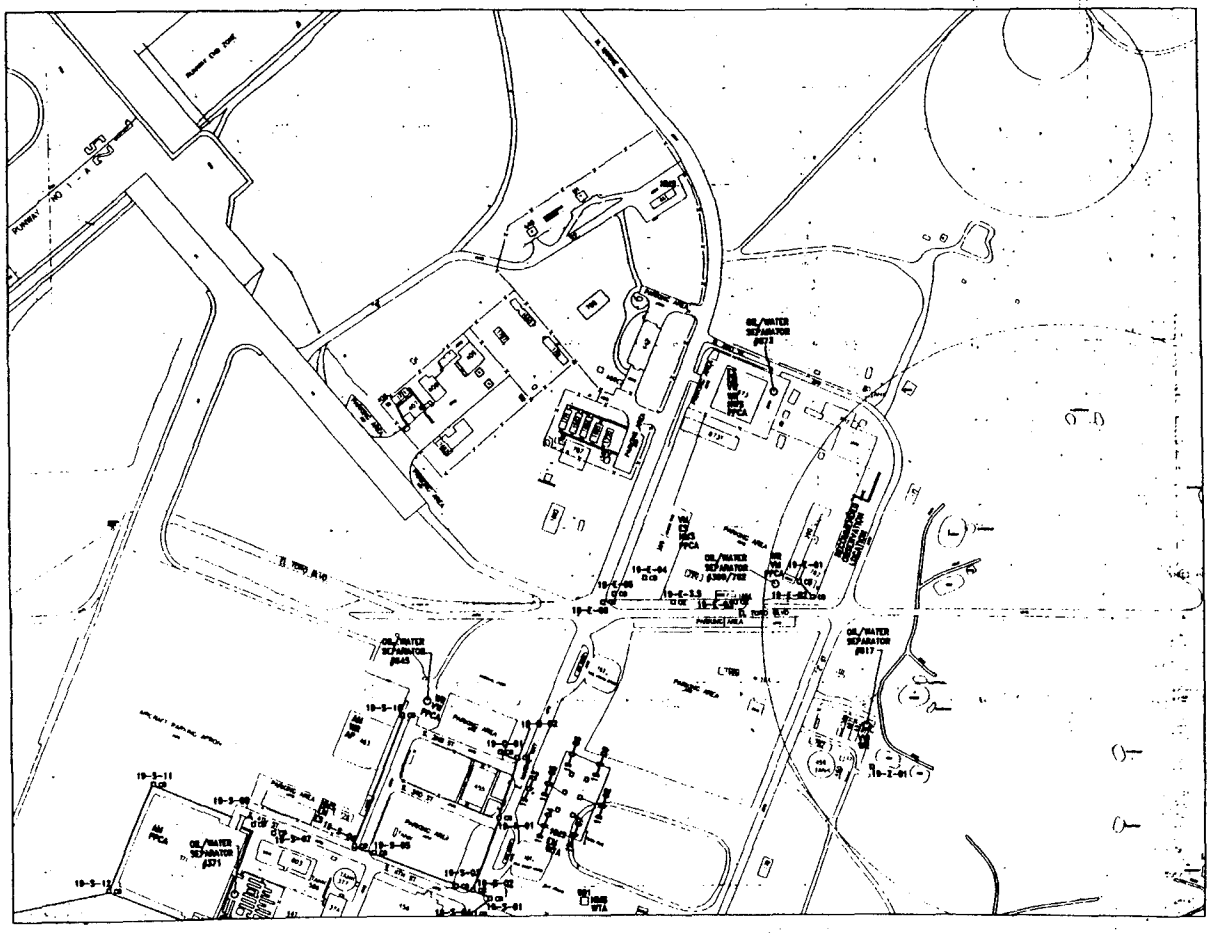
VOLUME 1

JULY, 1997

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

7. MATERIALS INVENTORY

Based on the information collected during the field survey conducted to gather facility information for the preparation of the SWPPP, and information kept by MCAS El Toro Environmental Department, a materials inventory for MCAS El Toro is presented in Table 7-1. This information can be used in tracing storm water pollution, if it is detected, through the storm water conveyance system to likely source facilities. Materials inventory data can also be used as an aid in developing SPCC plans and management of storm water pollution prevention.



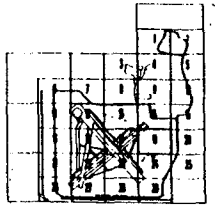
"MCAS" EL TORO - AREA 19

SCALE: 1"=150'-0"

REVISIONS				
SYMBOL	DESCRIPTION	PREP'D BY	DATE	APPROVED

LEGENDS

AST	-	ABOVE GROUND STORAGE TANK
AM	-	AIRCRAFT MAINTENANCE
AW	-	AIRCRAFT WASHING
AF	-	AIRCRAFT FUELING
AP	-	AIRCRAFT PAINTING
CB	-	CATCH BASIN
ES	-	EQUIPMENT STORAGE
EM	-	EQUIPMENT MAINTENANCE
HMS	-	HAZARDOUS MATERIAL STORAGE
HWS	-	HAZARDOUS WASTE STORAGE
HWTA	-	HAZARDOUS WASTE TRANSFER AREA
MH	-	MANHOLE
OWS	-	OIL/WATER SEPARATOR
PCA	-	POLLUTANT CONTACT AREA
PPCA	-	POTENTIAL POLLUTANT CONTACT AREA
UGT	-	UNDERGROUND STORAGE TANK
VP	-	VEHICLE PAINTING
VF	-	VEHICLE FUELING
VM	-	VEHICLE MAINTENANCE
VW	-	VEHICLE WASHING
WR	-	WASH RACK
WTA	-	WASTE TRANSFER AREA



KEY PLAN

SCALE: NONE

1"=150'-0" 150 0 150 300 SCALE FEET

IF SHEET IS LESS THAN 22X34 IT IS A REDUCED PRINT SCALE ACCORDINGLY

IEM
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

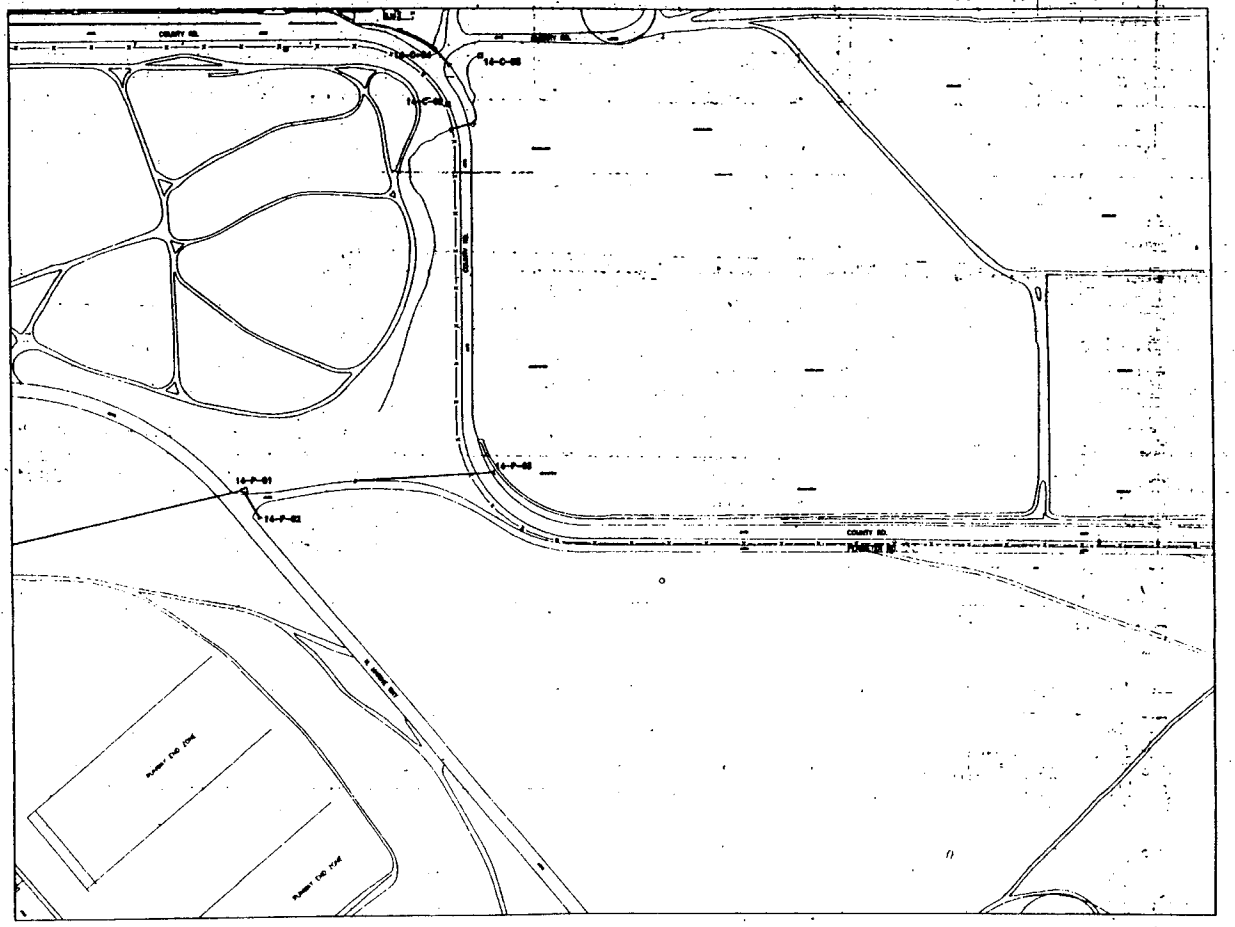
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
EL TORO CALIFORNIA
MARINE CORPS AIR STATION EL TORO, CA.

"MCAS" EL TORO

AREA 19 - STORM DRAINS

SIZE D

STWTRAREA19.PDF



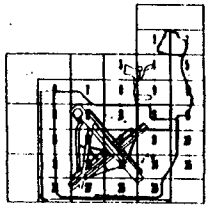
"MCAS" EL TORO - AREA 14

SCALE: 1"=150'-0"

REVISIONS				
SYMBOL	DESCRIPTION	PREP'D BY	DATE	APPROVED

LEGENDS

AST	-	ABOVE GROUND STORAGE TANK
AM	-	AIRCRAFT MAINTENANCE
AW	-	AIRCRAFT WASHING
AF	-	AIRCRAFT FUELING
AP	-	AIRCRAFT PAINTING
CB	-	CATCH BASIN
ES	-	EQUIPMENT STORAGE
EM	-	EQUIPMENT MAINTENANCE
HMS	-	HAZARDOUS MATERIAL STORAGE
HWS	-	HAZARDOUS WASTE STORAGE
HWTA	-	HAZARDOUS WASTE TRANSFER AREA
MH	-	MANHOLE
OWS	-	OIL/WATER SEPARATOR
PCA	-	POLLUTANT CONTACT AREA
PPCA	-	POTENTIAL POLLUTANT CONTACT AREA
UST	-	UNDERGROUND STORAGE TANK
VP	-	VEHICLE PAINTING
VF	-	VEHICLE FUELING
VM	-	VEHICLE MAINTENANCE
VW	-	VEHICLE WASHING
WR	-	WASH RACK
WTA	-	WASTE TRANSFER AREA



KEY PLAN

SCALE: NONE

1"=150'-0" SCALE 150 0 150 300 FEET

IF SHEET IS LESS THAN 22X34 IT IS A REDUCED PRINT SCALE ACCORDINGLY

IEM
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
SAN DIEGO, CALIFORNIA

"MCAS" EL TORO

AREA 14 - STORM DRAINS

SIZE D

STWTRARFA14.PDF

TABLE 7-1

MCAS EL TORO MATERIALS INVENTORY

BLDG #	BASIN	BUILDING DESCRIPTION	TENANT	Concern Level	TRADE/COMMON NAME	MAX. DAY	AVE. Day	CONT.
		Shop						
673	10	Ground Support Equipment Shop	MALS-16	Concern	Grease	N/A	N/A	N/A
673	10	Ground Support Equipment Shop	MALS-16	Concern	Lubricating Oil	N/A	N/A	N/A
674	01	Oil/Water Separator	Installation	Concern	N/A			
675	02	Oil/Water Separator	Installation	Concern	N/A			
676	30	Community Storage Misc.	Housing	Concern	N/A			
693	26	OFT (KC-130)	Training	Concern	N/A	N/A	N/A	55 gal
713	30	Haz/Flam Storehouse	MAG-11	Concern	Aerosol	N/A	N/A	N/A
713	30	Haz/Flam Storehouse	MAG-11	Concern	Cleaner	N/A	N/A	N/A
713	30	Haz/Flam Storehouse	MAG-11	Concern	Clorox Bleach	N/A	N/A	N/A
713	30	Haz/Flam Storehouse	MAG-11	Concern	Insecticide	N/A	N/A	N/A
713	30	Haz/Flam Storehouse	MAG-11	Concern	Lacquer	N/A	N/A	N/A
713	30	Haz/Flam Storehouse	MAG-11	Concern	Paints	N/A	N/A	N/A
713	30	Haz/Flam Storehouse	MAG-11	Concern	Thinner	N/A	N/A	N/A
716	07	Hush House	MALS-11	Concern	N/A			
717	01	Crash, Fire, Rescue	Sta/G-3	Concern	Aerosol Paints	N/A	N/A	N/A

TABLE 7-1

MCAS EL TORO MATERIALS INVENTORY

BLDG #	BASIN	BUILDING DESCRIPTION	TENANT	Concern Level	TRADE/COMMON NAME	MAX. DAY	AVE. Day	CONT.
800	02	Vehicle Maint Facility	MWSS-373 HM Storage	Concern	Lubricating oil, 80/90W	110 gal	25 gal	55 gal
800	02	Vehicle Maint Facility	MWSS-373 HM Storage	Concern	Lubricating oil, DEXRON ATF	200 gal	50 gal	5 gal
800	02	Vehicle Maint Facility	MWSS-373 HM Storage	Concern	Sulfuric Acid	500 gal	50 gal	1 gal
802	02	Washrack	MWSS-373	Concern	N/A			
803	02	Fuel Islands	MWSS-373	Concern	Diesel Fuel No. 2	N/A	N/A	N/A
804	02	Fuel Islands	MWSS-373	Concern	Diesel Fuel No. 2	N/A	N/A	N/A
817	37	Vehicle Wash Bldg	MWR-Rec	Concern	N/A			
831	37	Cryogenics	MALS-11	Concern	N/A			
845	37	Washrack Utility Bldg	VMFAT-101	Concern	N/A			
850	07	Crash Crew Burn Pit	Sta/G-3	Concern	Jet Fuel JP-5	N/A	N/A	N/A
850 A	07	UST-MWR burn pit	Sta/G-3	Concern	Jet Fuel JP-5	5000 gal	2500 gal	5000 gal
850 B	07	UST-MWR burn pit	Sta/G-3	Concern	Jet Fuel JP-5	5000 gal	2500 gal	5000 gal
851	07	Crash Crew Burn Pit	Sta/G-3	Concern	Jet Fuel JP-5	N/A	N/A	N/A
855	37	Electrical Comm Maint Shop	MALS-11	Concern	1,1,1 Trichloromethane	N/A	N/A	N/A
855	37	Electrical Comm Maint	MALS-11	Concern	Acetone	N/A	N/A	N/A

→ Bldg. 845 FORMER LOX Facility

Appendix E
Excerpts from Station's HM/HWMP

Final

Marine Corps Air Station El Toro
Hazardous Material/Hazardous Waste
Management Plan

August 1994

NOTE
ANNOTATION MADE BY THE WRITER OF THIS REPORT ARE IDENTIFIED WITH AN ARRROW

EXCERPTS

Prepared for:

Southwest Division Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

Prepared by:

Science Applications International Corporation
Engineering Sciences Division
10260 Campus Point Drive
San Diego, CA 92121

Contract No. N68711-92-D-4658
Delivery Order No. 0004

NOTE:
NO HAZARDOUS MATERIALS OR WASTE STORAGE AREAS ARE IDENTIFIED AT ANOMALY AREA 5, HOWEVER TAA 772 WHICH HAS BEEN INACTIVE FOR SEVERAL YEARS IS LOCATED ADJACENT TO ANOMALY AREA 5.

EXCERPTS

Hazardous Waste Accumulation Point Summary		
Unit	Bldg #	Coordinates
Aero Club	10	R5
Armory	744	O2
Auto Hobby Shop	626	M3
CSSD-14	388	U8
Environmental Above Ground Storage Tank	n/a	U6
FMD Shops, Bldg 1601	370	T6
Fuels Division	314	U9
H&HS 38	22	R4
MACG-38 MWCS 38	HGR 5	R4
MAG-46	51	O4
MAG-46 Fixed Wing	296	T9
MAG-46 Helo Mals-46	295	S8
MALS-11 Air Frames	130	M9
MALS-11 Avionics	856	Q12
MALS-11 Cryogenics (ALSS)	636	R12
MALS-11 GSE North	392	M9
MALS-11 Ordinance	673	P12
MALS-11 Power Plant	658	N10
MALS-11 Power Plant	634	N9
MALS-11 Supply	441	P12
Maytag Aircraft Corp	779	N10
MOD Team	115	N9
Motor Pool (G-4), Bldg 770	386	T7
MWHS-3	7	Q5
MWR Auto #1	651	O2
MWR Golf Course	390	P13
MWSS-Utilities	31	S4
MWSS-373 HQ	800	U10
MWSS-373 Refuelers	671	U9
SOMS HQ	269	N5
SOMS Maintenance	HGR 2	O4
SOMS Recovery		
Supply	320	U7
VMFA (AW)-121	462	R11
VMFA (AW) 225	696	N9
VMFA (AW)-242	461	R11
VMFAT-101	371	Q10
VMFA-323	606	N8
VMGR-352	297	T8
VFMA-314	605	N7

▲ HAZARDOUS MATERIALS STORAGE

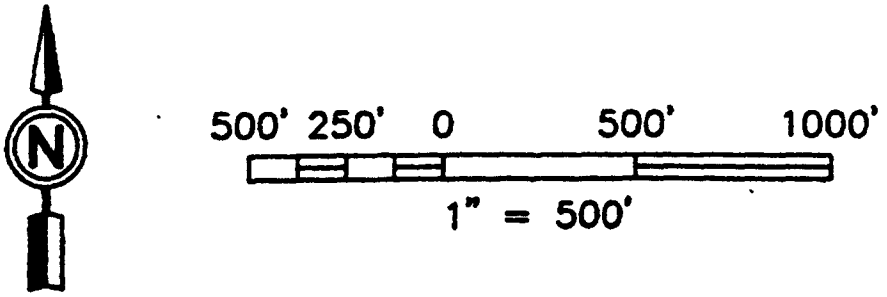
● HAZARDOUS WASTE ACCUMULATION POINT

■ ONE YEAR PERMITTED HAZARDOUS WASTE STORAGE AREA

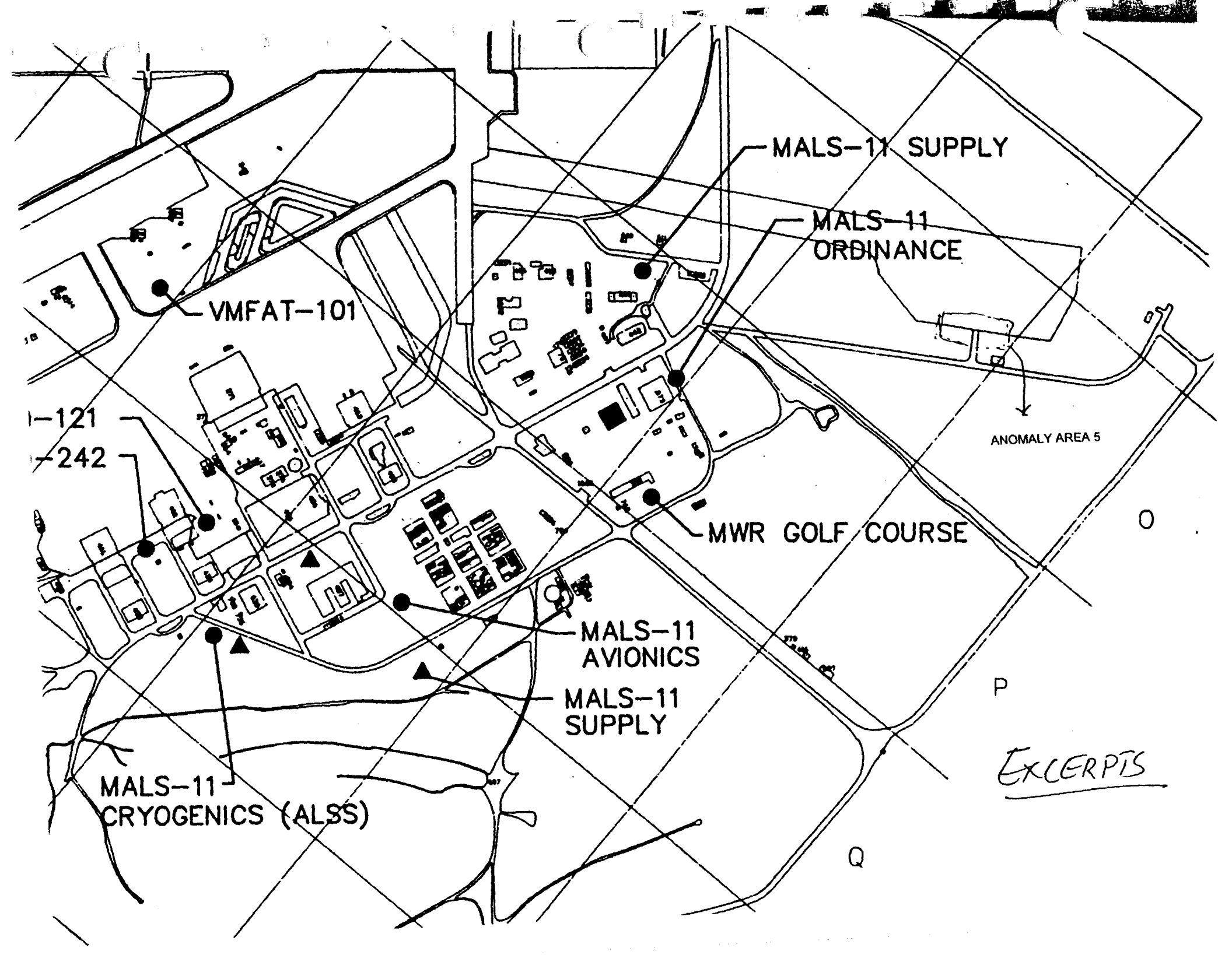
MCAS El Toro
Santa Ana, California

HAZARDOUS WASTE ACCUMULATION POINTS AND HAZARDOUS MATERIAL STORAGE LOCATIONS

NOVEMBER 5, 1993



Science Applications International Corporation
An Employee-Owned Company


MALS-11 SUPPLY
MALS-11 ORDINANCE
VMFAT-101
ANOMALY AREA 5
MWR GOLF COURSE
MALS-11 AVIONICS
MALS-11 SUPPLY
MALS-11 CRYOGENICS (ALSS)
O
P
Q
EXCERPTS

Appendix F
Excerpts from CDM Groundwater Report

EXCERPTS

FINAL

GROUNDWATER MONITORING REPORT
JULY 1997 SAMPLING ROUND

GROUNDWATER MONITORING PROGRAM
FOR
MARINE CORPS AIR STATION EL TORO
EL TORO, CALIFORNIA

Contract No. N68711-96-D-2029
Delivery Order 005

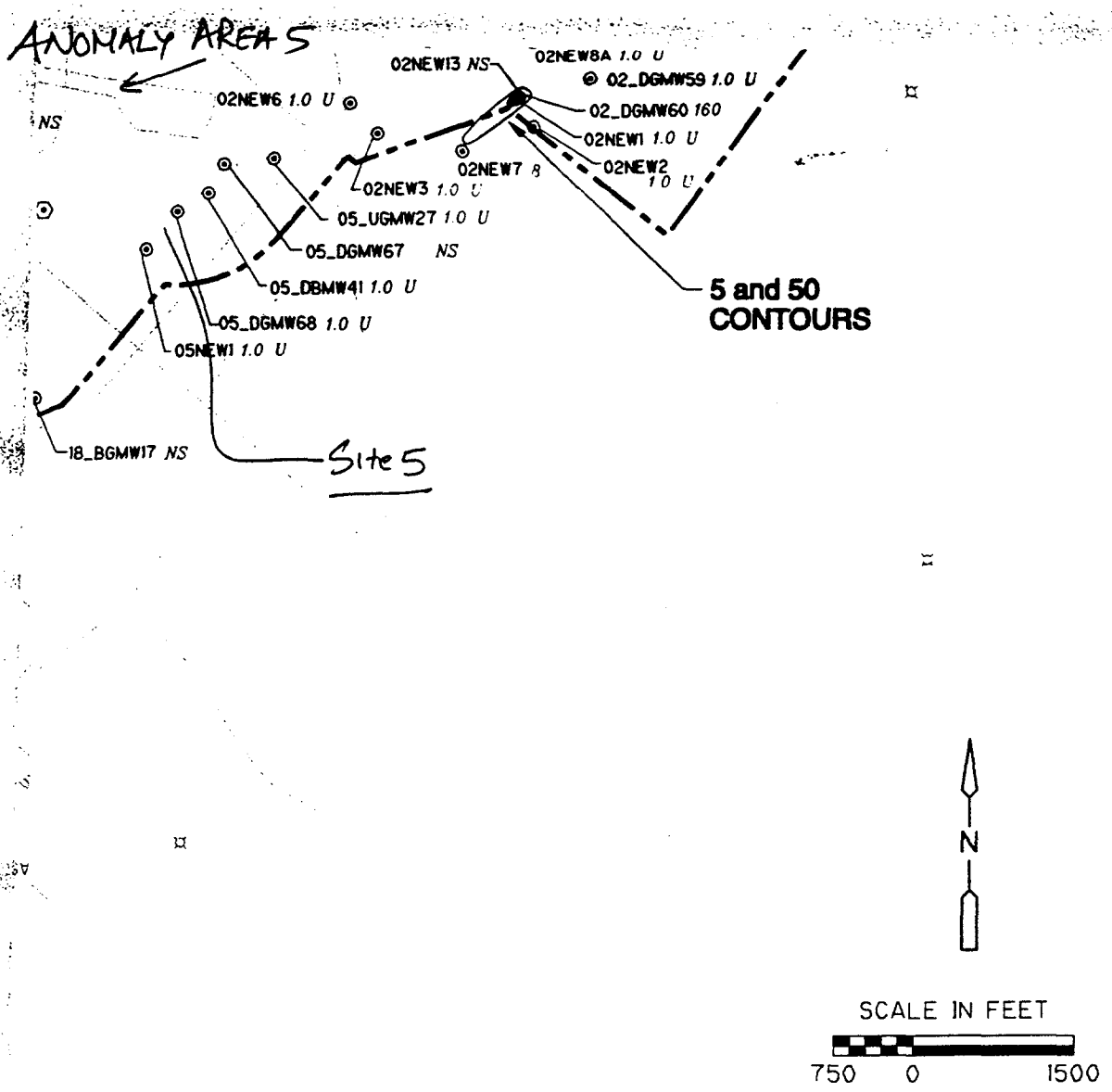
Prepared for:

SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 Pacific Highway
San Diego, California 92132

Prepared by:

CDM FEDERAL PROGRAMS CORPORATION
3760 Convoy Street, Suite 210
San Diego, California 92111

October 1997



Marine Corps Air Station, El Toro, California

TCE Concentrations in the Shallow Groundwater Unit

July 1997

MCAS El Toro Groundwater Monitoring Report

CDM Federal Programs Corporation
A Subsidiary of Camp Dresser & McKee Inc.

Figure 4-1

Table 2-1: GROUNDWATER SAMPLING AND ANALYSES
July 1997 Sampling Round, MCAS El Toro Groundwater Monitoring

Station ID	Date Sampled	ANALYSES					
		VOCs	Gross Alpha Gross Beta	Selected Radionuclides	Metals	General Chemistry	Treatability Parameters
01MW101	11-Jul-97	1	1	1	1	1	
01MW102	9-Jul-97	1	1	1	1	1	
01MW201	9-Jul-97	1	1	1	1	1	
02_DGMW59	3-Jul-97	1	1	1	1	1	
02_DGMW60	1-Jul-97	1	1	1	1	1	
02_DGMW61	2-Jul-97	1	1	1	1	1	
02_UGMW25	2-Jul-97	1	1	1	1	1	
02NEW1	1-Jul-97	1	1	1	1	1	
02NEW2	3-Jul-97	1	1	1	1	1	
02NEW3	2-Jul-97	1	1	1	1	1	
02NEW6	2-Jul-97	1	1	1	1	1	
02NEW7	11-Jul-97	1	1	1	1	1	
02NEW8A	2-Jul-97	1	1	1	1	1	
02NEW11	8-Jul-97	1	1	1	1	1	
02NEW12	30-Jun-97	1	1	1	1	1	
03_DBMW39	8-Jul-97	1	1	1	1	1	
03_DGMW64	30-Jun-97	1	1	1	1	1	
03_DGMW65X	30-Jun-97	1	1	1	1	1	
03_UGMW26	1-Jul-97	1	1	1	1	1	
04_DBMW40	30-Jun-97	1	1	1	1	1	
04_DGMW66	1-Jul-97	1	1	1	1	1	
04_UGMW63	Not Sampled						
05_DBMW41	8-Jul-97	1	1	1	1	1	
05_DGMW67	Not Sampled						
05_DGMW68	1-Jul-97	1	1	1	1	1	
05_UGMW27	9-Jul-97	1	1	1	1	1	
05NEW1	9-Jul-97	1	1	1	1	1	
07_DBMW43	3-Jul-97	1				1	
07_DGMW91	9-Jul-97	1				1	
07_DBMW100	10-Jul-97	1				1	
08_DGMW74	7-Jul-97	1				1	1
08_UGMW29	7-Jul-97	1				1	
09_DBMW45	8-Jul-97	1				1	
09_DGMW75	8-Jul-97	1				1	
10_DGMW77	10-Jul-97	1				1	

Table 2-1: GROUNDWATER SAMPLING AND ANALYSES
July 1997 Sampling Round, MCAS El Toro Groundwater Monitoring

Station ID	Date Sampled	ANALYSES					
		VOCs	Gross Alpha Gross Beta	Selected Radionuclides	Metals	General Chemistry	Treatability Parameters
13_DGMW78	9-Jul-97	1				1	
14_DBMW50	9-Jul-97	1				1	
14_DGMW79	9-Jul-97	1				1	
15_DBMW51	2-Jul-97	1				1	
16_DBMW52	11-Jul-97	1				1	
16_DGMW81	2-Jul-97	1				1	
16_UGMW33	10-Jul-97	1				1	
17_DGMW82	Not Sampled						
17NEW1	30-Jun-97	1				1	
17NEW2	30-Jun-97	1				1	
18_BGMW03C	8-Jul-97	1				1	
18_BGMW03E	8-Jul-97	1				1	1
18_BGMW04B	9-Jul-97	1				1	1
18_BGMW05D	7-Jul-97	1				1	1
18_BGMW101	9-Jul-97	1				1	
18_DW135	7-Jul-97	1				1	1
18_MCAS01-3	2-Jul-97	1				1	
18_MCAS01-4	2-Jul-97	1				1	
18_MCAS01-5	1-Jul-97	1				1	
18_MCAS02-3	2-Jul-97	1				1	
18_MCAS02-4	2-Jul-97	1				1	
18_MCAS02-5	2-Jul-97	1				1	
18_MCAS03-1	1-Jul-97	1				1	
18_MCAS03-2	1-Jul-97	1				1	
18_MCAS03-3	1-Jul-97	1				1	
18_MCAS04	14-Jul-97	1				1	
18_MCAS06	15-Jul-97	1				1	
18_MCAS07-3	10-Jul-97	1				1	
18_MCAS07-4	10-Jul-97	1				1	
18_MCAS07-5	10-Jul-97	1				1	

Table 2-1: GROUNDWATER SAMPLING AND ANALYSES
July 1997 Sampling Round, MCAS El Toro Groundwater Monitoring

Station ID	Date Sampled	ANALYSES					
		VOCs	Gross Alpha Gross Beta	Selected Radionuclides	Metals	General Chemistry	Treatability Parameters
18_MCAS08	14-Jul-97	1				1	
18_MCAS09	14-Jul-97	1				1	
18_MCAS10	15-Jul-97	1				1	
18_PS2	7-Jul-97	1				1	1
18_PS3	11-Jul-97	1				1	1
18_PS5	11-Jul-97	1				1	1
18_PS6	1-Jul-97	1				1	1
21_UGMW37	9-Jul-97	1				1	
22_DBMW47	8-Jul-97	1				1	
24NEW1	10-Jul-97	1				1	1
24NEW4	8-Jul-97	1				1	1
24NEW5	8-Jul-97	1				1	1
24NEW6	10-Jul-97	1				1	1
24NEW7	2-Jul-97	1				1	1
24NEW8	2-Jul-97	1				1	1
Total Samples		**77**	**25**	**25**	**25**	**77**	**15**

1. Analytical Parameters and Methods:

a) Volatile organic compounds (VOCs) plus Freon 113 by CLP SOW Version OLM03.0 for VOCs.

b) Gross Alpha by SM7110C/Gross Beta by EPA Method 900.

c) Selected Radionuclides include: Radium-226 by EPA Method 903.1, Radium-228 by EPA Method 904.0, Strontium-89 by EPA Method 905.0, and Cesium-134 by EPA Method 901.1.

d) Metals (Target Analyte List) by CLP SOW Version ILM03.0 for Metals (filtered samples).

e) General Chemistry includes: Nitrate/Nitrite (as N), Chloride, Sulfate by EPA Method 300.0; Carbonate and Bicarbonate by SM2320B; Alkalinity by EPA Method 310.1, and Total Dissolved Solids (TDS) by EPA Method 160.1.

f) Treatability Parameters include: Chemical Oxygen Demand (COD) by EPA Method 410.4, Total Organic Carbon (TOC) by EPA Method 415.1, Ammonia-Nitrogen by EPA Method 350.2, Phosphate by EPA Method 300.0, Silica (dissolved) by EPA Method 370.1, Strontium-90 by EPA Method 905.0, Radon by EPA Method 913.0, Total Suspended Solids (TSS) by EPA Method 160.2, and Color by EPA Method 110.2.

2. Wells from which duplicate samples were collected:

01MW101	05UGMW27	09DBMW45	21UGMW37
01MW102	05NEW1	09DGMW75	22DBMW47
01MW202	09DBMW45	15DBMW51	24NEW4
			24NEW7

3. Samples were not collected at the following wells:

04UGMW63	: Pump failed.
05DGMW67	: Controller box cut out, pump impeller was overheated.
17DGMW82	: Pump failed.

4. Wells 01 MW101, 01 MW102, and 01 MW201 were resampled for VOCs on September 12, 1997 (see Section 2.2).

Table B-1: WATER LEVEL MEASUREMENTS AND GROUNDWATER ELEVATIONS
MCAS El Toro Groundwater Monitoring Program

STATION ID	WELL TYPE	SCREEN INTERVAL (feet BGS)	TOP OF CASING (feet MSL)	MEASUREMENT DATE	DEPTH TO WATER (feet TOC)	WATER LEVEL ELEVATION (feet MSL)	CHANGE FROM PRIOR (+ or - feet)
04_UGMW63	WT	235 - 275	404.11	11-Jan-96	212.50	191.61	
			404.11	30-Jan-96	212.31	191.80	0.19
			404.11	28-Feb-96	211.72	192.39	0.59
			404.11	27-Mar-96	211.22	192.89	0.50
			404.11	31-Oct-96	210.14	193.97	1.08
			404.11	26-Nov-96	209.82	194.29	0.32
			404.11	26-Dec-96	209.30	194.81	0.52
			404.11	24-Jan-97	209.16	194.95	0.14
			404.11	26-Feb-97	207.80	196.31	1.36
			404.11	27-Mar-97	207.80	196.31	0.00
			404.11	26-Jun-97	208.67	195.44	-0.87
			404.11	11-Aug-97	208.64	195.47	0.03
05_DBMW41	WT	182 - 222	425.00	12-Jan-96	163.12	261.88	
			425.00	7-Feb-96	162.82	262.18	0.30
			425.00	28-Feb-96	162.82	262.18	0.00
			425.00	27-Mar-96	162.45	262.55	0.37
			425.00	31-Oct-96	161.60	263.40	0.85
			425.00	26-Nov-96	161.16	263.84	0.44
			425.00	26-Dec-96	161.12	263.88	0.04
			425.00	24-Jan-97	161.16	263.84	-0.04
			425.00	27-Feb-97	159.81	265.19	1.35
			425.00	27-Mar-97	159.86	265.14	-0.05
			425.00	26-Jun-97	159.56	265.44	0.30
			425.00	11-Aug-97	159.72	265.28	-0.16
05_DGMW67	WT	187 - 227	429.00	12-Jan-96	166.52	262.48	
			429.00	9-Feb-96	166.26	262.74	0.26
			429.00	27-Feb-96	166.19	262.81	0.07
			429.00	27-Mar-96	165.85	263.15	0.34
			429.00	31-Oct-96	165.34	263.66	0.51
			429.00	26-Nov-96	164.80	264.20	0.54
			429.00	26-Dec-96	164.68	264.32	0.12
			429.00	24-Jan-97	164.66	264.34	0.02
			429.00	27-Feb-97	163.20	265.80	1.46
			429.00	27-Mar-97	163.28	265.72	-0.08
			429.00	26-Jun-97	163.20	265.80	0.08
			429.00	11-Aug-97	163.30	265.70	-0.10
05_DGMW68	WT	190 - 210	417.00	12-Jan-96	168.71	248.29	
			417.00	26-Feb-96	168.11	248.89	0.60
			417.00	27-Feb-96	168.11	248.89	0.00
			417.00	27-Mar-96	167.79	249.21	0.32
			417.00	31-Oct-96	166.28	250.72	1.51
			417.00	26-Nov-96	165.68	251.32	0.60
			417.00	26-Dec-96	165.52	251.48	0.16
			417.00	24-Jan-97	161.51	255.49	4.01
			417.00	27-Feb-97	165.40	251.60	-3.89
			417.00	27-Mar-97	164.82	252.18	0.58
			417.00	26-Jun-97	164.34	252.66	0.48
			417.00	11-Aug-97	164.22	252.78	0.12
05_NEW01	WT	163 - 203	407.77	31-Oct-96	164.04	243.73	
			407.77	26-Nov-96	163.36	244.41	0.68
			407.77	26-Dec-96	162.98	244.79	0.38
			407.77	27-Feb-97	162.05	245.72	0.93
			407.77	27-Mar-97	162.41	245.36	-0.36
			407.77	26-Jun-97	162.23	245.54	0.18
			407.77	11-Aug-97	161.96	245.81	0.27

EXCERPTS

Table B-1: WATER LEVEL MEASUREMENTS AND GROUNDWATER ELEVATIONS
MCAS El Toro Groundwater Monitoring Program

STATION ID	WELL TYPE	SCREEN INTERVAL (feet BGS)	TOP OF CASING (feet MSL)	MEASUREMENT DATE	DEPTH TO WATER (feet TOC)	WATER LEVEL ELEVATION (feet MSL)	CHANGE FROM PRIOR (+ or - feet)
05_UGMW27	WT	198 - 238	438.00	11-Jan-96	169.84	268.16	
			438.00	29-Jan-96	169.72	268.28	0.12
			438.00	28-Feb-96	169.70	268.30	0.02
			438.00	27-Mar-96	169.32	268.68	0.38
			438.00	31-Oct-96	168.92	269.08	0.40
			438.00	26-Nov-96	168.40	269.60	0.52
			438.00	26-Dec-96	168.34	269.66	0.06
			438.00	23-Jan-97	168.26	269.74	0.08
			438.00	27-Feb-97	166.85	271.15	1.41
			438.00	27-Mar-97	166.62	271.38	0.23
			438.00	26-Jun-97	166.64	271.36	-0.02
			438.00	11-Aug-97	166.98	271.02	-0.34
06_DGMW69	WT	150 - 190	324.33	12-Jan-96	134.00	190.33	
			324.33	2-Feb-96	133.77	190.56	0.23
			324.33	27-Feb-96	133.50	190.83	0.27
			324.33	27-Mar-96	133.20	191.13	0.30
			324.33	31-Oct-96	133.06	191.27	0.14
			324.33	26-Nov-96	132.56	191.77	0.50
			324.33	27-Dec-96	133.10	191.23	-0.54
			324.33	24-Jan-97	131.80	192.53	1.30
			324.33	27-Feb-97	131.14	193.19	0.66
			324.33	27-Mar-97	131.90	192.43	-0.76
			324.33	26-Jun-97	131.44	192.89	0.46
			324.33	12-Aug-97	131.26	193.07	0.18
06_UGMW28	WT	140 - 180	334.90	12-Jan-96	139.36	195.54	
			334.90	16-Feb-96	138.91	195.99	0.45
			334.90	28-Feb-96	138.85	196.05	0.06
			334.90	27-Mar-96	138.51	196.39	0.34
			334.90	31-Oct-96	137.50	197.40	1.01
			334.90	26-Nov-96	137.04	197.86	0.46
			334.90	26-Dec-96	137.32	197.58	-0.28
			334.90	23-Jan-97	136.78	198.12	0.54
			334.90	26-Feb-97	136.52	198.38	0.26
			334.90	27-Mar-97	136.90	198.00	-0.38
			334.90	26-Jun-97	136.20	198.70	0.70
			334.90	11-Aug-97	136.04	198.86	0.16
07_DBMW100	WT	131 - 171	286.44	11-Jan-96	104.60	181.84	
			286.44	31-Jan-96	104.58	181.86	0.02
			286.44	27-Feb-96	104.52	181.92	0.06
			286.44	31-Oct-96	104.28	182.16	0.24
			286.44	26-Nov-96	103.60	182.84	0.68
			286.44	27-Dec-96	102.90	183.54	0.70
			286.44	26-Feb-97	103.36	183.08	-0.46
			286.44	27-Mar-97	102.63	183.81	0.73
			286.44	26-Jun-97	103.36	183.08	-0.73
			286.44	12-Aug-97	103.26	183.18	0.10
07_DBMW43	WT	150 - 190	292.56	12-Jan-96	113.01	179.55	
			292.56	19-Feb-96	112.55	180.01	0.46
			292.56	27-Feb-96	111.41	181.15	1.14
			292.56	27-Mar-96	112.42	180.14	-1.01
			292.56	31-Oct-96	113.95	178.61	-1.53
			292.56	26-Nov-96	113.02	179.54	0.93
			292.56	26-Dec-96	112.60	179.96	0.42
			292.56	23-Jan-97	111.96	180.60	0.64
			292.56	26-Feb-97	111.40	181.16	0.56
			292.56	27-Mar-97	112.08	180.48	-0.68
			292.56	26-Jun-97	112.84	179.72	-0.76
			292.56	12-Aug-97	112.96	179.60	-0.12

Appendix G
Sampling Strategy – Anomaly Areas 4 and 5, June and November 1999

SOUTHWESTNAVFACE: 3COM
Code 5BME.LMH
1220 Pacific Highway
San Diego, CA 92132
Telephone: (619) 532-4162/Fax: (619) 532-4160

File: anomaly3

FACSIMILE

Date: 7 June 1999

From: Lynn Marie Hornecker

To: **Glenn Kistner (USEPA)**
Tayseer Mahmoud (Cal EPA)
Patricia Hannon (RWQCB)

Subj: Sampling Strategy for Aerial Photograph Anomaly Areas 4 and 5
Marine Corps Air Station, El Toro

The purposes of this facsimile are to provide notification of our planned schedule for sampling and to provide additional information pertaining to the sampling strategy for Aerial Photograph Anomaly Areas 4 and 5 (also known as Anomaly Areas 4 and 5) at the Marine Corps Air Station, El Toro, California. If you have questions pertaining to this facsimile, please do not hesitate to call me at (619) 532-4162.

Schedule and Background Information

We will have an opportunity to conduct sampling activities at Anomaly Areas 4 and 5 in July or August 1999. We plan to investigate these sites under the Station's petroleum corrective action program and we plan to report the results in a Site Assessment Report that will include site photographs, laboratory test results, an assessment of the potential risk to ground water caused by residual petroleum hydrocarbons at the anomaly sites, and recommendations for the future management of the sites. Copies of the Site Assessment Report(s) will be provided to all BRAC Cleanup Team members.

Sampling will be conducted in accordance with the procedures described in *the Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine Corps Air Station, El Toro* (OHM, 1997). This work plan, that is used for the current sampling activities at Temporary Accumulation Areas, includes procedures for sample collection and test methods for analyses of samples for petroleum hydrocarbons, volatile organic compounds, metals, and other potential contaminants of concern.

Detailed information, including the historical aerial photographs on which the individual anomalies within Areas 4 and 5 were identified, are presented in the Technical Memorandum, Aerial Photograph Anomalies (Southwest Division, April 1999) that was submitted to the Base Realignment and Closure Cleanup Team (BCT) members on 5 April 1999.

SOUTHWESTNAVFACENGCOM
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1220 Pacific Highway
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Sampling Strategy

Anomaly Area 4 (former slurry beds identified on 1946 photograph):
Anomaly Area 4 is located adjacent to Building 306, the former water treatment facility, within the boundaries of Installation Restoration Program (IRP) Site 24 – the Volatile Organic Compound (VOC) Source Area. The former water treatment plant appears to have operated during the 1940's. The former water treatment plant included slurry beds (or surface impoundments) that have been filled with soil to match the existing grade. The vicinity of the former impoundments located north of Building 307 is covered with a grass cover. The vicinity of the former slurry beds located immediately northwest of Building 306 is covered with asphalt pavement.

Proposed sampling locations are shown on Figure 2. Five shallow soil borings are proposed for the slurry beds immediately adjacent to Building 306 and three shallow soil borings are proposed for the impoundments located north of Building 307 (total of eight borings). Samples will be analyzed for petroleum hydrocarbons, volatile organic compounds (including methyl tertiary butyl ether (MTBE)), and metals.

Monitoring wells for Installation Restoration Program (IRP) Site 9 (the Crash Crew Training Pit Number 1) and IRP Site 12 (the former Sludge Drying Beds) are located in the vicinity of Anomaly Area 4, and water quality information from these wells will be reviewed during the assessment of Anomaly Area 4. Anomaly Area 4 overlies the VOC ground water plume from IRP Site 24, and the depth to ground water is approximately 100 feet.

Anomaly Area 5 (former construction staging area (and areas of disturbed ground) identified on photographs during the period from 1967 to 1988):
Anomaly Area 5 is located adjacent to the east end of the east-west runway in the vicinity of MSC D1 (the Desert Storm Staging Area) and Solid Waste Management Unit 264 (Defense Reutilization and Marketing Office Yard 3). Most of Anomaly Area 5 is covered with a grass cover, however, some of the individual anomalies appear to be located beneath the end of the runway.

Proposed sampling locations are shown on Figure 3. Five shallow borings are proposed near the edge of the east-west runway. Samples will be analyzed for petroleum hydrocarbons and volatile organic compounds (including MTBE), and metals.

Monitoring wells for IRP Site 5 (the Perimeter Landfill) are located nearby, and water quality data from these wells will be reviewed during the assessment of Anomaly Area 5. The depth to ground water at IRP Site 5 is approximately 160 feet.

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File: anomaly3

Table. Proposed Sampling Strategy for Aerial Photograph Anomaly Areas 4 and 5 Marine Corps Air Station, El Toro

Site Identification	Sampling Strategy	Comments
Anomaly Area 4 (SAIC 39 (1946) former slurry beds	8 shallow borings, each approximately 20 feet deep, with analysis of two samples per boring by EPA Methods 8015M (jet fuel, diesel, gasoline), 8260 (Volatile Organic Compounds including MTBE), and 6000/7000 metals	Site is located near Buildings 306 and 307. Small slurry bed area, near Building 306, is approximately 60 feet by 60 feet. Large slurry bed area, north of Building 307, is approximately 100 feet by 800 feet.
Anomaly Area 5 (SAIC 161 (1967), SAIC 215 (1971), SAIC 287 (1974), SAIC 314 (1975), and SAIC 542 (1988)) (Staging Area for previous construction projects (anomaly sites)	5 shallow borings, each approximately 20 feet deep, with analysis of two samples per boring by EPA Methods 8015M (jet fuel, diesel, gasoline), 8260 (Volatile Organic Compounds including MTBE), and 6000/7000 metals	Site is located adjacent to the east end of the east-west runway. Desert Storm Staging Area (MSC D1) may be investigated concurrently with Area 5. Anomaly Area 5 is approximately 250 feet by 450 feet.

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1220 Pacific Highway
San Diego, CA 92132
Telephone: (619) 532-4162/Fax: (619) 532-4160

References and/or Sources of Information

CDM Federal Programs Corporation. 1997. *Final Groundwater Monitoring Report, July 1997 Sampling Round, Groundwater Monitoring Program for Marine Corps Air Station, El Toro, El Toro, California.* [Navy Contract N68711-96-D-2029, Delivery Order 5]

Jacobs Engineering Group (JEG). 1993. *Installation Restoration Program, Final Resource Conservation and Recovery Act Facility Assessment Report for Marine Corps Air Station, El Toro, California.* [Navy Contract N68711-89-D-9296, Contract Task Order 193]

OHM Remediation Services Corporation. 1997. *Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine Corps Air Station, El Toro, California.* [Navy Contract N68711-93-D-1459, Delivery Order 70]

Southwest Division, Naval Facilities Engineering Command. 1999. *Technical Memorandum, Aerial Photograph Anomalies, Marine Corps Air Station, El Toro, California.* April.

Figures

CF:
Joseph Joyce (MCAS El Toro BEC)
Andy Piszkin (MCAS El Toro Lead RPM)
Dave DeMars (MCAS El Toro RPM)
Project File (MCAS El Toro)

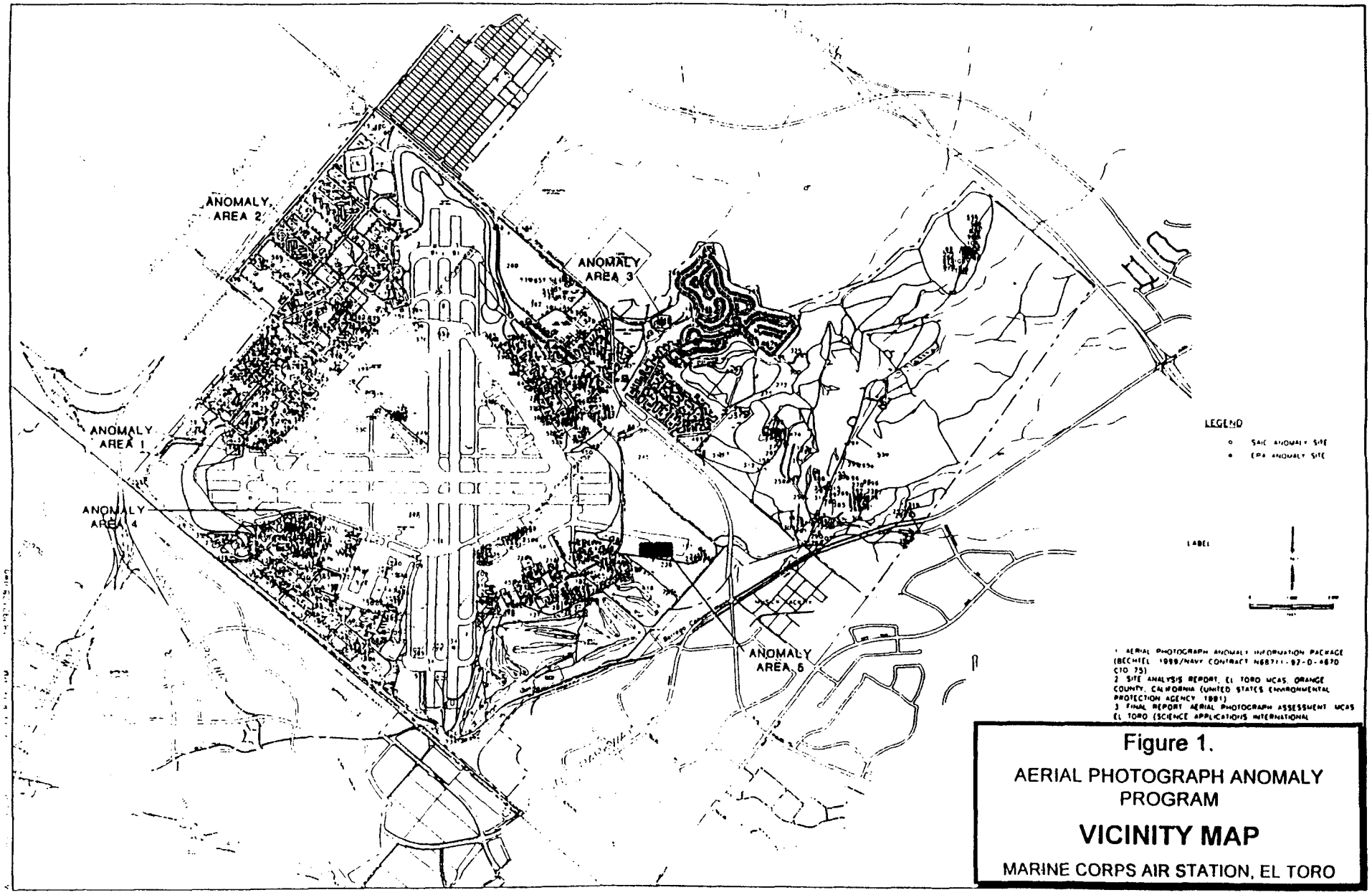


Figure 1.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

VICINITY MAP

MARINE CORPS AIR STATION, EL TORO

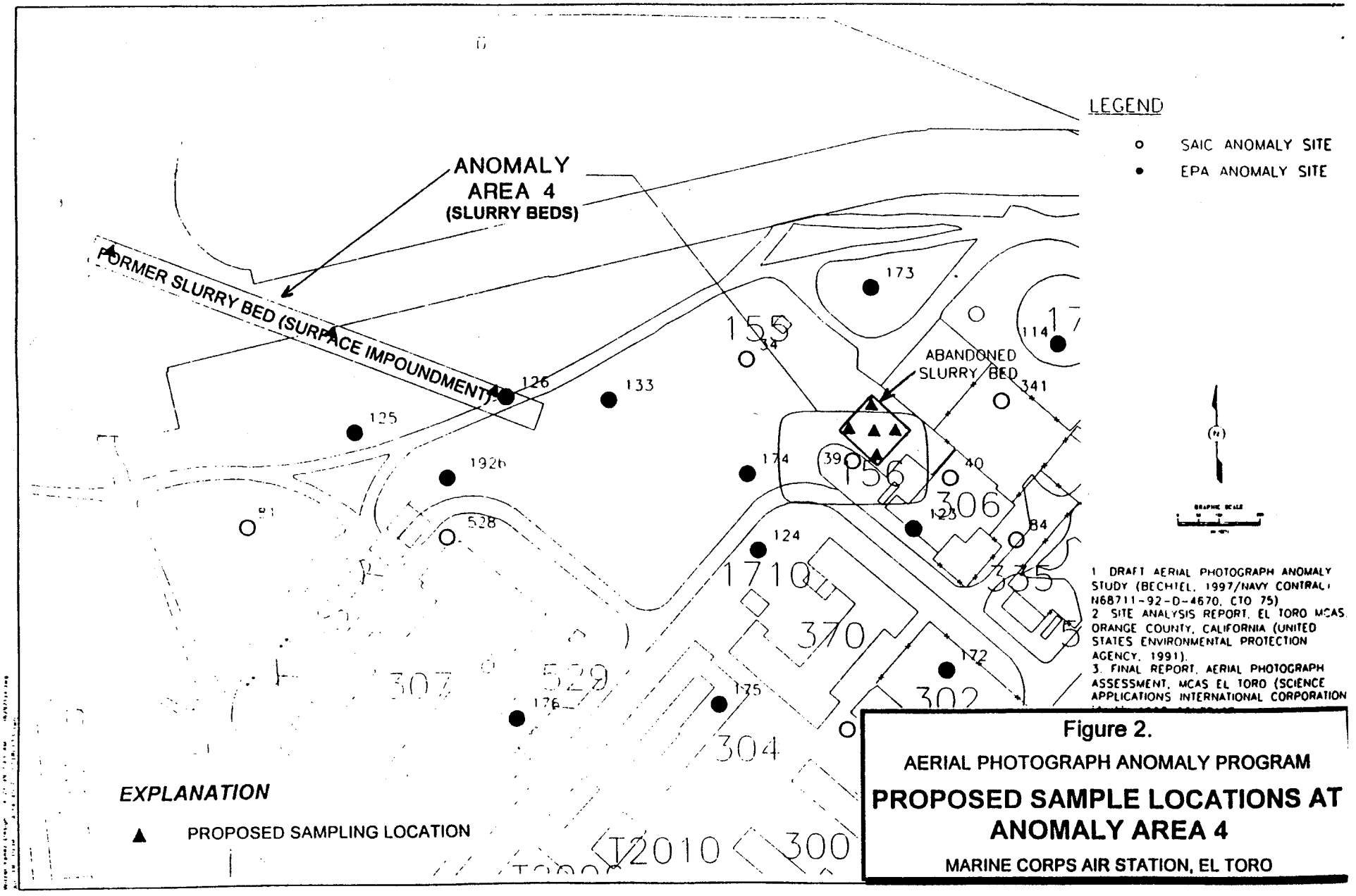


Figure 2.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

PROPOSED SAMPLE LOCATIONS AT ANOMALY AREA 4

MARINE CORPS AIR STATION, EL TORO

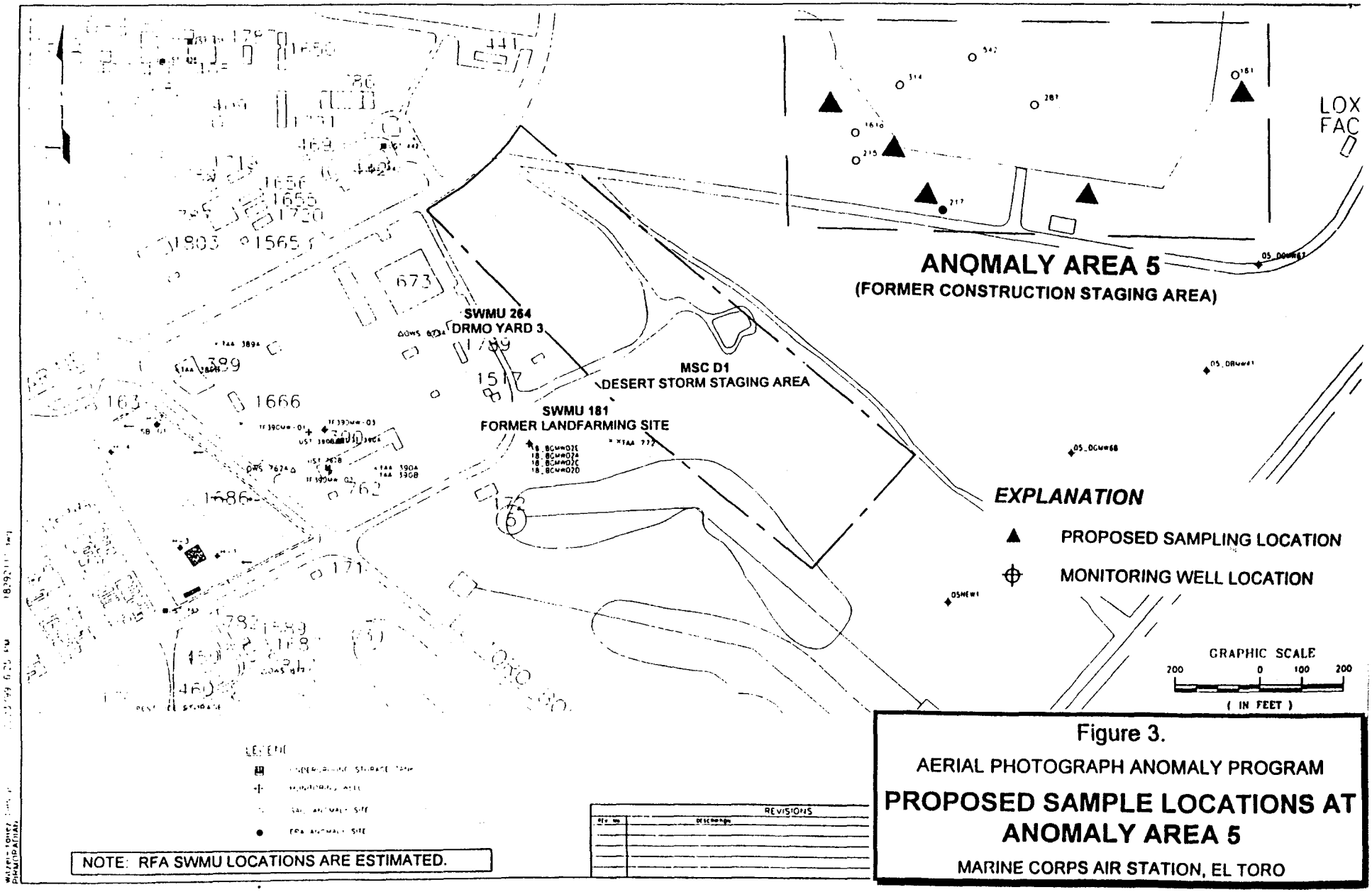


Figure 3.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

PROPOSED SAMPLE LOCATIONS AT ANOMALY AREA 5

MARINE CORPS AIR STATION, EL TORO

Department of Toxic Substances Control

Edwin F. Lowry, Directo
5796 Corporate Avenue
Cypress, California 9063

on H. Hickox
ary for
onmental
tion

June 22, 1999

Mr. Joseph Joyce
BRAC Environmental Coordinator
U.S. Marine Corps Air Station - El Toro
AC/S, Environmental (1AU)
P.O. Box 95001
Santa Ana, California 92709-5001

Dear Mr. Joyce:

COMMENTS ON SAMPLING STRATEGY FOR AERIAL PHOTOGRAPH ANOMALY AREAS 4 & 5, MARINE CORPS AIR STATION (MCAS) El TORO

The Department of Toxic Substances Control (DTSC) has reviewed the above subject document dated June 7, 1999. The document provides information regarding the sampling strategy for investigation of Aerial Photograph Anomaly Areas 4 and 5 and a schedule for conducting the sampling activities. The results of investigation and recommendations for future management of the sites will be submitted to the regulatory agencies for review and comments. DTSC comments are as follows:

GENERAL COMMENTS:

1. Please ensure that quality assurance/quality control (QA/QC) laboratory samples are in accordance with the procedures described in the Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Assessment Sites (OHM, 1997). The Site Assessment Report(s) should contain a narrative pertaining to the laboratory analyses that includes description of sampling techniques, decontamination procedures, analytical methods and laboratory procedures, laboratory data quality, and data validation results.

2. The Sampling Strategy states that sample analyses will be conducted for petroleum hydrocarbons, volatile organics compounds (VOCs), metals, and other potential contaminant of concern. The Sampling Strategy must also specify the contaminants of concern (COCs), appropriate test methods, and detection limits.

3. The Sampling Strategy states that "shallow" soil samples, approximately 20 feet deep will be collected. Please provide the rationale for the depth proposed for taking the samples

SPECIFIC COMMENTS:

4. Anomaly Area 4 - former slurry beds identified on 1946 photograph. Located adjacent to Building 306, the former water treatment facility, within the boundaries of IRP site 24, the VOC source area.

   a. All samples collected from the former slurry beds should, at a minimum, be analyzed for the same COCs identified at IRP Site 12, the former Sludge Drying Beds, since they probably handled the same waste. Soil samples collected at IRP Site 12 were analyzed for VOCs, TPH, SVOCs (specifically for PAHs), PCBs, Pesticides, Herbicides, and cyanide.

   b. Five shallow soil borings adjacent to Building 306 and three shallow soil borings are proposed for the impoundments located north of Building 307. DTSC recommends that two samples be collected from each proposed sample location; one sample at a depth near the bottom of the slurry bed and one sample five feet below the bottom of the slurry bed. Additional samples may be required at deeper depths if contamination is discovered. Continuous coring should be conducted and the lithology recorded.

5. Anomaly Area 5 - former construction staging area (and areas of disturbed ground) identified on photographs during the period from 1967 to 1988.

   DTSC recommends the soil samples be collected within 10 feet below ground surface (bgs). The information will be useful for preparing a risk assessment if contamination is found. Should the disturbed earth extend beyond 10 feet bgs, additional samples should be collected at the contact surface between the disturbed and native soil.

If you have any questions, please contact me at (714) 484-5418.

Sincerely,

Tayscer Mahmoud
Remedial Project Manager
Office of Military Facilities
Southern California Operations

cc: See next page

cc: Mr. Glenn Kistner, SFD-8-2
Remedial Project Manager
U. S. Environmental Protection Agency
Region IX, Superfund Division
75 Hawthorne Street
San Francisco, California 94105-3901

Ms. Patricia Hannon
Remedial Project Manager
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, California 92501-3339

Mr. Gregory F. Hurley
Restoration Advisory Board Co-chair
620 Newport Center Drive, Suite 450
Newport Beach, California 92660-8019

Ms. Polin Modanlou
MCAS El Toro Local Redevelopment Authority
10 Civic Center Plaza, 2nd Floor
Santa Ana, California 92703

Ms. Lynn Hornecker
Remedial Project Manager
Naval Facilities Engineering Command
Southwest Division - Code 5BME.LH
1220 Pacific Highway
San Diego, California 92132-5187

OHM Remediation Services Corp.
3347 Michelson Drive, Suite 200
Irvine, CA 92612-1692
Tel. 949.261.6441
Fax. 949.474.8309

A Member of The IT Group

November 8, 1999

Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Bozier H. Demarree
1220 Pacific Highway
San Diego, CA 92132-5187

Attention: Ms. Lynn Hornecker

Subject: **Supplemental Sampling Strategy, Aerial Photograph Areas 4 and 5**
Contract N68711-93-D-1459, Delivery Order 070,
Remediation of Various UST, AOC and RFA Sites, MCAS El Toro, California

Dear Ms. Hornecker:

The attached Supplemental Sampling Strategy, Aerial Photograph Anomaly Areas 4 and 5 provides a response to the comments generated by DTSC on the original Sampling Strategy the you faxed to the agencies on June 7, 1999. This supplemental document addresses the questions raised and includes the chemicals of concern and detection limits anticipated for these chemicals.

Following your concurrence, and that of DTSC, OHM will implement the field sampling discussed in the document.

If you have any questions or need additional information or copies please call or e-mail me.

Sincerely,

William Sedlak, P.E.
Sr. Project Manager

cc: L. Holloway, COTR 1C/1E
OHM PMO File 1C/1E
Project File, Communications B.01.

Supplemental Sampling Strategy, Aerial Photograph Anomaly Areas 4 and 5
Clarification of Comments from California Department of Toxic Substances Control

Background

A sampling strategy was developed and submitted to the BRAC Cleanup Team (BCT) (including U.S. EPA, California Department of Toxic Substances Control and Regional Water Quality Control Board) in early June 1999. The Department of Toxic Substances Control (DTSC) submitted comments on the strategy on June 22, 1999. In these comments, DTSC requested clarification of the sampling quality control and laboratory methodology.

	Comments by Tayseer Mahmoud, June 22, 1999 General Comments	**Response/Clarification**
1	Please ensure that quality assurance/quality control (QA/QC) laboratory samples are in accordance with the procedures described in the Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Assessment Sites (OHM, 1997). The Site Assessment Reports should contain a narrative pertaining to the laboratory analyses that includes description of sampling techniques, decontamination procedures, analytical methods and laboratory procedures. Laboratory data quality, and data validation results.	The procedures identified in the Final Supplemental Work Plan(OHM 1997) will be followed.
2	The Sampling Strategy states that sample analyses will be conducted for petroleum hydrocarbons, volatile hydrocarbons, volatile organic compounds (VOCs), metals and other potential contaminant of concern. The Sampling Strategy must also specify the contaminants of concern (COCs), appropriate test methods, and detection limits.	The COCs are provided in Table 1, along with test methods and anticipated levels of detection. Analyses will include VOCs, TPH, semi-volatile organic compounds (SVOC), pesticides/herbicides, metals, and PCBs. The detection levels are dependent on a variety of factors including the nature of the contaminant, type of media analyzed, and other contaminants that mask, or due to higher concentrations raise the detection limit. Detection limits are desired below the Preliminary Remediation Goal (PRGs) for each compound. The same methodology used in the analysis of samples from the temporary accumulation areas will be used for the anomalies.
3	The sampling Strategy states that "shallow" soil samples, approximately 20 feet deep will be collected. Please provide the rationale for the depth proposed for taking the samples.	The 20 foot depth referred to in the Proposed Strategy Table is the anticipated maximum depth. Sample depths are discussed in response to item 4 and 5 below.
	Specific Comments	

4	Anomaly Area 4 - former slurry beds identified on 1946 photograph. Located adjacent to Building 306, the former water treatment facility, within the boundaries of IRP Site 24, the VOC source area.	
4	a. All samples collected from the former slurry beds should, at a minimum, be analyzed for the same COCs identified at IRP Site 12, the former Sludge Drying Beds, since they probably handled the same waste. Soil samples at IRP Site 12 were analyzed for VOCs, TPH, SVOCs (specifically for PAHs), PCBs, Pesticides, Herbicides, and cyanide.	Agreed. Table 1 identifies the COCs and test methods.
4	b. Five shallow soil borings adjacent to Building 306 and three shallow soil borings are proposed for the impoundments located north of Building 307. DTSC recommends that two samples be collected from each proposed sample location; one sample at a depth near the bottom of the slurry bed and one sample five feet below the bottom of the slurry bed. Additional samples may be required at deeper depths if contamination is discovered. Continuous coring should be conducted and the lithology recorded.	The depth of the slurry bed is estimated to be from 9 to 10 feet below the surface grade. This is based on a 1949 drawing of the slurry pit and vicinity(see attached copy). Based on the details provided in the Phase II RI for IRP Site 12, the slurry beds at that site were abandoned in place, and simply tilled into the existing grade. This resulted in an increased ground elevation of approximately 5 feet. Due to the uncertainty in the depth of the slurry pits, sampling is proposed at 5, 10 and 15 feet bgs. The 5-foot sample theoretically would be in the tilled materials, the 10 foot should be at the bottom of the bed, and the 15 foot sample should be below the bottom of the bed. Lithology will be recorded adjacent to sampling depths.
5	Anomaly Area 5 - former construction staging area (and areas of disturbed ground) identified on photographs during the period from 1967 to 1988. DTSC recommends the soil samples be collected within 10 feet below ground surface (bgs). The information will be useful for preparing a risk assessment if contamination is found. Should the disturbed earth extend beyond 10 feet bgs, additional samples should be collected at the contact surface between the disturbed and native soil.	Two samples are proposed per boring. Proposed sample depths are from 5 to 7 feet bgs (depending on whether surface is paved or dirt) and 10 to 12 feet bgs.

Table 1: Potential Contaminants of Concern Reporting Limits

Parameter/Method	Analyte	Water		Soil	
		RL	Unit	RL	Unit
VOCs	1,1,1-TCA	5	µg/L	5	µg/kg
EPA 8260A	1,1,2,2-Tetrachloroethane	5	µg/L	5	µg/kg
	1,1,2-TCA	5	µg/L	5	µg/kg
	1,1-DCA	5	µg/L	5	µg/kg
	1,1-DCE	5	µg/L	5	µg/kg
	1,2-DCA	5	µg/L	5	µg/kg
	1,2-Dichloropropane	5	µg/L	5	µg/kg
	Acetone	50	µg/L	50	µg/kg
	Methyl ethyl ketone (MEK)	50	µg/L	50	µg/kg
	Methylisobutyl ketone (MIBK)	50	µg/L	50	µg/kg
	Methyl tert-butyl ether (MTBE)	10	µg/L	10	µg/kg
	2-Hexanone	50	µg/L	50	µg/kg
	Vinyl acetate	50	µg/L	50	µg/kg
	2-Chloroethylvinylether	50	µg/L	50	µg/kg
	Benzene	5	µg/L	5	µg/kg
	Bromodichloromethane	5	µg/L	5	µg/kg
	Bromoform	5	µg/L	5	µg/kg
	Bromomethane	5	µg/L	5	µg/kg
	Carbon disulfide	5	µg/L	5	µg/kg
	Carbon tetrachloride	5	µg/L	5	µg/kg
	Chlorobenzene	5	µg/L	5	µg/kg
	Chloroethane	5	µg/L	5	µg/kg
	Chloroform	5	µg/L	5	µg/kg
	Chloromethane	5	µg/L	5	µg/kg
	cis-1,2-DCE	5	µg/L	5	µg/kg
	cis-1,3-Dichloropropene	5	µg/L	5	µg/kg
	Dibromochloromethane	5	µg/L	5	µg/kg
	Ethylbenzene	5	µg/L	5	µg/kg
	Methylene chloride	5	µg/L	5	µg/kg
	Styrene	5	µg/L	5	µg/kg
	TCE	5	µg/L	5	µg/kg
	Tetrachloroethene	5	µg/L	5	µg/kg
	Toluene	5	µg/L	5	µg/kg
	trans-1,2-DCE	5	µg/L	5	µg/kg
	trans-1,3-Dichloropropene	5	µg/L	5	µg/kg
	Vinyl chloride	5	µg/L	5	µg/kg
	Xylene, Total	5	µg/L	5	µg/kg

Table 1: Potential Contaminants of Concern Reporting Limits

Parameter/Method	Analyte	Water		Soil	
		RL	Unit	RL	Unit
Semivolatile organics	1,2,4-Trichlorobenzene	10	µg/L	330	µg/kg
Base/Neutral Extractables	1,2-Dichlorobenzene	10	µg/L	330	µg/kg
EPA 8270B	1,3-Dichlorobenzene	10	µg/L	330	µg/kg
	1,4-Dichlorobenzene	10	µg/L	330	µg/kg
	2,4-Dinitrotoluene	10	µg/L	330	µg/kg
	2,6-Dinitrotoluene	10	µg/L	330	µg/kg
	2-Chloronaphthalene	10	µg/L	330	µg/kg
	2-Methylnaphthalene	10	µg/L	330	µg/kg
	2-Nitroaniline	25	µg/L	830	µg/kg
	3-Nitroaniline	25	µg/L	830	µg/kg
	3,3'-Dichlorobenzidine	10	µg/L	330	µg/kg
	4-Bromophenyl phenyl ether	10	µg/L	330	µg/kg
	4-Chloroaniline	10	µg/L	330	µg/kg
	4-Chlorophenyl phenyl ether	10	µg/L	330	µg/kg
	4-Nitroaniline	25	µg/L	830	µg/kg
	Acenaphthylene	10	µg/L	330	µg/kg
	Acenapthene	10	µg/L	330	µg/kg
	Anthracene	10	µg/L	330	µg/kg
	Benzo (a) anthracene	10	µg/L	330	µg/kg
	Benzo (a) pyrene	10	µg/L	250	µg/kg
	Benzo (b) fluoranthene	10	µg/L	330	µg/kg
	Benzo (k) fluoranthene	10	µg/L	330	µg/kg
	Benzo (g,h,i) perylene	10	µg/L	330	µg/kg
	Bis (2-chloroethoxy) methane	10	µg/L	330	µg/kg
	Bis (2-chloroethyl) ether	10	µg/L	50	µg/kg
	Bis (2-chloroisopropyl) ether	10	µg/L	330	µg/kg
	Bis (2-ethylhexyl) phthalate	10	µg/L	330	µg/kg
	Butyl benzylphthalate	10	µg/L	330	µg/kg
	Chrysene	10	µg/L	330	µg/kg
	Di-n-butylphthalate	10	µg/L	330	µg/kg
	Di-n-octylphthalate	10	µg/L	330	µg/kg
	Dibenz (a.h) anthracene	10	µg/L	250	µg/kg
	Dibenzofuran	10	µg/L	330	µg/kg
	Diethyl phthalate	10	µg/L	330	µg/kg
	Dimethyl phthalate	10	µg/L	330	µg/kg
	Fluoranthene	10	µg/L	330	µg/kg
	Fluorene	10	µg/L	330	µg/kg
	Hexachlorobenzene	10	µg/L	330	µg/kg
	Hexachlorobutadiene	10	µg/L	330	µg/kg
	Hexachlorocyclopentadiene	10	µg/L	330	µg/kg
	Hexachloroethane	10	µg/L	330	µg/kg
	Indeno (1,2,3-cd) pyrene	10	µg/L	330	µg/kg
	N-Nitrosodiphenylamine	10	µg/L	330	µg/kg
	N-Nitrosodi-n-propylamine	10	µg/L	250	µg/kg
	Naphthalene	10	µg/L	330	µg/kg
	Nitrobenzene	10	µg/L	330	µg/kg
	Phenanthrene	10	µg/L	330	µg/kg

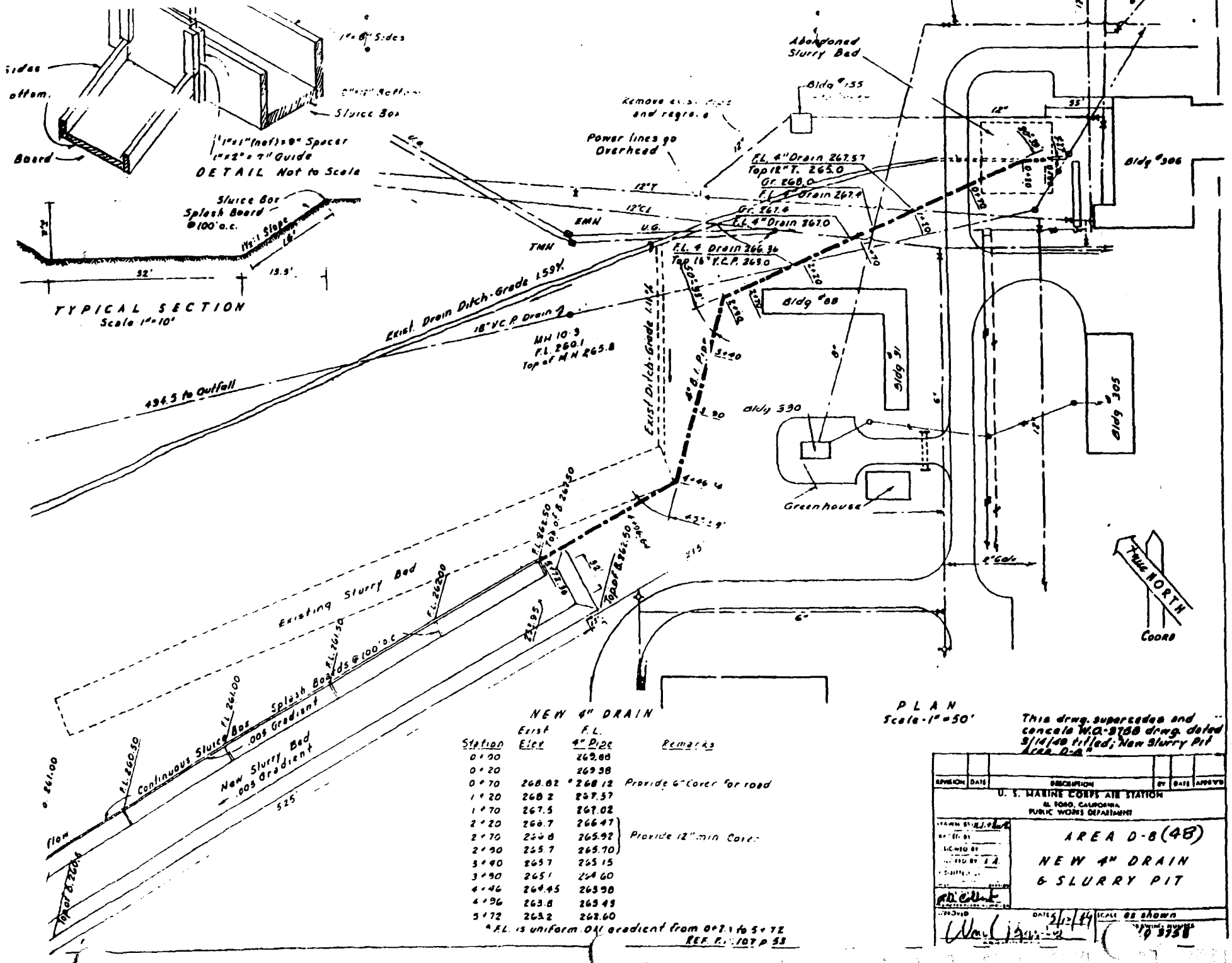
Table 1: Potential Contaminants of Concern Reporting Limits

Parameter/Method	Analyte	Water		Soil	
		RL	Unit	RL	Unit
EPA 8270B (cont'd)	Pyrene	10	µg/L	330	µg/kg
	2,4,5-Trichlorophenol	25	µg/L	830	µg/kg
	2,4,6-Trichlorophenol	10	µg/L	330	µg/kg
	2,4-Dichlorophenol	10	µg/L	330	µg/kg
	2,4-Dimethylphenol	10	µg/L	330	µg/kg
	2,4-Dinitrophenol	25	µg/L	830	µg/kg
	2-Chlorophenol	10	µg/L	330	µg/kg
	2-Methylphenol	10	µg/L	330	µg/kg
	2-Nitrophenol	10	µg/L	330	µg/kg
	4,6-Dinitro-2-methylphenol	25	µg/L	830	µg/kg
	4-Chloro-3-methylphenol	10	µg/L	330	µg/kg
	4-Methylphenol	10	µg/L	330	µg/kg
	4-Nitrophenol	25	µg/L	830	µg/kg
	Pentachlorophenol	10	µg/L	330	µg/kg
	Phenol	10	µg/L	330	µg/kg
Organochlorine Pesticides and PCBs EPA 8081/8082	α-BHC	0.35	µg/L	0.019	mg/kg
	β-BHC	0.23	µg/L	0.033	mg/kg
	δ-BHC	0.24	µg/L	0.011	mg/kg
	γ-BHC (Lindane)	0.25	µg/L	0.020	mg/kg
	α-Chlordane	0.80	µg/L	0.015	mg/kg
	γ-Chlordane	0.37	µg/L	0.015	mg/kg
	4,4'-DDD	0.50	µg/L	0.042	mg/kg
	4,4'-DDE	0.58	µg/L	0.025	mg/kg
	4,4'-DDT	0.81	µg/L	0.036	mg/kg
	Aldrin	0.34	µg/L	0.022	mg/kg
	Dieldrin	0.44	µg/L	0.035	mg/kg
	Endosulfan I	0.30	µg/L	0.021	mg/kg
	Endosulfan II	0.40	µg/L	0.024	mg/kg
	Endosulfan Sulfate	0.35	µg/L	0.036	mg/kg
	Endrin	0.39	µg/L	0.036	mg/kg
	Endrin Aldehyde	0.50	µg/L	0.016	mg/kg
	Heptachlor	0.40	µg/L	0.020	mg/kg
	Heptachlor Epoxide	0.32	µg/L	0.021	mg/kg
	Methoxychlor	0.86	µg/L	0.057	mg/kg
	PCB-1016	1.00	µg/L	0.70	mg/kg
	PCB-1221	1.00	µg/L	0.70	mg/kg
	PCB-1232	1.00	µg/L	0.70	mg/kg
	PCB-1242	1.00	µg/L	0.70	mg/kg
	PCB-1248	1.00	µg/L	0.70	mg/kg
	PCB-1254	1.00	µg/L	0.70	mg/kg
	PCB-1260	1.00	µg/L	0.70	mg/kg
	Toxaphene	0.50	µg/L	0.57	mg/kg

Table 1: Potential Contaminants of Concern Reporting Limits

Parameter/Method	Analyte	Water		Soil	
		RL	Unit	RL	Unit
Chlorinated Phenoxy Acid Herbicides EPA 8150	2,4-D	12.0	µg/L	0.8	mg/kg
	2,4-DB	9.0	µg/L	0.6	mg/kg
	2,4,5-T	2.0	µg/L	0.1	mg/kg
	2,4,5-TP	1.7	µg/L	0.1	mg/kg
	Dalapon	60.0	µg/L	4.0	mg/kg
	Dicamba	2.7	µg/L	0.2	mg/kg
	Dichloroprop	6.5	µg/L	0.5	mg/kg
	Dinoseb	0.7	µg/L	0.05	mg/kg
	MCPA	2,500.0	µg/L	170.0	mg/kg
	MCPP	1,900.0	µg/L	130.0	mg/kg
ICP Screen for Metals EPA 6010/7000	Antimony	500	µg/L	1	mg/kg
	Arsenic	5	µg/L	0.5	mg/kg
	Barium	100	µg/L	1	mg/kg
	Beryllium	10	µg/L	0.2	mg/kg
	Cadmium	5	µg/L	0.5	mg/kg
	Chromium	50	µg/L	1	mg/kg
	Cobalt	50	µg/L	1	mg/kg
	Copper	50	µg/L	1	mg/kg
	Lead	5	µg/L	0.3	mg/kg
	Manganese	20	µg/L	2	mg/kg
	Molybdenum	100	µg/L	2	mg/kg
	Nickel	150	µg/L	2	mg/kg
	Selenium	5	µg/L	0.5	mg/kg
	Silver	50	µg/L	1	mg/kg
	Thallium	400	µg/L	1	mg/kg
	Vanadium	100	µg/L	1	mg/kg
	Zinc	20	µg/L	1	mg/kg
TPH-Purgeable CA LUFT	Gasoline	0.1	mg/L	10	mg/kg
TPH-Extractable CA LUFT	Diesel	0.1	mg/L	10	mg/kg
EPA 9010	Cyanide	0.02	mg/L	0.5	mg/kg

If required for semi-volatile organic compounds, the Selected Ion Monitoring (SIM) technique may be used to achieve lower detection limits to meet certain EPA Region IX PRG values. The OHM criteria for acceptance of the SIM data is that the laboratory Method Detection Limit must be equal to or less than half of the PRG value.



NEW 4" DRAIN

Station	Exist Elev	F.L. 4" Pipe	Remarks
0+00		269.88	
0+20		269.38	
0+70	268.82	*268.12	Provide 6" Cover for road
1+20	268.2	267.57	
1+70	267.5	267.02	
2+20	266.7	266.47	
2+70	266.8	265.92	Provide 12" min Cover
2+90	265.7	265.70	
3+40	265.7	265.15	
3+90	265.1	264.60	
4+46	264.45	263.98	
4+96	263.8	263.49	
5+72	263.2	262.60	

*F.L. is uniform .01 gradient from 0+71 to 5+72

REF. F.: 107 p 53

PLAN
Scale-1"=50'

This drwg. supercedes and cancels W.O. 3758 drwg. dated 9/14/48 titled; New Slurry Pit Area D-8

REVISION	DATE	DESCRIPTION	BY	DATE	APPD'D

U. S. MARINE CORPS AIR STATION
EL TORO, CALIFORNIA
PUBLIC WORKS DEPARTMENT

DRAWN BY R.J.Y.
DESIGNED BY
TRACED BY T.A.
CHECKED BY R.D. Gilbert

AREA D-8(48)
NEW 4" DRAIN
& SLURRY PIT

APPROVED
DATE 5/2/49
SCALE as shown
DRAWING NUMBER
D 3758

erial Photograph Anomalies

rine Corps Air Station, El Toro, California

thwest Division, Naval Facilities Engineering Command

AC Operations Office – April 5, 1999

echnical Memorandum

TABLE 1. Anomaly Areas Recommended for Additional Evaluation or Sampling

File c:\aerial\table5r.xls

ANOMALY AREA NUMBER[a]	ANOMALY NUMBERS[b] (date of associated photograph)	LOCATION AND DESCRIPTION	STUDY AREA[c]	SITE VISIT PERFORMED[d]	DoN RECOMMENDATION[e]	ESTIMATED DIMENSIONS[f]	COMMENTS[g]
1	SAIC 144 (1964), SAIC 169 (1967), EPA 7 (1952, 1965), EPA 36 (1980)	A circular scar on the unpaved ground surface southwest of former Tank Farm 1.	A	Yes	Management of the site as a petroleum corrective action program site with soil sampling for petroleum hydrocarbons.	125 foot diameter turning circle (unpaved roadway)	This unpaved area may have been used to dispose of excess oil. No stains were observed during the site visit.
2	SAIC 173 (1967), EPA 21 (1970)	The former location of four fuel bladder revetments southeast of Tank Farm 3.	A	Yes	Management of the site as a petroleum corrective action program site with soil sampling for petroleum hydrocarbons.	130 by 40 feet	Fuel bladder revetments (FBR) were located in an area adjacent to and east of the vehicle storage yard. The area is presently paved with asphalt. The FBR were present at this location from at least 1962 through 1970. No stained areas were observed during the site visit.
3	SAIC 20 (1946), SAIC 64 (1952), SAIC 106 (1960), SAIC 156 (1967), SAIC 443 (1981), SAIC 536 (1988), SAIC 564 (1992)	The area between Pusan Way and Agua Chinon Wash, East of Bldg. 722.	B	Yes	Management of the site as an RFA site with trenching and visual inspections.	1000 by 300 feet	Refuse was noted in anomaly SAIC 156. Construction debris is visible at scattered locations throughout the site. Station personnel have indicated this was a construction debris disposal area.
4	SAIC 39 (1946)	The area west of Bldg. 306.	D	Yes	Management of the site as a petroleum corrective action program site with soil sampling for petroleum hydrocarbons.	60 by 60 feet	This area is listed as "slurry beds" on historical plans up to 1951. The slurry beds were used as part of the potable water treatment system.
5	SAIC 161 (1967), SAIC 215 (1971), SAIC 287 (1974), SAIC 314 (1975), SAIC 542 (1988)	The area located approximately 1600 feet west of the intersection of Perimeter Road and Magazine Road (LOX FAX facility is inside the area) and adjacent to MSC D1-the Desert Storm Staging Area.	E	Yes	Management of the site as a petroleum corrective action program site with soil sampling for petroleum hydrocarbons.	450 by 250 feet	Disturbed ground, grading, and trenching were observed in this area. The EBS indicates that hazardous materials from Desert Storm activities were staged in this area. This area was reportedly used as a bivouac area for Boy Scout Jamborees.

Notes:

[a] = This column lists areas recommended for potential sampling or additional evaluation. Each area consists of one or more anomalies.

[b] = This column identifies the anomalies contained in the area.

[c] = References the study area (A through F) of MCAS El Toro that the anomaly is located. The designations are derived from the USEPA Site Analysis Report. These study areas are illustrated on Figure 1.

[d] = This column indicates whether a site reconnaissance has been performed for this the area.

[e] = This column identifies the Navy recommendation for the area.

[f] = Dimensions include areas containing all anomalies obtained from the aerial photographs in the U.S.EPA and SAIC reports. The dimensions are rough estimates due to the small scale of photographs and absence of photographs in some cases.

[g] = Comments include information on anomalies obtained from U.S EPA and SAIC reports as well as information obtained from historical documents.

TABLE 2. Proposed List of Aerial Photograph Anomalies for BCP Table 3-2, Year 2000 Update

Database Tracking	Anomaly Identification Number	Year of Photograph	Anomaly Area Number *	1998 Reuse Parcel	Point of Reference	Description/Explanation for Proposed Management Strategy **	NFA
APHO 6	SAIC 39	1946	Anomaly Area 4	29	B 306	***Two impoundments (IM) can be observed on the southwest side of Building 306, near S 11th Street and L Street.*** *Historical station maps from the 1940's show a water treatment facility at Building 306 with adjacent slurry beds (impoundments). Further investigation is proposed*	
APHO 7	SAIC 46	1946		29	B 1389	**There is wet soil (WS) or stains (ST) in the area now occupied by the southwest corner of Building 1389 and in the open storage (OS) area about 200 feet northwest of Building 1389.** This comment may actually refer to the former Building 1589 in the vicinity of IRP Site 11 (and southwest of Building 369) which includes a small drainage ditch (Unit 2). No further action is proposed based upon the sampling that has been conducted at IRP Site 11. Additionally, the anomaly site is located within IRP Site 24 and soil gas surveying was conducted near the site and this data was evaluated for the Remedial Investigation of IRP Site 24.	X
APHO 8	SAIC 52	1946		7	Runways 34-L & 34-R	**In the area north of the railroad tracks, between Agua Chinon Wash and Borrego Canyon Wash, there are four open storage (OS) areas. All appear to contain refuse (R) or materials in storage. The westerly area appears to have been excavated (EX) and the spoil (FA) placed toward the southeast. The spoil area (FA) and the excavated (EX) area appear to be covered with refuse (R) or other materials. The southerly open storage (OS) area is an aircraft salvage area with several fuselage and wing sections visible. Smaller open storage (OS) areas occur near the four major sites.** This area is located beneath Runways 34R and 34L and/or the approaches to the runways and the southwestern portion of the golf course. The anomaly site is adjacent to Perimeter Road, and no refuse, aircraft parts, or other materials are visible. It is likely that all surface debris was removed as the runway approaches were modified and as the golf course area expanded toward the runways. No further action is proposed due to the absence of additional evidence to support the observation that refuse may have been stored at this area.	X

TABLE 2. Proposed List of Aerial Photograph Anomalies for BCP Table 3-2, Year 2000 Update

Database Tracking	Anomaly Identification Number	Year of Photograph	Anomaly Area Number *	1998 Reuse Parcel	Point of Reference	Description/Explanation for Proposed Management Strategy **	NFA
APHO 9	SAIC 53	1946		23	Agua Chinon Wash	**Liquid (LQ) can be seen flowing from a former (?) hangar near the northeast end of the aircraft parking apron on the northerly side of the present ACER site (Site 19). The liquid (LQ) discharges into a drainage ditch from a small building behind the former hangar.** The anomaly site corresponds to the location of Agua Chinon Wash near Site 19. The drainages, including Agua Chinon Wash, have been investigated during the Remedial Investigation of Site 25 - the Major Drainages. No further action recommended based upon the sampling conducted at Site 25 and at Site 19, Units 1, 2, 3, and 4 in the vicinity of Agua Chinon Wash.	X
APHO 10	SAIC 79	1955		23	B 286	**There is an open storage (OS) area on the westerly side of Building 286, near N 7th Street and West Marine Way.** Historical property records do not indicate that hazardous wastes were managed at Building 286, and consequently, no further action is proposed.	X
APHO 11	SAIC 81	1955		29	B 307	***A trench (TR) and disturbed ground (DG) can be seen about 230 feet northwesterly of Building 307, near S 14th Street and K Street. The purpose is unknown.*** *The location of the disturbed area corresponds approximately with the location of one of the slurry beds associated with the former water treatment facility. The slurry beds, including SAIC 81, are proposed for further investigation in Anomaly Area 4 (SAIC 39).*	
APHO 12	SAIC 92	1958		8	DRMO Yard 2	**There is wet soil (WS) in the open field between East Marine Way and Z Street.** This area is near or at Solid Waste Management Unit (SWMU) 46 which has been investigated under the Resource Conservation and Recovery Act Facility Assessment (RFA). No further action recommended.	X
APHO 13	SAIC 102	1960		40	B 415	**Possible drums (D) are located on the northeast side of Building 415, located easterly of the rodeo area.** Historical records do not indicate that hazardous wastes were managed or stored at Building 415, most recently used for storage of materials by the Marine Air Group (MAG) -11, and consequently, no further action is recommended.	X
APHO 14	SAIC 105	1960		40	Horse Stables	**Stains (ST) or wet soil (WS) can be seen in the cleared areas on the northeast and southeast sides of the Rodeo Area complex.** Historical records do not indicate that hazardous wastes were managed in this area. No further action recommended based upon the review of historical records.	X

TABLE 2
SAIC Aerial Photograph Anomaly List

SAIC 467	LQ	1983	B	Liquid is apparently flowing southwesterly into a parking area from buildings located about 200 feet southeast of Bldg 392	SAIC 17, SAIC 150, SAIC 196 SAIC 198, SAIC 338, SAIC 388 SAIC 422, EPA 61, EPA 66, EPA 68	Motor Pool Area	2	FI	NFI (4)	NFI	This anomaly is part of an site indicated to be the "Motor Pool Area" in the USEPA report. Several SWMUs have been investigated in this area. Most of the anomalies in this area are stains or liquid.
SAIC 483	ST, LQ	1984	B	Stains or liquids are at three locations: near the northwest edge of the aircraft parking apron, the northeast portion of Tank Farm No. 4, and the parking area to the southeast.	SAIC 12, SAIC 22, SAIC 148 SAIC 237, SAIC 332, SAIC 369 SAIC 459, EPA 73	Tank Farm 4	2	FI	NFI (4)	NFI	This anomaly has been addressed by excavations or soil investigations related to Tank Farm 4.
SAIC 484	ST	1984	B	Probable stains on the southerly side of Bldg 658.		IRP Site 4	N/A	FI	FI (2)	NFI	This anomaly only identified on this aerial photograph.
SAIC 497	B, DG	1984	B	New construction and associated disturbed ground in the triangular area southeast of Perimeter Road and Magazine Road.		This aNonemaly is only Noneted on one aerial photograph.	1	NFI	NFI	NFI	
SAIC 508	LQ	1987	B	Liquid is apparently flowing near the northeast side of Bldg 125.		None	2	FI	NFI (3)	NFI	
SAIC 518	ST, WS	1987	B	Probable stains or wet soil are on the northeast side of Bldg. 415.	SAIC 102	SWMU 125	2	NFI	NFI	NFI	
SAIC 519	GR	1987	B	The Rodeo Area has expanded to the northwest following probable site grading.		None	1	NFI	NFI	NFI	
SAIC 527	VT	1988	B	A vertical tank is near the northwest corner of Bldg 121.		None	4	FI	NFI (4)	NFI	
SAIC 536	EXT, FA	1988	B	The former extraction area at the mouth of Agua Chinon Wash has been filled.	SAIC 20, SAIC 64, SAIC 106 SAIC 156, SAIC 443, SAIC 564	None	1	NFI	NFI	FI	Construction debris is visible at scattered locations throughout the site. Station personnel have indicated this area was a disposal area.
SAIC 539	DG, B, MMLT, DG, TR	1988	B	The Rodeo Area has expanded to the northwest where disturbed soil, buildings, and light-toned mounded material can be seen. There is an area of disturbed ground along the southerly side of Irvine Blvd that may be a backfilled trench.		None	1	FI	NFI (4)	NFI	
SAIC 557	B, UO, VT	1992	B	A new building and unidentified object (tank or circular horse training area) are at the Rodeo Area		None	4	NFI	NFI	NFI	
SAIC 564	GR	1992	B	Grading appears to be complete in the south-central area of MCAS.	SAIC 20, SAIC 64, SAIC 106 SAIC 156, SAIC 443, SAIC 536	None	1	NFI	NFI	FI	Construction debris is visible at scattered locations throughout the site. Station personnel have indicated this area was a disposal area.
SAIC 97	UO, MMLT	1958	C	No significant changes are noted at Site 1		IRP Site 1	6	NFI	NFI	NFI	
SAIC 116	ST, TR, LQ	1960	C	Several stains and a trench with with probable liquid at Site 1.		IRP Site 1	2	NFI	NFI	NFI	
SAIC 221		1971	C	No significant changes are noted at the EOD range		IRP Site 1		NFI	NFI	NFI	
SAIC 254	TR, HT	1973	C	Two possible trenches and a horizontal tank at Site 1		IRP Site 1	1	NFI	NFI	NFI	
SAIC 571		1974	C	No significant changes at Site 1		IRP Site 1		NFI	NFI	NFI	
SAIC 572		1975	C	No significant changes at Site 1		IRP Site 1		NFI	NFI	NFI	
SAIC 373		1977	C	No significant changes are noted at Site 1		IRP Site 1		NFI	NFI	NFI	
SAIC 444	IM, LQ	1981	C	A berm has been constructed in the northern portion of Site 1. Pounded liquid is noted in photographs from some years		IRP Site 1	5	NFI	NFI	NFI	
SAIC 472	LQ, IM	1983	C	A liquid filled impoundment (about 100 by 150 feet) is at the northern portion of Site 1. A liquid filled trench is in the center of Site 1.		IRP Site 1	5	NFI	NFI	NFI	
SAIC 513		1987	C	No significant changes are noted at Site 1		IRP Site 1		NFI	NFI	NFI	
SAIC 34	VT	1946	D	A probable vertical tank near S 11th Street and L Street		SWMU 45	4	FI	NFI (4)	NFI	Possibly Tank 155?
SAIC 35	UO, VT, M	1946	D	Unidentified object, possibly a vertical tank or mound on the north side of perimeter road	No	None	4	FI	NFI (4)	NFI	
SAIC 37	LQ	1946	D	Liquid flowing southwesterly from the southwest side of Bldg 132	No	None	2	FI	NFI (4)	NFI	Location is questionable
SAIC 39	IM	1946	D	Two impoundments on the southwest side of Bldg 306		None	5	FI	FI	FI	Listed as "Slurry Beds" on station plans from 1940s. This anomaly was recommended for further investigation in Table 5 of this Report
SAIC 40	VT	1946	D	Two vertical tanks on the northeast side of Bldg 306		None	4	FI	NFI (4)	NFI	
SAIC 41	OS, D	1946	D	An open storage area, possibly with drums on the westerly side of Building 320	SAIC 181 SAIC 410	IRP Site 21	N/A	FI	NFI (3)	NFI	
SAIC 42	ST	1946	D	Soil stains beneath the present aircraft apron about 500 feet southeast of Tank 174		IRP Site 10	N/A	FI	FI (2)	NFI	This anomaly is contained within IRP Site 10
SAIC 43	OS, D	1946	D	Open storage areas with possible drums beneath the present aircraft parking apron about 700 to 1000 feet southeast of Tank 174		IRP Site 10	N/A	FI	FI (2)	NFI	This anomaly is contained within IRP Site 10
SAIC 44	ST, OS	1946	D	Soil stains in an open storage area now occupied by Bldgs 386 and 1389		IRP Site 10	N/A	FI	FI (2)	NFI	A portion of this anomaly is contained within IRP Site 10
SAIC 45	WS, ST, OS	1946	D	Wet soil or stains in an open storage area about 500 feet northwest of Bldg 322		None	2	FI	NFI (4)	NFI	

TABLE 2
SAIC Aerial Photograph Anomaly List

SAIC 46	WS, ST, OS	1948	D	Wet soil or stains in the area now occupied by the southwest corner of Bldg 1389, and in the open storage area about 200 feet northwest of Bldg 1389.		None	2	FI	FI	NFI	This anomaly only identified on this aerial photograph.
SAIC 47	OS, D	1948	D	An open storage area with possible drums near the		None	3	FI	NFI (4)	NFI	
SAIC 48	ST, LQ	1948	D	Stains caused by liquid flowing easterly from the aircraft parking apron about 200 feet east of Bldg. 296.		Adjacent to IRP Site 7	N/A	FI	FI (2)	NFI	This anomaly is contained within IRP Site 7.
SAIC 49	D, OS	1948	D	There may be drums in an open storage area about 200 feet east of Bldg 296.		Adjacent to IRP Site 7	N/A	FI	FI (2)	NFI	
SAIC 50	OS	1948	D	An open storage area at the present location of Bldg. 360		None	3	FI	FI (2)	NFI	Building 360 was constructed prior to December 1952.
SAIC 51	MMDT	1948	D	Dark-toned mounded material adjacent to the drainage ditch between Perimeter road and the Southeast corner of the aircraft parking apron.		None	6	NFI	NFI	NFI	Mounds appear to be soil related to maintenance of the ditch.
SAIC 52	OS	1948	D	Four open storage areas north of the railroad tracks, between Agua Chinon Wash and Borrego Canyon Wash.		None	3	FI	FI	NFI	This area has now been covered by the end of Runways 34-L and 34-R.
SAIC 68	TR	1952	D	Shallow or backfilled trench		None	1	FI	NFI (4)	NFI	
SAIC 69	MMLT	1952	D	Light-toned mounded material can be seen on the westerly side of Bee Canyon Wash, South of Perimeter Road	SAIC 246 SAIC 277 SAIC 485	Adjacent SWMUs	6	NFI	NFI	NFI	Disturbed ground, trenches, and/or mounded material was observed on aerial photographs from four different years.
SAIC 70	TR, LQ	1952	D	A trench with possible liquid at its northern end		None	1	NFI	NFI	NFI	
SAIC 81	TR, DG	1955	D	A trench and disturbed ground about 230 feet northwesterly of Bldg 307.	EPA 125	None	1	FI	FI	NFI	This anomaly is only identified on this aerial photograph. No liquids, refuse or other materials were noted in the trenches.
SAIC 82	OS	1955	D	Open storage areas in much of the north-central portion of Area D from the USEPA Report		IRP Sites 10, 22, 24	N/A	NFI	NFI	NFI	
SAIC 83	ST	1955	D	Probable stains adjacent to the northwest corner of the aircraft parking apron		IRP Site 22	N/A	NFI	NFI	NFI	
SAIC 84	VT	1955	D	Two vertical tanks can north of Bldg 355		None	4	FI	NFI (4)	NFI	
SAIC 85	VT	1955	D	Two vertical tanks about 200 feet south of Bldg 368	EPA 131 (7)	IRP Site 12	N/A	FI	FI (2)	NFI	This anomaly is contained within IRP Site 12
SAIC 86	OS	1955	D	Open storage area parallel to S. Manne Way, extends from SAIC 85 to Bldg. 317	SAIC 488	None	3	NFI	NFI	NFI	
SAIC 90	LQ, WS	1958	D	Possible liquid or wet soil at the northerly end of the sludge drying beds		IRP Site 12	N/A	NFI	FI (2)	NFI	This anomaly is contained within IRP Site 12
SAIC 129	IM, VT	1961	D	An impoundment and six vertical tanks near S. Manne Way, S. 15th Street, and Plant Road	EPA 129	IRP Site 12	N/A	FI	FI (2)	NFI	This anomaly is contained within IRP Site 12
SAIC 130	ST, DG	1961	D	Stains and disturbed ground near the near the northerly and easterly sides of Bldg. 1585 about 200 feet north of the Bldg 322		SWMUs 243, 291	2	FI	NFI (4)	NFI	
SAIC 131	LQ	1961	D	Liquid appears to be flowing from a hangar (Bldg 296) at the southeast corner of the aircraft parking apron and discharging into the ditch each of the apron		IRP Site 24	N/A	FI	FI (2)	NFI	This anomaly is partially contained within IRP Site 7.
SAIC 132	ST	1961	D	Stains in the proximity of Bldg 1749	SAIC 137 SAIC 461	IRP Site 8	N/A	FI	FI (2)	NFI	This anomaly is contained within IRP Site 8
SAIC 134	MMLT	1964	D	Light-toned mounded material on the north side of the railroad tracks near the approach end of Runway 34R		None	6	NFI	NFI	NFI	Materials appear to be soil and vegetation from earthmoving activities
SAIC 135	TR, DG	1964	D	A trench and disturbed ground about 1000 feet northeast of SAIC 134		None	1	FI	NFI (4)	NFI	Could be backfilled trench or disposal site
SAIC 137	ST	1964	D	Stains are observed in the cleared or graded area easterly of Bldg. 360 and Site 8		IRP Sites 8 & 24, SWMU 232	N/A	FI	FI (2)	NFI	Northern portion of anomaly is contained within IRP Site 8
SAIC 138	OS, ST, D	1964	D	An open storage area, probable stains and drums about 500 feet Southeasterly of the southeast corner of the aircraft parking apron	SAIC 247 SAIC 305	None	3	FI	FI (2)	NFI	Western portion of anomaly is contained within IRP Site 8
SAIC 139	ST	1964	D	Stains in the vicinity of Bldg. 325		None	2	FI	FI	NFI	This anomaly only noted on this aerial photograph. Within in area where several soil gas samples have been taken.
SAIC 140	ST	1964	D	Stains on the westerly side of Bldg. 324		None	2	FI	FI	NFI	This anomaly only noted on this aerial photograph. Within in area where several soil gas samples have been taken
SAIC 141	ST, LQ	1964	D	Stains in the general area of Bldgs. 309, 311, and 312, probable liquid flow from toward the northeast from near Bldg 312	EPA 163	IRP Site 24 boring at West Edge of anomaly	2	FI	FI	NFI	Within in area where several soil gas samples have been taken as part of Site 24 investigation.
SAIC 142	ST	1964	D	Stains in the open area within and south of Site 10		IRP Site 10	N/A	FI	FI (2)	NFI	All of the eastern portion and half of the western portion of anomaly is contained within IRP Site 10
SAIC 167	ST	1967	D	Extensive staining at Sites 9, 10, and 22		IRP Site 9, 10, 22	N/A	NFI	NFI	NFI	
SAIC 168	OS, D	1967	D	An open storage area with probable drums adjacent to the southwest corner of the aircraft parking apron near Bldgs 388 and 655		IRP Site 10	N/A	FI	FI (2)	NFI	Anomaly is contained within IRP Site 10
SAIC 176	EXT	1968	D	A 400 by 70 feet extraction between Runways 34L and 34R about 500 feet south of Runway 25R		None	1	FI	FI	NFI	This anomaly is likely related to some type of runway construction.
SAIC 177	EX	1968	D	An excavation near threshold of Runway of 34R containing unidentified equipment or materials		None	1	FI	NFI (4)	NFI	

s Marine Corps

Base Realignment and Closure Cleanup Plan (BCP)

For

Marine Corps Air Station El Toro, CA

March 1999

soil contaminated with PCBs located in a large pit with a 10-foot-deep layer of clean soil. This action met the U.S. EPA remedy requirements for PCB-contaminated soil.

- Soil vapor extraction (SVE) pilot tests, initiated at IRP Site 24 in 1996, were continued at various vapor extraction wells during 1998. Over 870 pounds of VOCs were removed during the SVE pilot testing.
- Groundwater remediation pilot tests, initiated at IRP Site 24 in 1997, were continued during 1998. The purpose of the testing program was to compare and evaluate the effectiveness of groundwater extraction, SVE-enhanced groundwater extraction and groundwater injection during remediation of VOCs in groundwater. The testing program provided additional data to assist in the design of a remedial alternative capable of (1) minimizing the migration of VOCs within the shallow groundwater unit and (2) minimizing the migration of VOCs from the shallow groundwater unit to the principle aquifer.

Table 3-3 will be revised in updates of this BCP as early actions for IRP sites are implemented and/or completed.

3.1.2 Installation-Wide Source Discovery and Assessment Status

An EBS for MCAS El Toro was completed on 01 April 1995. One of the main objectives of the EBS was to evaluate the ECP at the Station to facilitate property disposal. Information from this study related to source discovery and assessment are detailed below.

3.1.2.1 Aerial Photograph Features/Anomalies

In 1991 and 1993, surveys of historical aerial photographs of MCAS El Toro were performed by the U.S. EPA and Science Applications International Corporation (SAIC) (SAIC 1993), respectively. The survey included photographs dating back to 1946. The photographs were reviewed for features/anomalies of potential environmental concern. Over 500 features/anomalies were identified by SAIC which took into account hundreds of anomalies initially identified by the U.S. EPA report. The features/anomalies that related to IRP sites were evaluated and incorporated, as appropriate, in the Phase II RI Work Plan. As part of the EBS, the remaining aerial photograph features/anomalies were further evaluated. The final EBS Report identified a total of 53 features/anomalies requiring more detailed assessment. These 53 features/anomalies are described in Table 3-2 and shown in Figure 3-1. DoN initiated a more detailed assessment of these features/anomalies in 1997. Physical sampling in some of the areas of consolidated anomalies is anticipated in 1999.

Table 3-2
Aerial Photograph Features/Anomalies
(Sheet 1 of 7)

Database Tracking	SAIC Anomaly ID No.	LRA Reuse Parcel	Point of Reference	Year	SAIC Observations[1]	SAIC Comments[2]	Comments	ECP Area Type
APHO 1	7	32	Tank Farm 3	1946	ST	C	The stains appear adjacent to the southeastern side of Tank Farm 3 where a former fuel bladder may have been located. Also see anomalies 113, 173, 190, 227, 235, and 272.	7
APHO 2	14	42	B 136	1946	OS, D	C	Miscellaneous equipment is stored along the southeast side of B 135. The ground surface is paved with asphalt, and surface runoff flows in a southwest direction.	7
APHO 3	21	43	B 120	1946	OS, D	C	Miscellaneous equipment is stored along the southeast side of B 120. The ground surface is paved with asphalt, and surface runoff flows in a southwest direction.	7
APHO 4	22	23	Tank Farm 4	1946	ST	C	Miscellaneous equipment is stored along all sides of this building. Portions of the ground surface along the east and west sides of the building are unpaved. Surface runoff flows in a southwesterly direction.	7
APHO 5	25	32	B 50	1946	OS	C	This area is commonly used for open storage. The ground surface is unpaved.	7
APHO 6	39	29	B 306	1946	IM	C	Unknown impoundments. Additional investigation recommended.	7
APHO 7	46	29	B 1389	1946	WS, ST, OS	C	The liquid is probably surface runoff.	7
APHO 8	52	7	Golf Course Hole 12	1946	OS, R, EX, FA	C	Portions of this storage area has been covered by the extension of runways 34-L and 34-R.	7
APHO 9	53	23	Agua Chinon Wash	1946	LQ	C	The liquid could be surface runoff flowing into Agua Chinon Wash.	7

Table 3-2
Aerial Photograph Features/Anomalies
(Sheet 2 of 7)

Database Tracking	SAIC Anomaly ID No.	LRA Reuse Parcel	Point of Reference	Year	SAIC Observations[1]	SAIC Comments[2]	Comments	ECP Area Type
APHO 10	79	23	B 286	1955	OS	A	The open storage area may be associated with B 286.	7
APHO 11	81	29	B 307	1955	TR, DG	C	This feature is located adjacent to the NW side of the stor[redacted] yard for the trade shops and NE of B 307. Activities associated with the disturbed ground are unknown.	7
APHO 12	92	8	DRMO Yard 2	1958	WS	C	Two areas of wet soil are identified in this anomaly. One is located near the SE corner of the DRMO storage yard #2 (SWMU 46) and the other is located SW of B 457. No analytical data has been collected for the general area SW of B 457.	7
APHO 13	102	40	B 415	1960	D	C	SWMU 125 is located on the NE side of B 415. The storage area featured in the photograph is located in an unpaved area on the NW side of the building. Also see anomalies 289 and 431	7
APHO 14	105	40	Horse Stables	1960	ST, WS	C	This feature is located near the horse stables. No HW-generating activities are known to have occurred at the stable area.	7
APHO 15	113	32	Tank Farm 3	1960	ST	C	Several stains appear at various locations adjacent to the parking apron near Tank Farm 3. It is possible that the stains could be due to runoff from the apron.	7
APHO 16	115	32	Tank Farm 3	1960	WS, LQ	C	The wet soil appears in a storage yard located adjacent to the SW side of Tank Farm 3. The storage yard is used to store vehicles and miscellaneous equipment.	7
APHO 17	139	29	B 357	1964	ST	C	Currently, this area is unpaved. A hazardous materials storage locker is located approximately 20 feet north of the anomaly	7

Table 3-2
Aerial Photograph Features/Anomalies
(Sheet 7 of 7)

Database Tracking	SAIC Anomaly ID No.	LRA Reuse Parcel	Point of Reference	Year	SAIC Observations[1]	SAIC Comments[2]	Comments	ECP Area Type
APHO 53	502	32	Perimeter Rd. & Magazine Rd.	1987	ST	C		7

Notes:

1 The abbreviations in this column correspond to the following:

B - Building
D - Drums
DB - Debris
DG - Disturbed ground
DT - Dark-toned
EX - Excavation
EXT - Extraction
FA - Fill area
FBR - Fuel bladder revetment
HT - Horizontal tank
IM - Impoundment
LQ - Liquid
M - Material
MM - Mounded material
OS - Open storage
R - Refuse
Rd - Road
St - Street
ST - Stain
SW - Southwest
TR - Trench
UO - Unidentified object
VT - Vertical tank
WS - Wet soil

2 The letters in this column correspond to the following:

A - Verification of a feature identified in U.S. EPA, 1991, "Site Analysis, El Toro MCAS" and occurring within the Sampling and Analysis Plan (SAP) Amendment RI/FS site boundaries.
B - Features identified in SAIC assessment that occur within the SAP Amendment IRP site boundaries.
C - Sites outside of the SAP Amendment RI/FS site boundaries

Abbreviations:

APHO - aerial photograph anomaly
DRMO - Defense Reutilization Marketing Office
EPA - Environmental Protection Agency
HW - hazardous waste
HWSA - hazardous waste storage area
NE - northeast
NFA - no further action
NW - northwest
RFA - Resource Conservation and Recovery Act (RCRA) Facility Assessment
RI - Remedial Investigation
SE - southeast
SW - southwest
SWMU - Solid Waste Management Unit

EXTRACTS

Final Report
Aerial Photograph Assessment
MCAS El Toro

Contract No. N68711-91-D-4658
Delivery Order 0002
SAIC Project No. 01-0892-02-0817

Submitted to:

Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway, Room 18
San Diego, CA 92132-5181

Submitted by:

Science Applications International Corporation
Engineering Sciences Division
10260 Campus Point Drive, MS F1
San Diego, CA 92121

October 25, 1993

Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1988

Figure 24

Sheet 1 of 1
January 21, 1988
Photo Number 3697-161
Source:
U.S. Geological Survey

Prepared for:

Southwest Division
Naval Facilities Engineering Command
Contract N68711-92-D-4658

LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B	Building	IM	Impoundment
D	Drums	LQ	Liquid
DB	Debris	LT	Light-Toned
DG	Disturbed Ground	M	Material
DK	Dark-Toned	MM	Mounded Material
EX	Excavation	OS	Open Storage
EXT	Extraction	R	Refuse
FA	Fill Area	ST	Stain
FBR	Fuel Bladder Revetment	TR	Trench
GR	Graded Area	UO	Unidentified Object
GS	Ground Scar	VT	Vertical Tank
HT	Horizontal Tank	WS	Wet Soil

-60' 0 3000' 6000'

1" = 2750'

Science Applications International Corporation
An Employee Owned Company

2.23 1988 PHOTOGRAPHS

FIGURE:	24
DATE:	21 JANUARY 1988
PHOTOGRAPH:	3697-161
NOTES:	The photographs are of a small scale and provide only partial coverage of the site.

c 522. There is disturbed ground (DG) at a construction site on the southeast side of Perimeter Road, between N 4th Street and N 6th Street. No additional investigation is recommended at this time.

c 523. Liquid (LQ) is flowing southwesterly across a parking area from Building 15, near West Marine Way and N 3rd Street. The flow discharges into a ditch (WS). Additional investigation is recommended.

c 524. Three possible vertical tanks (VT) are noted: two (2) are along the southerly side of Building 5, near S 3rd Street and West Marine Way; the third is in an open field southerly of Building 517, near S 5th Street and H Street. The tanks should be verified and their contents determined.

c 525. There is probable wet soil (WS) westerly of Building 52 and southerly of Building 692, near El Toro Boulevard and H Street. No additional investigation is recommended at this time.

c 526. There is an open storage (OS) area with possible drums (D) west of the Battery Acid Disposal Area (Site 14). Additional investigation is recommended. The current IR program field investigation of Site 14 should be expanded to include this area.

c 527. A vertical tank (VT) is located near the northwest corner of Building 121, near N 9th Street and P Street. Determination of the tank contents is recommended.

c 528. There is possible liquid (LQ) at the southerly corner of Building 369, near S 12th Street and N Street. Additional investigation is recommended.

c 529. Liquid (LQ) is flowing southeasterly into the parking area from the northwest corner of Building 307, near S 14th Street and K Street. The current IR program field investigation of the Petroleum Disposal Area (Site 10) or of the TAFDS area (Site 22) should be expanded to include this area.

c 530. There are three probable vertical tanks (VT): about 100 feet east of Building 442, near North Marine Way and N 3rd Street; about 200 feet west of Building 442; and at the north side of Building 1791. The tanks should be verified and their contents determined.

c 540. Several features can be observed at the industrial/agricultural area south of Lambert Reservoir. Dark-toned mounded material (MMDT) is located in the northern and southern portions of the site. There is probable liquid (LQ): at the southern edge of the northern mounded material: in the pond adjacent to the road in the southwestern portion of the site; and at the western corner of the southern mounded material. There are stains (ST) in the southwestern corner of the site. No additional investigation is recommended at this time unless contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

c 541. No significant changes are noted at the South Coast Agriculture Field Station.

c 542. A light-colored pad, possibly concrete, was constructed west of Perimeter Road and Magazine Road. The purpose of the pad is unknown, but the area was probably graded (GR). No additional investigation is recommended at this time.

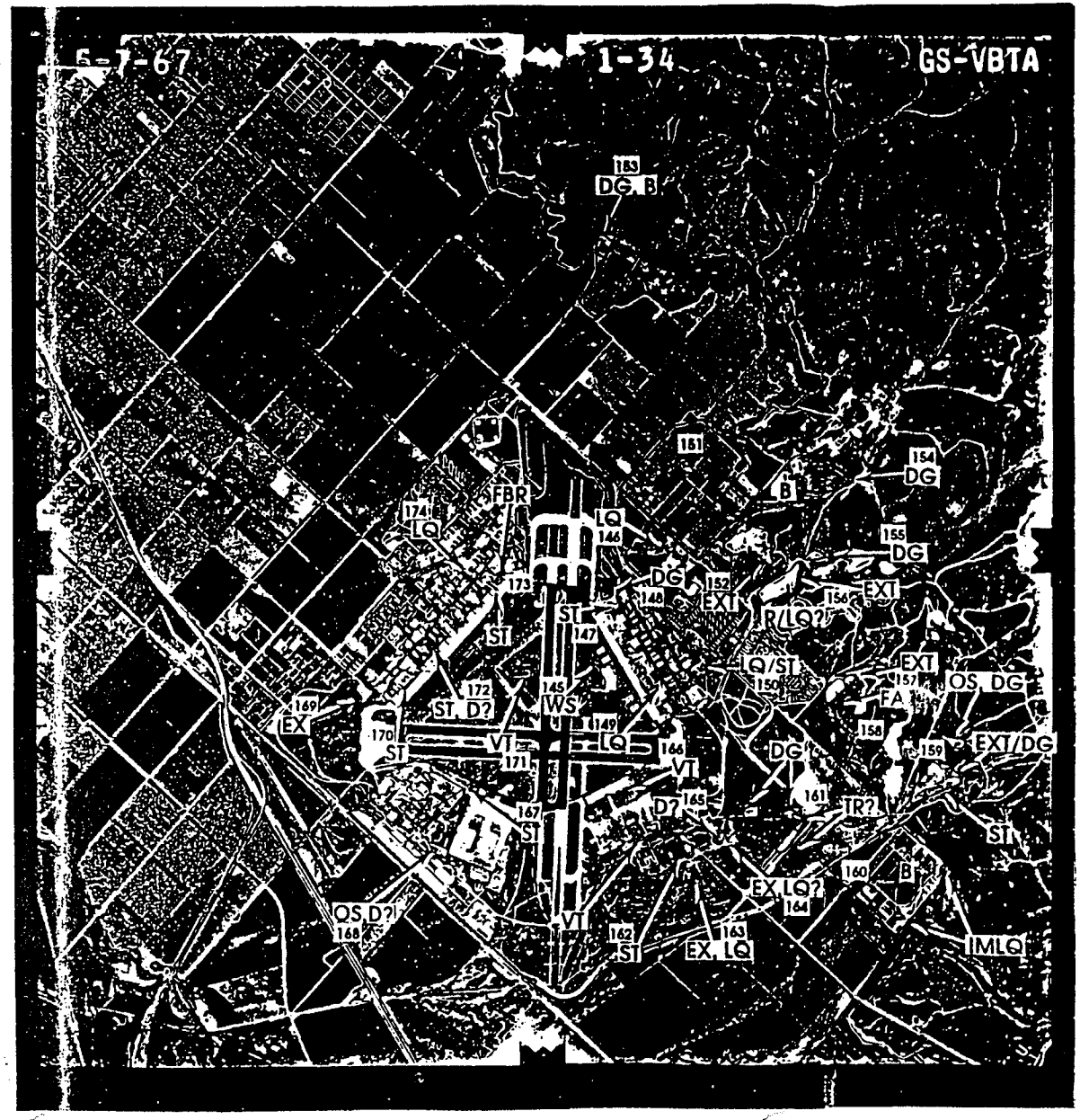
c 543. There has been industrial/commercial development (buildings (B) and grading (GR)) southwest of Building 360, between the railroad tracks and Interstate Highway 5. No additional investigation is recommended at this time, unless contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

a 544. A pad, probably of concrete and asphalt was constructed immediately south of Crash Crew Pit No. 2 (Site 16). The site was probably graded (GR). No additional investigation is recommended. The current IR program field investigation of the Site 16 area appears to be adequate, relative to the features noted here.

c 545. The impoundment (IM), probably for irrigation water or flood control, on the northerly side of Irvine Boulevard, near the departure end of Runway 34R, is dry. No additional investigation is recommended at this time.

c 546. No significant changes are noted at the Rifle Range, or in its immediate vicinity.

c 547. There has been continued commercial and industrial development (buildings (B) and grading (GR)) along the southeastern border of the activity. No additional investigation is recommended at this time, unless contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.



Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1967

Figure 9

Sheet 1 of 1
June 27, 1967
Photo Number GS-VBTA-1-34
Source:
U.S. Geological Survey

Prepared for:

Southwest Division
Naval Facilities Engineering Command
Contract N68711-92-D-4658

LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B	Building	IM	Impoundment
D	Drums	LQ	Liquid
DB	Debris	LT	Light-Toned
DG	Disturbed Ground	M	Material
DK	Dark-Toned	MM	Mounded Material
EX	Excavation	OS	Open Storage
EXT	Extraction	R	Refuse
FA	Fill Area	ST	Stain
FBR	Fuel Bladder Revetment	TR	Trench
GR	Graded Area	UO	Unidentified Objec
GS	Ground Scar	VT	Vertical Tank
HT	Horizontal Tank	WS	Wet Soil

N

3000' 0 3000' 6000

1" = 2667'

Science Applications International Corporation
An Employee-Owned Company

2.8 1967 PHOTOGRAPHS

FIGURE:	9
DATE:	27 JUNE 1967
PHOTOGRAPH:	GS-VBTA-1-34
NOTE:	The scale of this photograph is poor, rendering recognition and identification of small features difficult.

c 145. Wet soil (WS) can be seen on the northerly side of Building 1793, and wet soil (WS) with probable liquid (LQ) occurs near the edge of the aircraft parking apron near the Base Operations facilities. Additional investigation is recommended.

c 146. Liquid (LQ) is flowing easterly from the northerly side of Building 1798 in the Rodeo Area. Additional investigation is not recommended at this time.

c 147. Apparent soil stains (ST) form three parallel lines on the westerly side of Building 139, near N 9th Street and M Street. Additional investigation is recommended.

c 148. There is an area of disturbed ground (DG), with four, dark-toned, rectangular features, in the southerly portion of Tank Farm No. 4. Additional investigation is recommended.

c 149. There appears to be liquid (LQ) flowing northerly from Building 114, near N 8th Street and S Street. Additional investigation is recommended.

c 150. There are soil stains (ST) and probable liquid (LQ) flowing southerly from the former building located about 550 feet south of Building 392 (Motor Pool). Additional investigation is recommended.

c 151. No significant changes are noted at the South Coast Agriculture Field Station.

c 152. There appears to be continuing development for an unknown purpose in the former quarry (EXT) south of Lambert Reservoir. Additional investigation is recommended if contamination is identified near the site, or downgradient of the site, in areas of interest to the IR program.

c 153. No significant changes are noted at the Rifle Range at the northern tip of the activity. However, there are disturbed ground (DG) and buildings (B) adjacent to the northwest corner of the range. This appears to be an agricultural area, and as such, fuel, solvents, oil, pesticides, fertilizers, and other potential contaminants may have been used or stored at the site. Additional investigation may be advised if contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

c 154. There are buildings (B), cultivation, and disturbed ground (DG) in the industrial or agricultural complex south of Lambert Reservoir. Fuel, solvents, oil, pesticides, fertilizers, and other potential contaminants may have been used or stored at the site. Additional investigation may be advised if contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

c 155. Disturbed ground (DG), probably due to vegetation clearing, is noted northwesterly of the activity's residential area. The purpose is unknown and no additional investigation is recommended at this time.

c 156. Extraction (EXT) can be observed near the mouth of Agua Chinon Wash. There appears to be dark-toned material, possibly refuse (R) or liquid (LQ), in the eastern portion of the excavation. Additional investigations to determine if potential contaminants were placed in the quarry is recommended if contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

c 157. Areas of extraction (EXT) and filling (FA) are noted at Fuel Road and Quarry Road. If a fuel tank farm exists at this location, an investigation of tank and ancillary equipment integrity is recommended.

c 158. No activity is noted at the Communication Station Landfill (Site 17).

c 159. At the Magazine Road Landfill (Site 2) there is evidence of extraction (EXT), disturbed ground (DG) and stains (ST). In addition, a stain (ST) "path" in the form of a loop appears to have resulted from liquid discharge from a moving vehicle. There is an open storage (OS) area surrounded by disturbed ground (DG) north of the landfill. Quarrying (EXT) of the ridge to the west continues. No additional investigation is recommended at this time; the present IR program field investigation of Site 2 appears to be adequate, relative to the features noted here.

c 160. The County Industrial Farm and sewage disposal area contains two (2) liquid-filled (LQ) impoundment areas (IM) and several buildings (B). Fuel, oil, solvents, pesticides, fertilizers, and other potential contaminants may have been used or stored at the site. Additional investigation is recommended if contamination is detected at the site or downgradient of the site, in areas of interest to the IR program.

c 161 Disturbed ground (DG) and probable backfilled trenches (TR) are noted in the western corner of Perimeter Road and Magazine Road, and about 1400 feet westerly of the intersection. Additional investigation of the purpose of these sites is recommended. The northeasterly-oriented, backfilled trench (TR) adjacent to Perimeter Road is the Perimeter Road Landfill (Site 5). No additional investigation of Site 5 is recommended at this time. The present IR program field investigation Site 5 appears to be adequate, relative to the features noted here.

Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1974
Figure 13

Sheet 1 of 1
December 9, 1974
Photo Number TG-7400-10-16
Source: Map and Imagery Library,
University of California, Santa Barbara

Prepared for:

Southwest Division
Naval Facilities Engineering Command
Contract N68711-92-D-4658

LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B	Building	IM	Impoundment
D	Drums	LQ	Liquid
DB	Debris	LT	Light-Toned
DG	Disturbed Ground	M	Material
DK	Dark-Toned	MM	Mounded Material
EX	Excavation	OS	Open Storage
EXT	Extraction	R	Refuse
FA	Fill Area	ST	Stain
FBR	Fuel Bladder Revetment	TR	Trench
GR	Graded Area	UO	Unidentified Object
GS	Ground Scar	VT	Vertical Tank
HT	Horizontal Tank	WS	Wet Soil

N

2000' 0 2000' 4000'

1" = 2275'

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2.12 1974 PHOTOGRAPHS

FIGURE: 13
DATE: 9 DECEMBER 1974
PHOTOGRAPH: TG-7400-10-16
NOTE: The photographs do not provide complete stereographic coverage.

c 270. Probable liquid (LQ) is noted on the southwest side of Building 279, near N 7th Street and H Street. Additional investigation is recommended.

c 271. There are probable drums (D) on the southwest side of Building 287, near N 7th Street and J Street. Additional investigation is recommended.

c 272. Stains (ST) or wet soil (WS) can be seen on the southwest side of Building 624, near N 6th Street and J Street. The pattern suggests probable liquid flow from the south corner of the building. Additional investigation is recommended.

c 273. There is disturbed ground (DG) on the northwest sides of Buildings 25, 27 and 29, near West Marine Way and S 6th Street. Investigation of the site's history as a possible disposal area is recommended. Expansion of the Suspended Fuel Tank (Site 15) IR program field investigation to include this general area may be advisable.

c 274. There are stains (ST) on the northwest side of Building 31, near West Marine Way and S 8th Street. Additional investigation is recommended. Expansion of the Suspended Fuel Tank (Site 15) IR program field investigation to include the entire area is recommended.

c 275. There are possible stains (ST) southwest of the Battery Disposal Area (Site 14), adjacent to the parking area. The possible stains may be the result of healthier vegetation due to locally increased runoff. Additional investigation not recommended at this time.

c 276. There is an impoundment (IM) with possible liquid (LQ) at Crash Crew Pit No. 2 (Site 16), stains (ST) about 220 feet south of Site 16, and vertical tank (VT) about 450 feet southeast of Site 16. Determination of the tank's contents is recommended. The origin of the stain (ST) is unknown. The current IR program field investigation of Site 16 appears to be adequate, relative to the features noted here, and additional investigation of the site is not recommended at this time. However, investigation of the other areas noted here is advisable.

c 277. Light- and dark-toned mounded material (MMLT and MMDT) are located about 200 feet southwest of S 15th Street and Plant Road. The features appear to be stockpiling of soil (DG) on the northwesterly side of Bee Canyon Wash. There is a possible drum (D) in the open storage (OS) area on the northerly side of S 15th Street

contaminants would be used and probably stored at the facility. No additional investigation is recommended unless contamination is detected at the site, or downgradient of the site, in areas of interest to the IR program.

c 287. There is an excavation (EX) about 1600 feet west of the Perimeter Road and Magazine Road intersection. The purpose of the excavation is unknown, and investigation of the site history as a possible disposal area is recommended.

c 288. Disturbed ground (DG), mounded material (MM) and probable trench (TR) can be seen about 700 feet southeast of the Perimeter Road and Quarry Road intersection. The purpose of the features is unknown, and investigation of site history as a possible disposal area is recommended.

c 289. There are wet soil (WS) or a stain (ST), and possible liquid (LQ) flow to the southwest from the open storage area on the northeast side of Building 415, adjacent to the Rodeo Area. Drums (D) may also be present. Additional investigation is recommended.

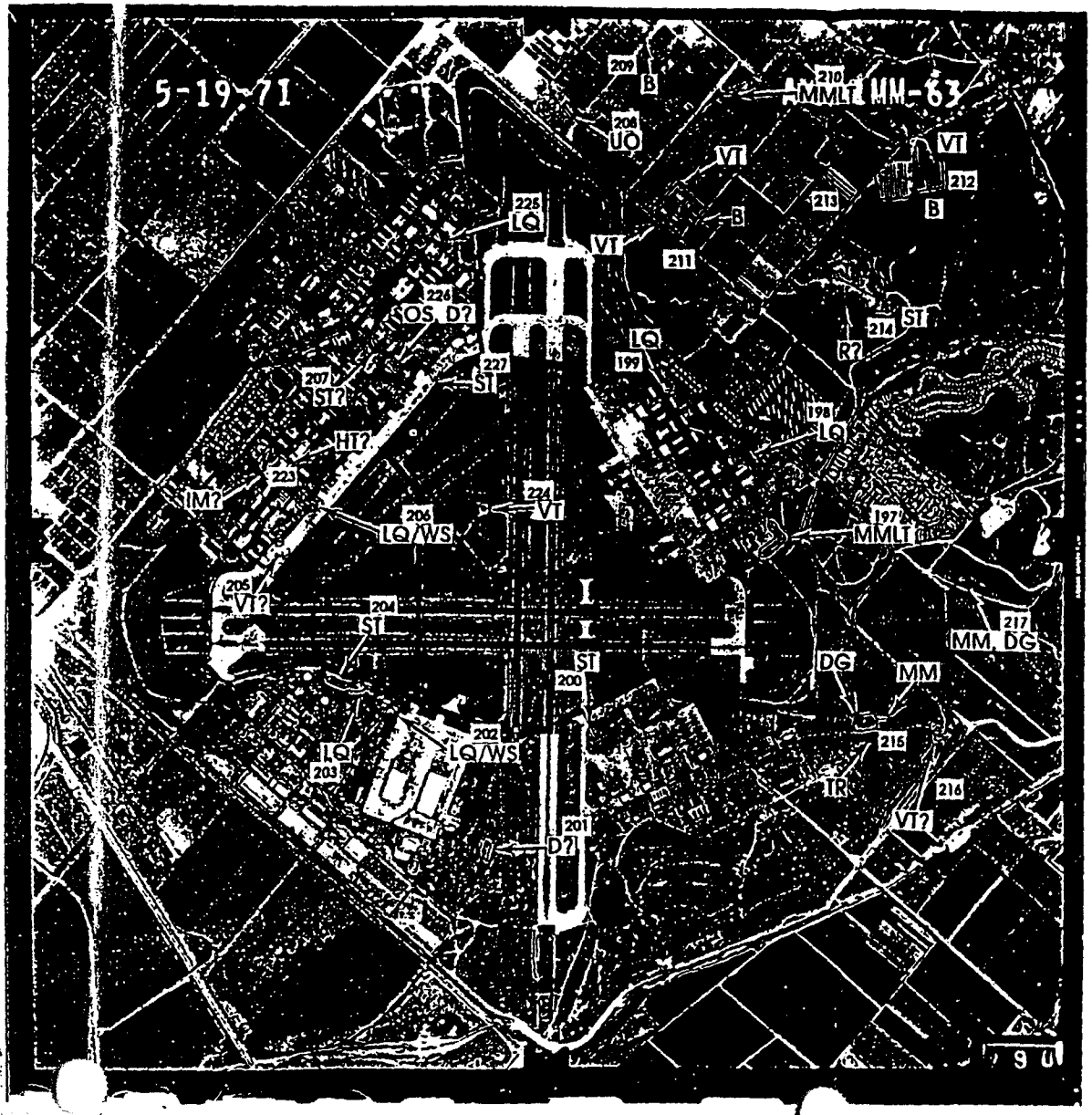
c 290. No significant changes are noted at the South Coast Agriculture Field Station.

c 291. No significant changes are noted at this apparent industrial or agricultural site.

a 292. At the Magazine Road Landfill, the trenches (TR) remain open and there are unidentified objects (UO) probably containers, but there are no significant changes.

c 293. There is wet soil (WS) and probable liquid (LQ) in the open area north of Trabuco Road, about 700 feet northwest of Gate No. 1. The features probably due to irrigation. Additional investigation is not recommended at this time.

a 571. No significant changes are noted at the EOD Range. The site is not indicated on the photograph.



Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1971

Figure 11

Sheet 1 of 1
May 19, 1971
Photo Number AXK-1MM-63
Source:
U.S. Department of Agriculture

Prepared for:

Southwest Division
Naval Facilities Engineering Command
Contract N68711-92-D-4658

LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B	Building	IM	Impoundment
D	Drums	LQ	Liquid
DB	Debris	LT	Light-Toned
DG	Disturbed Ground	M	Material
DK	Dark-Toned	MM	Mounded Material
EX	Excavation	OS	Open Storage
EXT	Extraction	R	Refuse
FA	Fill Area	ST	Stain
FBR	Fuel Bladder Revetment	TR	Trench
GR	Graded Area	UO	Unidentified Object
GS	Ground Scar	VT	Vertical Tank
HT	Horizontal Tank	WS	Wet Soil

N

2000' 0 2000' 4000'

1" = 1667'

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2.10 1971 PHOTOGRAPHS

FIGURE: 11
DATE: 19 MAY 1971
PHOTOGRAPH: AXK-1MM-63

c 197. There are light-toned mounded materials (MMLT) on the northeast and southeast sides of Tank Farm No. 5. The mounds appear to be stockpiled soil. Expansion of the Original Landfill (Site 3) investigation to include this area is recommended.

a 198. Liquid (LQ) is flowing south to southwest from the Motor Pool (Building 392). This feature has been noted previously. Additional investigation is recommended.

a 199. Liquid (LQ) is flowing easterly from Building 138, near N 9th Street and N Street. Additional investigation is recommended.

b 200. There is a stain (ST) on north side of the fuel bladders at ACER (Site 19). No additional investigation is recommended at this time. The current IR program field investigation of Site 19 appears to be adequate, relative to the features noted here.

c 201. Probable drums (D) can be seen in the open storage (OS) area about 800 feet southeast of the southeast corner of the aircraft parking apron. Expansion of the Drop Tank Drainage Area No. 2 (Site 7) investigation to include this site is recommended.

b 202. Wet soil (WS) and probable liquid (LQ) can be seen at the east end of the Crash Crew complex (Buildings 435 and 1649). The features are also noted in other years. Additional investigation is not recommended at this time. The current IR program field investigation of Site 9 appears to be adequate, relative to the features noted here.

c 203. Liquid (LQ) is flowing northeast from near Crash Crew Pit No.1 (Site 9), toward the taxiway about 300 feet east of the Crash Crew complex (Buildings 435 and 1649). The liquid may be contaminated with materials from the Site 9 area. Expansion of the Site 9 IR program field investigation to include this area is recommended.

c 204. There is a stain (ST) about 80 feet by 250 feet in dimension near Crash Crew Pit No. 1 (Site 9). Expansion of the IR program field investigation area to include the stained area is recommended.

a 205. There is a possible vertical tank (VT) near the Oil Change Area (Site 13), adjacent to Building 1505. There is also a stain (ST) on the northerly side of the tank area. Additional investigation is not recommended at this time. The current IR program field investigation of Site 13 appears to be adequate, relative to the features noted here.

between the developed quarry and the MCAS El Toro residential area appear to be inactive.

c 215. There is disturbed ground (DG) about 250 feet by 350 feet in area, dark-toned mounded material (MMDT), and a probable trench (TR), all about 1600 feet westerly of West Marine Road and Magazine Road. There is also a possible light-toned unidentified object (UO). Additional investigation of the site as a possible disposal or storage site is recommended.

c 216. Two (2) probable vertical tanks (VT) are adjacent to buildings at the west corner of Perimeter Road and Magazine Road. Verification of the tanks and determination of their contents is recommended.

c 217. Mounded material (MM) and disturbed ground (DG) can be seen about 500 feet southeast of Perimeter Road and Quarry Road. The purpose is unknown. Investigation of the site's history as a possible disposal area is recommended.

b 218. At the Magazine Road Landfill (Site 2) there is a trench (TR) about 600 feet by 70 feet in area, containing probable liquid (LQ). There are also three smaller trenches (TR), an excavation (EX) in the southern portion of area, and disturbed ground (DG) over the entire site. Additional investigation is not recommended at this time. The current IR program field investigation of Site 2 appears to be adequate, relative to the features noted here. The site area is not shown on the photograph.

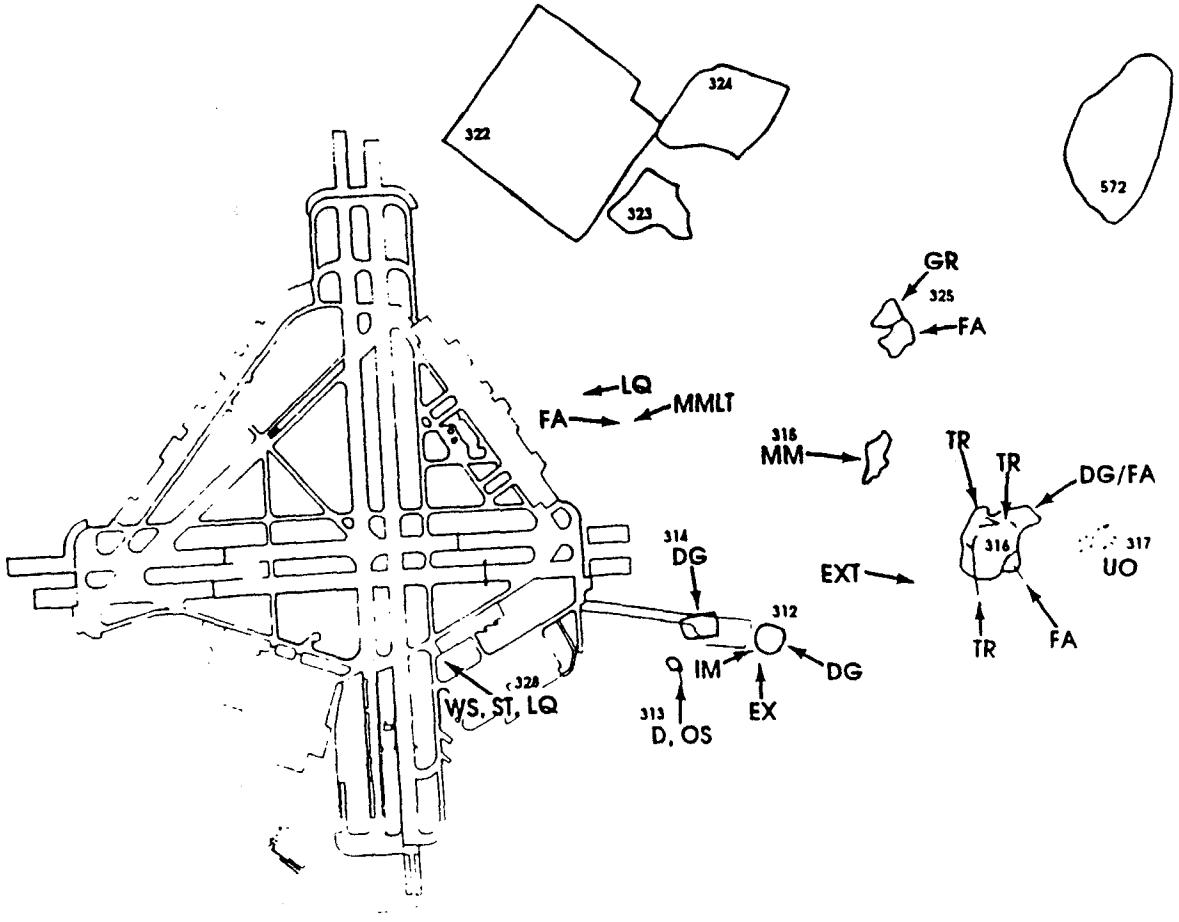
c 219. There is an area of disturbed ground (DG) with a trench (TR), mounded material (MM) and an excavation (EX) located east of Magazine Road Landfill, near the MCAS El Toro boundary. The purpose of the features is unknown. Additional investigation is recommended. The site area is not shown on the photograph.

c 220. At the County Industrial Farm and Sewage Disposal Facility there are impoundments (IM) with liquids (LQ), two (2) vertical tanks (VT), a trench (TR) and a southerly flow of liquid (LQ) from a building. No additional investigation is recommended unless contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program. The site area is not shown on the photograph.

b 221. No significant changes are noted at the EOD Range. The site area is not shown on the photograph.

c 222. The Magazine Road Landfill (Site 2) remains active and extraction (EXT) from the ridge west of the landfill continues. No additional investigation is recommended at this time. The current IR program field investigation of Site 2 appears to be adequate, relative to the features noted here. The site area is not shown on the photograph.

c 223. There is a probable horizontal tank (HT) (Building 517?) with a revetment (IM) near 4th Street and H Street. Verification of the tank and determination of its contents are recommended.



1992 Airfield Outline
Used for Reference

Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1975
Figure 14
Sheet 2 of 2
January 13, 1975
Photo Number 157-11-16
Source:
Continental Aerial Photo, Inc.

Prepared for:

Southwest Division
Naval Facilities Engineering Command
Contract N68711-92-D-4658

LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
B	Building	IM	Impoundment
D	Drums	LQ	Liquid
DB	Debris	LT	Light-Toned
DG	Disturbed Ground	M	Material
DK	Dark-Toned	MM	Mounded Material
EX	Excavation	OS	Open Storage
EXT	Extraction	R	Refuse
FA	Fill Area	ST	Stain
FBR	Fuel Bladder Revetment	TR	Trench
		UO	Unidentified Object
GR	Graded Area	VT	Vertical Tank
GS	Ground Scar	WS	Wet Soil
HT	Horizontal Tank		

N

2000' 0 2000' 4000'

1" = 2000'

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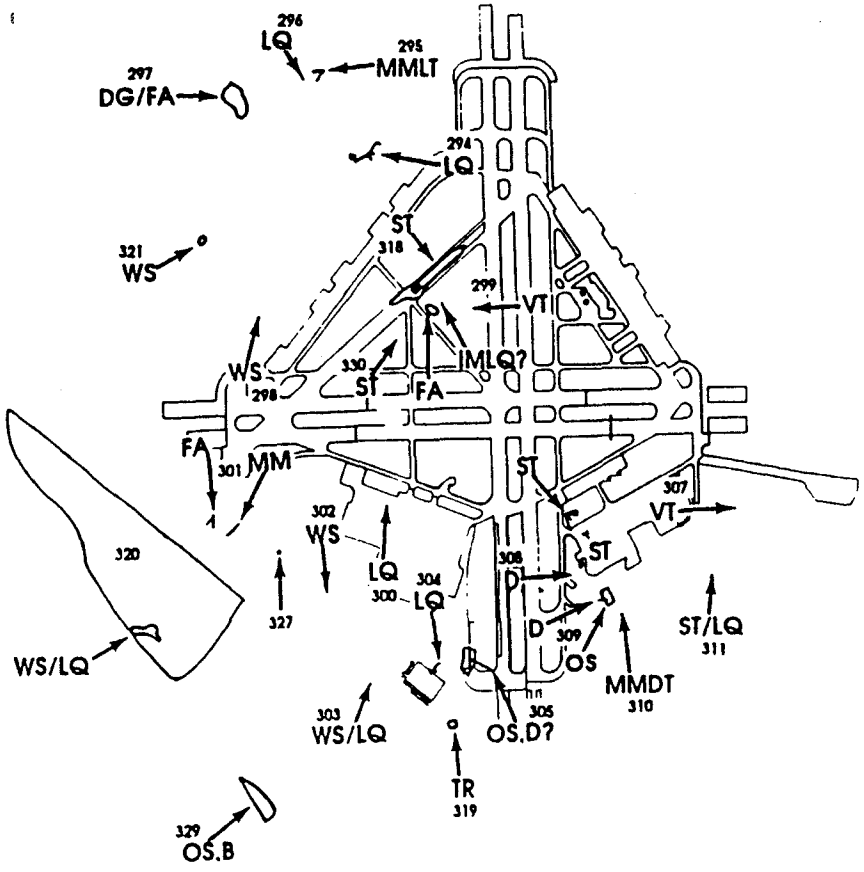

1992 Airfield Outline
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Aerial Photographic Interpretation
MCAS El Toro
Santa Ana, California
1975
Figure 14
Sheet 1 of 2
January 13, 1975
Photo Number 157-10-17
Source:
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LEGEND:

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
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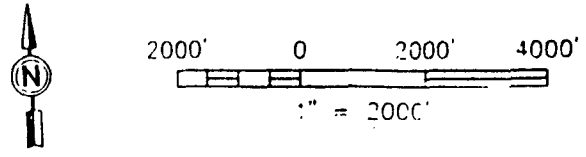
FBR	Fuel Bladder Revetment	TR	Trench
GR	Graded Area	UO	Unidentified Object
GS	Ground Scar	VT	Vertical Tank
HT	Horizontal Tank	WS	Wet Soil



Science Applications International Corporation
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2.13 1975 PHOTOGRAPHS

FIGURE:	14
DATE:	13 JANUARY 1975
PHOTOGRAPHS:	157-10-17 and 157-11-16
NOTE:	Copyrighted photograph, reproduction not authorized.

c 294. Liquid (LQ) can be seen flowing southeast and then southwest from the area of Building 99, near N 3rd Street and West Marine Way. The liquid appears to be irrigation runoff; additional investigation is not recommended at this time.

c 295. Light-toned mounded material (MMLT), probably construction related, can be seen near B Street, between N 4th Street and N 5th Street. Additional investigation is not recommended at this time.

c 296. There is possible liquid (LQ) in the street at the front of Building 443. Additional investigation is not recommended at this time.

c 297. There are disturbed ground (DG) and a fill area (FA) at the site of Building 694, near N 4th Street and Perimeter Road. These features appear to be related to construction. Additional investigation is not recommended at this time.

c 298. Possible wet soil (WS) is noted on the westerly side of West Marine Way, between Buildings 27 and 29. Additional investigation is recommended.

c 299. No significant changes are observed at Crash Crew Pit No. 2 (Site 16), but an impoundment (IM) with possible liquid (LQ) and a fill area (FA) are noted. The current IR program field investigation of Site 16 should include this entire area.

a 300. Liquid (LQ) is flowing southeasterly into the parking area from the east side of Building 435 (Crash Crew). The liquid is noted over a period of several years. Verification of the type of liquid is recommended, however, the current IR program field investigation of the Site 9 area appears to be adequate, relative to the features noted here.

c 301. There are mounded material (MM) and a fill area (FA) about 1000 feet northwest of Building 317, near Bee Canyon Wash Aqueduct. No additional investigation is recommended unless contamination is detected near the site, or downgradient of the site, in areas of interest to the IR program.

c 302. There is probable wet soil (WS) in the open area about 200 feet east of Building 322 (Mess Hall). The feature appears to be related to irrigation. Additional investigation is not recommended at this time.

c 313. There is an open storage (OS) area with possible drums (D) about 700 feet northeast of Building 673, near North/East Marine and N 3rd Street. Additional investigation is recommended.

c314 Disturbed ground (DG) can be seen about 1000 feet northeast of Building 673, near North / East Marine and N 3rd Street. The cause of the disturbance is unknown. Investigation of the site's history as a possible disposal area is recommended.

b 315. Light-and dark-toned mounded material (MMLT, MMDT) occur over much of the Communication Station Landfill (Site 17). The mounds appear to be soil. Additional investigation is not recommended at this time; the current IR program field investigation of the Site 17 area appears to be adequate, relative to the features noted here.

b 316. The Magazine Road Landfill (Site 2) is active with disturbed ground (DG) several trenches (TR) and fill areas (FA) noted. Most of area has been stripped of vegetation. No additional investigation is recommended at this time; the current IR program field investigation of the Site 2 area appears to be adequate, relative to the features noted here.

c 317. Ten (10) unidentified objects (UO) can be observed on the hillside about 1000 feet east of the Magazine Road Landfill. The objects are light colored, and may be vertical tanks (VT). Identification of the objects is recommended.

c 318. There is a large stain (ST), about 1600 feet long, on Runway 21, apparently caused by a flowing liquid. The stain extends to soil areas adjacent to the runway and into a drainage ditch. The cause of the stain is unknown, but it may be related to a fuel spill or fire suppressant. Investigation of recent occurrences on runway prior to date of photograph (13 Jan 1975) is recommended.

c 319. There is a trench (TR) about 300 feet northerly of the railroad tracks, on the easterly side of Agua Chinon Wash. The purpose of the trench is unknown. Investigation of the site's history as a possible disposal area is recommended.

c 320. With the exception of localized wet soil (WS) and liquid (LQ) no significant changes are noted at the International Raceway, near the southwestern corner of the activity.

c 321. There is wet soil (WS) in the cultivated field west of Perimeter Road near S 5th Street. The wet soil is probably due to irrigation; additional investigation is not recommended at this time.

c 322. No significant changes are noted at the South Coast Agriculture Field Station.

c 323. No significant changes are noted at the former quarry site.

c 324. No significant changes are noted at industrial/agricultural complex.

Appendix H
Soil Boring Logs

Geologic Log of Boring PHA5-SB01

Project **MCAS/EL TORO**	Northing - 2129369.693	Drilling Company BC2	
Project Number **18609**	Easting - 6117308.753	Drill Rig CME75	Begin Drilling 12/10/99
Client SWDIV	TOC Elevation NA	Driller Diego Torres	End Drilling 12/10/99
Location **PHOTO ANOMALY AREA 5**	TOP OF RIM NA	Drill Method HSA	Well Completion Date 12/10/99
Geologist B. Tanaka	DIAGRAM NOT TO SCALE		
Borehole Diameter 8-INCHES	Total Depth of Borehole 16 FEET	Depth to Water NOT ENCOUNTERED	

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	BORING DETAIL
Soil surface Hand augured to 4 feet bgs. 5 foot sample was collected, hand augured to 10 feet bgs	0							
Silty Sands (SM) Pale brown (10YR 6/5), fine to coarse, subrounded to subangular sands, fine non plastic silts, slightly moist to dry, no odor detected	2	SM						
Sands (SW) Pinkish white (7.5YR 8/2), very fine to medium, medium dense to loose, poorly sorted, subrounded to subangular, slightly moist, no odor detected. **18609-216 Sample collected at 5.0-5.5 feet bgs.**	4				0	8	6	
	6	SW			0	10 11	6	
	8							
Silts (ML) Strong brown (7.5YR 5/6), fine, slightly plastic to plastic, firm to soft, mica, slightly moist, no odor detected. **18609-217 Sample collected at 10.0-10.5 feet bgs.**	10				0	15 17	6	
	12	ML						
	14							
Silty Sands (SM) Strong brown (7.5YR 5/6), very fine to fine sand, fine slightly plastic to plastic silts, slightly moist, no odor detected	16	SM			0	50/3	6	CEMENT
End of boring at 16 feet bgs. No groundwater was encountered in the boring. Boring was back filled with 3 (100lb) bags of cement mixed with 50 gallons of potable water	18							
	20							
	22							
	24							
	26							
	28							
	30							
	32							
	34							
	36							
	38							
	40							

Geologic Log of Boring PHA5-SB02

Project **MCAS/EL TORO**	Northing - 2189552.054	Drilling Company BC2	
Project Number **18609**	Easting - 6117593.411	Drill Rig CME75	Begin Drilling 12/10/99
Client SWDIV	TOC Elevation NA	Driller Diego Torres	End Drilling 12/10/99
Location **PHOTO ANOMALY AREA 5**	TOP OF RIM NA	Drill Method HSA	Well Completion Date 12/10/99
Geologist B. Tanaka	DIAGRAM NOT TO SCALE		
Borehole Diameter 8-INCHES	Total Depth of Borehole 16 FEET	Depth to Water NOT ENCOUNTERED	

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	BORING DETAIL
Soil surface Hand augured to 4 feet bgs, 5 foot sample was collected, hand augured to 10 feet bgs Silty Sands (SM) Pale brown (10YR 6/5), fine to coarse, subrounded to subangular sands, fine non plastic silts, slightly moist to dry, no odor detected	0							
	2							
	4							
Same as above (SM) Strong brown (7.5YR 4/6), no odor detected **18609-2514 Sample collected at 5.0-5.5 feet bgs.**	6	SM			0 0 0	10 12 16	6 6 6	
	8							
Silts (ML) Strong brown (7.5YR 4/6), fine plastic silts, firm to hard, slightly moist, no odor detected **18609-2515 Sample collected at 10.0-10.5 feet bgs.**	10				0 0 0	11 13 14	6 6 6	
	12	ML						
	14							
Sands (SP) Strong brown (7.5YR 5/6), very fine to fine, subrounded to subangular, medium dense, well sorted sands, slightly moist, no odor detected	16	SP			0 0 0	9 13 14	6 6 6	CEMENT
End of boring at 16 feet bgs. No groundwater was encountered in the boring. Boring was back filled with 3 (100lb) bags of cement mixed with 50 gallons of potable water	18							
	20							
	22							
	24							
	26							
	28							
	30							
	32							
	34							
	36							
	38							
	40							

Geologic Log of Boring PHA5-SB03

Project **MCAS/EL TORO**	Northing - 2189590.811	Drilling Company BC2	
Project Number **18609**	Easting - 6116654.147	Drill Rig CME75	Begin Drilling 12/10/99
Client SWDIV	TOC Elevation NA	Driller Diego Torres	End Drilling 12/10/99
Location **PHOTO ANOMALY AREA 5**	TOP OF RIM NA	Drill Method HSA	Well Completion Date 12/10/99
Geologist B. Tanaka	DIAGRAM NOT TO SCALE		
Borehole Diameter 8-INCHES	Total Depth of Borehole 16 FEET	Depth to Water NOT ENCOUNTERED	

DESCRIPTION

Soil surface Hand augured to 4 feet bgs, 5 foot sample was collected, hand augured to 10 feet bgs
Silty Sands (SM) Pale brown (10YR 6/5), fine to coarse, subrounded to subangular sands, fine non plastic silts, slightly moist to dry, no odor detected

Same as above (SM) Strong brown (7.5YR 5/3), slightly moist, no odor detected
18609-2522 & 18609-2523 Sample collected at 5.0-5.5 feet bgs.

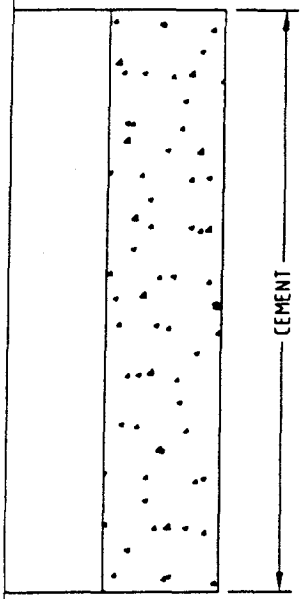
Sands (SP) Yellow (10YR 8/6), fine sands, well sorted, medium dense, subrounded to subangular, slightly moist, no odor detected.
18609-2524 Sample collected at 10.0-10.5 feet bgs.

Silts (ML) Strong brown (7.5YR 5/6), fine slightly plastic firm to hard silts, slightly moist, no odor detected

End of boring at 16 feet bgs. No groundwater was encountered in the boring. Boring was back filled with 3 (100lb) bags of cement mixed with 50 gallons of potable water.

Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)
0						
2						
4						
6	SM			0 0 0	16 14 12	6 6 6
8						
10				0 0 0	15 13 17	6 6 6
12	SP					
14						
16	ML			0 0 0	13 15 19	6 6 6
18						
20						
22						
24						
26						
28						
30						
32						
34						
36						
38						
40						

BORING DETAIL



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Geologic Log of Boring PHA5-SB04

Project **MCAS/EL TORO**	Northing - 2189437.804	Drilling Company BC2	
Project Number **18609**	Easting - 6116853.192	Drill Rig CME75	Begin Drilling 12/10/99
Client SWDIV	TOC Elevation NA	Driller Diego Torres	End Drilling 12/10/99
Location **PHOTO ANOMALY AREA 5**	TOP OF RIM NA	Drill Method HSA	Well Completion Date 12/10/99
Geologist B. Tanaka	DIAGRAM NOT TO SCALE		
Borehole Diameter 8-INCHES	Total Depth of Borehole 16 FEET	Depth to Water NOT ENCOUNTERED	

DESCRIPTION	Depth (feet)	Soil Group	Graphic Log	Samples	PID/FID (ppm)	Blows/6 in.	Recovery (inches)	BORING DETAIL
Soil surface Hand augured to 4 feet bgs. 5 foot sample was collected, hand augured to 10 feet bgs Silty Sands (SM) Pale brown (10YR 6/5), fine to coarse, subrounded to subangular sands, fine non plastic silts, slightly moist to dry, no odor detected	0 2 4	SM						
Sands (SP) Reddish yellow (7.5YR 6/6), very fine to fine, well sorted, medium dense, subrounded to subangular, slightly moist, no odor detected. **18609-2520 Sample collected at 5.0-5.5 feet bgs.**	6 8	SP			0 0	3 5	6 6	CEMENT
Sands (SP) Yellow (10YR 8/6), fine sands, well sorted, subrounded to subangular, medium dense, slightly moist, no odor detected. **18609-2521 Sample collected at 10.0-10.5 feet bgs.**	10 12 14				0 0 0	5 7 11	6 6 6	
Silts (ML) Strong brown (7.5YR 5/6), fine firm to soft plastic silts, slightly moist, no odor detected.	16	ML			0 0	8 15	6 6	
End of boring at 16 feet bgs. No groundwater was encountered in the boring Boring was back filled with 3 (100lb) bags of cement mixed with 50 gallons of potable water.	18 20 22 24 26 28 30 32 34 36 38 40							

Geologic Log of Boring PHA5-SB05

Project **MCAS/EL TORO**	Northing - 2189336.962	Drilling Company BC2	
Project Number **18609**	Easting - 6116938.700	Drill Rig CME75	Begin Drilling 12/10/99
Client SWDIV	TOC Elevation NA	Driller Diego Torres	End Drilling 12/10/99
Location **PHOTO ANOMALY AREA 5**	TOP OF RIM NA	Drill Method HSA	Well Completion Date 12/10/99
Geologist B. Tanaka	DIAGRAM NOT TO SCALE		
Borehole Diameter 8-INCHES	Total Depth of Borehole 16 FEET	Depth to Water NOT ENCOUNTERED	

DESCRIPTION

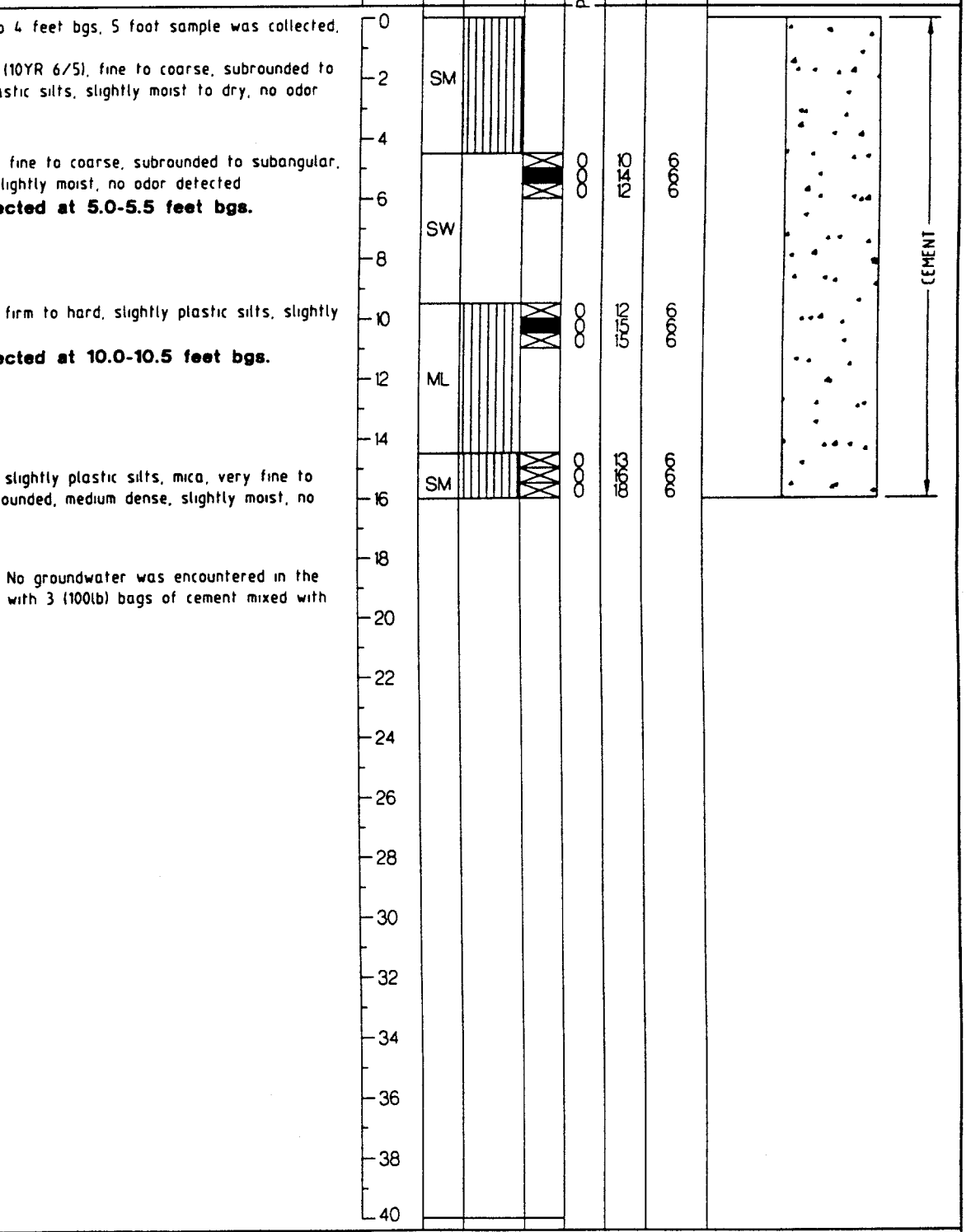
Soil surface Hand augured to 4 feet bgs, 5 foot sample was collected, hand augured to 10 feet bgs
Silty Sands (SM) Pale brown (10YR 6/5), fine to coarse, subrounded to subangular sands, fine non plastic silts, slightly moist to dry, no odor detected

Sands (SW) Pink (7.5YR 7/4), fine to coarse, subrounded to subangular, medium dense, partly sorted, slightly moist, no odor detected
18609-2518 Sample collected at 5.0-5.5 feet bgs.

Silts (ML) Strong brown, fine firm to hard, slightly plastic silts, slightly moist, no odor detected.
18609-2519 Sample collected at 10.0-10.5 feet bgs.

Silts (SM) Strong brown, fine slightly plastic silts, mica, very fine to fine sands, subangular to subrounded, medium dense, slightly moist, no odor detected.

End of boring at 16 feet bgs. No groundwater was encountered in the boring. Boring was back filled with 3 (100lb) bags of cement mixed with 50 gallons of potable water.



OHM Remediation Services Corp.

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Appendix I
Laboratory Analytical Results

IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

Phase 1 Annually Areas A 10085

FORM 0019 REV. 9/99

COORDINATOR: Zielkowski	LAB COORDINATOR'S PHONE: 949-660-7535	LAB COORDINATOR'S FAX: 949-475-5433	LABORATORY SERVICE ID: 99L066	LABORATORY CONTACT: ELLIOTT	MAIL REPORT (COMPANY NAME): IT Group
SAMPLERS: DO 10	PROJECT LOCATION: MCAS El Toro CA	PROJECT NUMBER: 786609	LABORATORY PHONE: 310-618-8889	LABORATORY FAX:	RECIPIENT NAME: Dwayne Winder
CONTACT: Zielkowski	PROJECT PHONE NUMBER: 949-451-1667	PROJECT FAX:	LABORATORY ADDRESS: 630 Maple		ADDRESS: 3341 Michelson
ADDRESS:	CITY, STATE AND ZIP CODE:	CLIENT: SWDIV	CITY, STATE AND ZIP CODE: Torrance, CA 90503		CITY, STATE AND ZIP CODE: Irvine, CA
MANAGER: Zielk	PROJECT MANAGER'S PHONE: 760-1060-1544	PROJECT MANAGER FAX:			

Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T	Analyses: TPH-GAS	TPH-DIESEL	TPH-JP-5	5-PAH's (Chrysene, Naphthalene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene)	Comments: Analyze from the "X" End
786609-2513	Water	12/1/99	0800	HCL	3	3	Stdy	✓			✓	
786609-2514	Soil	12/1/99	0900	NONE	1	3		✓	✓	✓	✓	
786609-2515			0905	NONE	1	3		✓	✓	✓	✓	
786609-2516			0950	NONE	1			✓	✓	✓	✓	
786609-2517			0955	NONE	1			✓	✓	✓	✓	
786609-2518			1030		1			✓	✓	✓	✓	
786609-2519			1035		1			✓	✓	✓	✓	
786609-2520			1110		1			✓	✓	✓	✓	
786609-2521			1115		1			✓	✓	✓	✓	
786609-2522	↓	↓	1150	↓	1	↓	↓	✓	✓	✓	✓	

RELINQUISHED BY: Dawn Drake

COURIER AND AIRBILL NUMBER:

RECEIVED BY:

DATE: 12/1/99 TIME: 1930

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE'S CONDITION UPON RECEIPT:

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1) PHAS Trip Blank				✓
2) PHAS SB02 5.0-5.5	✓			
3) PHAS SB02 10.0-10.5	✓			
4) PHAS SB01 5.0-5.5	✓			
5) PHAS SB01 10.0-10.5	✓			
6) PHAS SB05 5.0-5.5	✓			
7) PHAS SB05 10.0-10.5	✓			
8) PHAS SB04 5.0-5.5	✓			
9) PHAS SB04 10.0-10.5	✓			
10) PHAS SB03 5.0-5.5				

Comments:

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

[redacted]

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2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

Pilot Anomaly Area 5

A 10075

FORM 0019 REV. 9/99

COORDINATOR: Dierkwski	LAB COORDINATOR'S PHONE: 949-660-7535	LAB COORDINATOR'S FAX: 949-475-5433	LABORATORY SERVICE ID: 99L046	LABORATORY CONTACT: EMAX	MAIL REPORT COMPANY NAME: IT Group
CE NAME: Dec. 0070	PROJECT LOCATION: MCAS ELTWO CA/ 18609	PROJECT NUMBER: 310618 5087	LABORATORY PHONE:	LABORATORY FAX:	RECIPIENT NAME: DWAYNE ISHIDA
CE CONTACT: Dierkwski	PROJECT PHONE NUMBER: 949-451-1667	PROJECT FAX:	LABORATORY ADDRESS: 630 Maple		ADDRESS: 33547 Mickelson #211
CE ADDRESS:	CITY, STATE AND ZIP CODE:	CLIENT: SWDIV	CITY, STATE AND ZIP CODE: TORRANCE CA		CITY, STATE AND ZIP CODE: DANA POINT CA 92629
CE MANAGER: Dellan	PROJECT MANAGER'S PHONE NUMBER: 949-660-5446	PROJECT MANAGER'S FAX:			

Analyses: TPH 8015M | TPH DRO M | TPH 1A 5 | LPA 8260B/MTBE | SVOCs 8270C/PAHs

Analyze from the "x" end

Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Comments
18609-2523	Soil	12/9/99	1151	N	1	4	5day	5560 SS.SS (DUP)
18609-2524	Soil	12/9/99	1155	N	1	3	5day	
18609-2525	Water	12/9/99	1310	HNO3 pH<2 N	7	3	5day	

BT 12/10/99

SAMPLES COLLECTED BY: Lloyd Tavares

COURIER AND AIRBILL NUMBER:

RECEIVED BY:

DATE: 12/10/99

TIME: 1430

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE CONDITION UPON RECEIPT:

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type G	C	F	QC
1) PHA5 SB03				✓
2) PHA5 SB03 10.0-10.5	✓			
3) PHA5 SB03 Rinse				✓

Comments:

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

EMAX
LABORATORIES INC
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 01-19-2000
EMAX Batch No.: 99L066

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 12/10/99. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
18609-2513	L066-01	12/10/99	WATER	Modified 8015 by Purge & Trap Volatile Organics by GC/MS
18609-2514	L066-02	12/10/99	SOIL	Modified 8015 by Purge & Trap Modified 8015 by Extraction Volatile Organics by GC/MS M8015 JP-5 CAM Metals Mercury
18609-2515	L066-03	12/10/99	SOIL	Modified 8015 by Extraction Modified 8015 by Purge & Trap M8015 JP-5 Volatile Organics by GC/MS CAM Metals Mercury
18609-2516	L066-04	12/10/99	SOIL	Modified 8015 by Extraction Modified 8015 by Purge & Trap M8015 JP-5 Volatile Organics by GC/MS CAM Metals

Sample ID	Control #	Col Date	Matrix	Analysis
				Mercury
18609-2517	L066-05	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2518	L066-06	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2519	L066-07	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2520	L066-08	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2521	L066-09	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2522	L066-10	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2523	L066-11	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS

Sample ID	Control #	Col Date	Matrix	Analysis
				CAM Metals
				Mercury
18609-2524	L066-12	12/10/99	SOIL	Modified 8015 by Extraction
				Modified 8015 by Purge & Trap
				M8015 JP-5
				Volatile Organics by GC/MS
				CAM Metals
				Mercury
18609-2525	L066-13	12/10/99	WATER	Modified 8015 by Purge & Trap
				Modified 8015 by Extraction
				Volatile Organics by GC/MS
				M8015 JP-5
				CAM Metals
				Mercury

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Y. Pang, Ph.D.
Laboratory Director

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
Batch No. : 99L066	Date Extracted: 12/22/99 21:19
Sample ID: 18609-2513	Date Analyzed: 12/22/99 21:19
Lab Samp ID: L066-01	Dilution Factor: 1
Lab File ID: RLP223	Matrix : WATER
Ext Btch ID: VOL1502	% Moisture : NA
Calib. Ref.: RLP208	Instrument ID : T-002

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	1.1
1,1,2,2-TETRACHLOROETHANE	ND	5	.49
1,1,2-TRICHLOROETHANE	ND	5	.52
1,1-DICHLOROETHANE	ND	5	1.2
1,1-DICHLOROETHENE	ND	5	2
1,2-DICHLOROETHANE	ND	5	.58
1,2-DICHLOROPROPANE	ND	5	.53
2-BUTANONE	ND	50	7.9
2-CHLOROETHYLVINYLETHER	ND	50	.83
2-HEXANONE	ND	50	1
4-METHYL-2-PENTANONE	ND	50	1
ACETONE	ND	50	10
BENZENE	ND	5	.85
BROMODICHLOROMETHANE	ND	5	.33
BROMOFORM	ND	5	.29
BROMOMETHANE	ND	5	1.5
CARBON DISULFIDE	ND	5	1.3
CARBON TETRACHLORIDE	ND	5	1.3
CHLOROBENZENE	ND	5	.68
CHLOROETHANE	ND	5	2.9
CHLOROFORM	ND	5	.85
CHLOROMETHANE	ND	5	1.7
CIS-1,2-DICHLOROETHENE	ND	5	.97
CIS-1,3-DICHLOROPROPENE	ND	5	.47
DIBROMOCHLOROMETHANE	ND	5	.29
ETHYLBENZENE	ND	5	.72
MTBE	ND	10	.96
METHYLENE CHLORIDE	4.7JB	5	1.8
STYRENE	ND	5	.58
TETRACHLOROETHENE	ND	5	1.2
TOLUENE	ND	5	.92
TRANS-1,2-DICHLOROETHENE	ND	5	1.5
TRANS-1,3-DICHLOROPROPENE	ND	5	.45
TRICHLOROETHENE	ND	5	.9
VINYL ACETATE	ND	50	6.2
VINYL CHLORIDE	ND	5	1.7
XYLENES	ND	5	2.4

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	62-139
TOLUENE-D8	95	75-125
BROMOFLUOROBENZENE	92	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.C. 70	Date Received: 12/10/99
Batch No. : 99L066	Date Extracted: 12/22/99 22:26
Sample ID: 18609-2514	Date Analyzed: 12/22/99 22:26
Lab Samp ID: L066-02	Dilution Factor: 1
Lab File ID: RLP225	Matrix : SOIL
Ext Btch ID: VOL1502	% Moisture : 13.6
Calib. Ref.: RLP208	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.8	.38
1,1,2,2-TETRACHLOROETHANE	ND	5.8	.38
1,1,2-TRICHLOROETHANE	ND	5.8	.27
1,1-DICHLOROETHANE	ND	5.8	.35
1,1-DICHLOROETHENE	ND	5.8	.62
1,2-DICHLOROETHANE	ND	5.8	.38
1,2-DICHLOROPROPANE	ND	5.8	.44
2-BUTANONE	ND	58	5.9
2-CHLOROETHYLVINYLETHER	ND	58	.2
2-HEXANONE	ND	58	1.4
4-METHYL-2-PENTANONE	ND	58	1.3
ACETONE	ND	58	4.7
BENZENE	ND	5.8	.29
BROMODICHLOROMETHANE	ND	5.8	.3
BROMOFORM	ND	5.8	.32
BROMOMETHANE	ND	5.8	.74
CARBON DISULFIDE	ND	5.8	.15
CARBON TETRACHLORIDE	ND	5.8	.92
CHLOROBENZENE	ND	5.8	.23
CHLOROETHANE	ND	5.8	2.1
CHLOROFORM	ND	5.8	.49
CHLOROMETHANE	ND	5.8	2.4
CIS-1,2-DICHLOROETHENE	ND	5.8	.34
CIS-1,3-DICHLOROPROPENE	ND	5.8	.26
DIBROMOCHLOROMETHANE	ND	5.8	.091
ETHYLBENZENE	ND	5.8	.45
MTBE	ND	12	.43
METHYLENE CHLORIDE	4.6JB	5.8	.47
STYRENE	ND	5.8	.51
TETRACHLOROETHENE	ND	5.8	.28
TOLUENE	ND	5.8	.36
TRANS-1,2-DICHLOROETHENE	ND	5.8	.33
TRANS-1,3-DICHLOROPROPENE	ND	5.8	.77
TRICHLOROETHENE	ND	5.8	.3
VINYL ACETATE	ND	58	.83
VINYL CHLORIDE	ND	5.8	1.2
XYLENES	ND	5.8	1.3

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	102	52-149
TOLUENE-D8	97	65-135
BROMOFLUOROBENZENE	92	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2005

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
Batch No. : 99L066	Date Extracted: 12/22/99 23:00
Sample ID: 18609-2515	Date Analyzed: 12/22/99 23:00
Lab Samp ID: L066-03	Dilution Factor: 1
Lab File ID: RLP226	Matrix : SOIL
Ext Btch ID: VOL1502	% Moisture : 12.1
Calib. Ref.: RLP208	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.7	.38
1,1,2,2-TETRACHLOROETHANE	ND	5.7	.38
1,1,2-TRICHLOROETHANE	ND	5.7	.27
1,1-DICHLOROETHANE	ND	5.7	.34
1,1-DICHLOROETHENE	ND	5.7	.61
1,2-DICHLOROETHANE	ND	5.7	.37
1,2-DICHLOROPROPANE	ND	5.7	.43
2-BUTANONE	ND	57	5.8
2-CHLOROETHYLVINYLETHER	ND	57	.19
2-HEXANONE	ND	57	1.4
4-METHYL-2-PENTANONE	ND	57	1.3
ACETONE	ND	57	4.7
BENZENE	ND	5.7	.28
BROMODICHLOROMETHANE	ND	5.7	.29
BROMOFORM	ND	5.7	.32
BROMOMETHANE	ND	5.7	.73
CARBON DISULFIDE	ND	5.7	.14
CARBON TETRACHLORIDE	ND	5.7	.9
CHLOROBENZENE	ND	5.7	.22
CHLOROETHANE	ND	5.7	2
CHLOROFORM	ND	5.7	.48
CHLOROMETHANE	ND	5.7	2.3
CIS-1,2-DICHLOROETHENE	ND	5.7	.33
CIS-1,3-DICHLOROPROPENE	ND	5.7	.25
DIBROMOCHLOROMETHANE	ND	5.7	.09
ETHYLBENZENE	ND	5.7	.45
MTBE	ND	11	.42
METHYLENE CHLORIDE	3.6JB	5.7	.47
STYRENE	ND	5.7	.5
TETRACHLOROETHENE	ND	5.7	.28
TOLUENE	ND	5.7	.36
TRANS-1,2-DICHLOROETHENE	ND	5.7	.33
TRANS-1,3-DICHLOROPROPENE	ND	5.7	.76
TRICHLOROETHENE	ND	5.7	.29
VINYL ACETATE	ND	57	.81
VINYL CHLORIDE	ND	5.7	1.1
XYLENES	ND	5.7	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	101	52-149
TOLUENE-D8	97	65-135
BROMOFLUOROBENZENE	93	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2006

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
Batch No.	: 99L066	Date Extracted:	12/22/99 23:34
Sample ID	: 18609-2516	Date Analyzed:	12/22/99 23:34
Lab Samp ID	: L066-04	Dilution Factor:	1
Lab File ID	: RLP227	Matrix :	SOIL
Ext Btch ID	: VOL1502	% Moisture :	1.8
Calib. Ref.	: RLP208	Instrument ID :	T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.1	.34
1,1,2,2-TETRACHLOROETHANE	ND	5.1	.34
1,1,2-TRICHLOROETHANE	ND	5.1	.24
1,1-DICHLOROETHANE	ND	5.1	.31
1,1-DICHLOROETHENE	ND	5.1	.55
1,2-DICHLOROETHANE	ND	5.1	.33
1,2-DICHLOROPROPANE	ND	5.1	.38
2-BUTANONE	ND	51	5.2
2-CHLOROETHYLVINYLETHER	ND	51	.17
2-HEXANONE	ND	51	1.3
4-METHYL-2-PENTANONE	ND	51	1.2
ACETONE	ND	51	4.2
BENZENE	ND	5.1	.25
BROMODICHLOROMETHANE	ND	5.1	.26
BROMOFORM	ND	5.1	.28
BROMOMETHANE	ND	5.1	.65
CARBON DISULFIDE	ND	5.1	.13
CARBON TETRACHLORIDE	ND	5.1	.81
CHLOROBENZENE	ND	5.1	.2
CHLOROETHANE	ND	5.1	1.8
CHLOROFORM	ND	5.1	.43
CHLOROMETHANE	ND	5.1	2.1
CIS-1,2-DICHLOROETHENE	ND	5.1	.3
-1,3-DICHLOROPROPENE	ND	5.1	.23
ROMOCHLOROMETHANE	ND	5.1	.08
THYLBENZENE	ND	5.1	.4
MTBE	ND	10	.38
METHYLENE CHLORIDE	3.1JB	5.1	.42
STYRENE	ND	5.1	.45
TETRACHLOROETHENE	ND	5.1	.25
TOLUENE	ND	5.1	.32
TRANS-1,2-DICHLOROETHENE	ND	5.1	.29
TRANS-1,3-DICHLOROPROPENE	ND	5.1	.68
TRICHLOROETHENE	ND	5.1	.26
VINYL ACETATE	ND	51	.73
VINYL CHLORIDE	ND	5.1	1
XYLENES	ND	5.1	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	105	52-149
TOLUENE-D8	98	65-135
BROMOFLUOROBENZENE	93	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2007

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609	Date Received:	12/10/99
Batch No.	: 99L066	Date Extracted:	12/23/99 04:04
Sample ID	: 18609-2517	Date Analyzed:	12/23/99 04:04
Lab Samp ID	: L066-05	Dilution Factor:	1
Lab File ID	: RLP235	Matrix	: SOIL
Ext Btch ID	: VOL1602	% Moisture	: 18.1
Calib. Ref.	: RLP230	Instrument ID	: T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	6.1	.4
1,1,2,2-TETRACHLOROETHANE	ND	6.1	.4
1,1,2-TRICHLOROETHANE	ND	6.1	.28
1,1-DICHLOROETHANE	ND	6.1	.37
1,1-DICHLOROETHENE	ND	6.1	.66
1,2-DICHLOROETHANE	ND	6.1	.4
1,2-DICHLOROPROPANE	ND	6.1	.46
2-BUTANONE	ND	61	6.3
2-CHLOROETHYLVINYLETHER	ND	61	.21
2-HEXANONE	ND	61	1.5
4-METHYL-2-PENTANONE	ND	61	1.4
ACETONE	ND	61	5
BENZENE	ND	6.1	.3
BROMODICHLOROMETHANE	ND	6.1	.32
BROMOFORM	ND	6.1	.34
BROMOMETHANE	ND	6.1	.78
CARBON DISULFIDE	ND	6.1	.15
CARBON TETRACHLORIDE	ND	6.1	.97
CHLOROBENZENE	ND	6.1	.24
CHLOROETHANE	ND	6.1	2.2
CHLOROFORM	ND	6.1	.52
CHLOROMETHANE	ND	6.1	2.5
CIS-1,2-DICHLOROETHENE	ND	6.1	.36
CIS-1,3-DICHLOROPROPENE	ND	6.1	.27
DIBROMOCHLOROMETHANE	ND	6.1	.096
ETHYLBENZENE	ND	6.1	.48
MTBE	ND	12	.45
METHYLENE CHLORIDE	4.1JB	6.1	.5
STYRENE	ND	6.1	.53
TETRACHLOROETHENE	ND	6.1	.3
TOLUENE	ND	6.1	.38
TRANS-1,2-DICHLOROETHENE	ND	6.1	.35
TRANS-1,3-DICHLOROPROPENE	ND	6.1	.81
TRICHLOROETHENE	ND	6.1	.31
VINYL ACETATE	ND	61	.87
VINYL CHLORIDE	ND	6.1	1.2
XYLENES	ND	6.1	1.3

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	52-149
TOLUENE-D8	97	65-135
BROMOFLUOROBENZENE	88	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2008

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
Lcn No. : 99L066	Date Extracted: 12/23/99 04:37
Sample ID: 18609-2518	Date Analyzed: 12/23/99 04:37
Lab Samp ID: L066-06	Dilution Factor: 1
Lab File ID: RLP236	Matrix : SOIL
Ext Btch ID: VOL1602	% Moisture : 4.4
Calib. Ref.: RLP230	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.2	.35
1,1,2,2-TETRACHLOROETHANE	ND	5.2	.35
1,1,2-TRICHLOROETHANE	ND	5.2	.24
1,1-DICHLOROETHANE	ND	5.2	.32
1,1-DICHLOROETHENE	ND	5.2	.56
1,2-DICHLOROETHANE	ND	5.2	.34
1,2-DICHLOROPROPANE	ND	5.2	.39
2-BUTANONE	ND	52	5.4
2-CHLOROETHYLVINYLETHER	ND	52	.18
2-HEXANONE	ND	52	1.3
4-METHYL-2-PENTANONE	ND	52	1.2
ACETONE	ND	52	4.3
BENZENE	ND	5.2	.26
BROMODICHLOROMETHANE	ND	5.2	.27
BROMOFORM	ND	5.2	.29
BROMOMETHANE	ND	5.2	.67
CARBON DISULFIDE	ND	5.2	.13
CARBON TETRACHLORIDE	ND	5.2	.83
CHLOROBENZENE	ND	5.2	.21
CHLOROETHANE	ND	5.2	1.9
CHLOROFORM	ND	5.2	.44
CHLOROMETHANE	ND	5.2	2.2
CIS-1,2-DICHLOROETHENE	ND	5.2	.3
CIS-1,3-DICHLOROPROPENE	ND	5.2	.23
DIBROMOCHLOROMETHANE	ND	5.2	.083
ETHYLBENZENE	ND	5.2	.41
MTBE	ND	10	.39
METHYLENE CHLORIDE	3.2JB	5.2	.43
STYRENE	ND	5.2	.46
TETRACHLOROETHENE	ND	5.2	.25
TOLUENE	ND	5.2	.33
TRANS-1,2-DICHLOROETHENE	ND	5.2	.3
TRANS-1,3-DICHLOROPROPENE	ND	5.2	.7
TRICHLOROETHENE	ND	5.2	.27
VINYL ACETATE	ND	52	.75
VINYL CHLORIDE	ND	5.2	1.1
XYLENES	ND	5.2	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	102	52-149
TOLUENE-D8	97	65-135
BROMOFLUOROBENZENE	89	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2009

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
Batch No.	: 99L066	Date Extracted:	12/23/99 05:11
Sample ID:	18609-2519	Date Analyzed:	12/23/99 05:11
Lab Samp ID:	L066-07	Dilution Factor:	1
Lab File ID:	RLP237	Matrix :	SOIL
Ext Btch ID:	VOL1602	% Moisture :	9.5
Calib. Ref.:	RLP230	Instrument ID :	T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.5	.37
1,1,2,2-TETRACHLOROETHANE	ND	5.5	.37
1,1,2-TRICHLOROETHANE	ND	5.5	.26
1,1-DICHLOROETHANE	ND	5.5	.33
1,1-DICHLOROETHENE	ND	5.5	.59
1,2-DICHLOROETHANE	ND	5.5	.36
1,2-DICHLOROPROPANE	ND	5.5	.42
2-BUTANONE	ND	55	5.7
2-CHLOROETHYLVINYLETHER	ND	55	.19
2-HEXANONE	ND	55	1.4
4-METHYL-2-PENTANONE	ND	55	1.3
ACETONE	ND	55	4.5
BENZENE	ND	5.5	.27
BROMODICHLOROMETHANE	ND	5.5	.29
BROMOFORM	ND	5.5	.31
BROMOMETHANE	ND	5.5	.71
CARBON DISULFIDE	ND	5.5	.14
CARBON TETRACHLORIDE	ND	5.5	.87
CHLOROBENZENE	ND	5.5	.22
CHLOROETHANE	ND	5.5	2
CHLOROFORM	ND	5.5	.47
CHLOROMETHANE	ND	5.5	2.3
CIS-1,2-DICHLOROETHENE	ND	5.5	.32
CIS-1,3-DICHLOROPROPENE	ND	5.5	.25
DIBROMOCHLOROMETHANE	ND	5.5	.087
ETHYLBENZENE	ND	5.5	.43
MTBE	ND	11	.41
METHYLENE CHLORIDE	3.2JB	5.5	.45
STYRENE	ND	5.5	.48
TETRACHLOROETHENE	ND	5.5	.27
TOLUENE	ND	5.5	.35
TRANS-1,2-DICHLOROETHENE	ND	5.5	.32
TRANS-1,3-DICHLOROPROPENE	ND	5.5	.74
TRICHLOROETHENE	ND	5.5	.28
VINYL ACETATE	ND	55	.79
VINYL CHLORIDE	ND	5.5	1.1
XYLENES	ND	5.5	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	99	52-149
TOLUENE-D8	98	65-135
BROMOFLUOROBENZENE	89	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2010

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
Lab No. : 99L066	Date Extracted: 12/23/99 05:44
Sample ID: 18609-2520	Date Analyzed: 12/23/99 05:44
Lab Samp ID: L066-08	Dilution Factor: 1
Lab File ID: RLP238	Matrix : SOIL
Ext Btch ID: VOL1602	% Moisture : 10.4
Calib. Ref.: RLP230	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.6	.37
1,1,2,2-TETRACHLOROETHANE	ND	5.6	.37
1,1,2-TRICHLOROETHANE	ND	5.6	.26
1,1-DICHLOROETHANE	ND	5.6	.34
1,1-DICHLOROETHENE	ND	5.6	.6
1,2-DICHLOROETHANE	ND	5.6	.36
1,2-DICHLOROPROPANE	ND	5.6	.42
2-BUTANONE	ND	56	5.7
2-CHLOROETHYLVINYLETHER	ND	56	.19
2-HEXANONE	ND	56	1.4
4-METHYL-2-PENTANONE	ND	56	1.3
ACETONE	ND	56	4.6
BENZENE	ND	5.6	.28
BROMODICHLOROMETHANE	ND	5.6	.29
BROMOFORM	ND	5.6	.31
BROMOMETHANE	ND	5.6	.71
CARBON DISULFIDE	ND	5.6	.14
CARBON TETRACHLORIDE	ND	5.6	.88
CHLOROBENZENE	ND	5.6	.22
CHLOROETHANE	ND	5.6	2
CHLOROFORM	ND	5.6	.47
CHLOROMETHANE	ND	5.6	2.3
CIS-1,2-DICHLOROETHENE	ND	5.6	.32
CIS-1,3-DICHLOROPROPENE	ND	5.6	.25
DIBROMOCHLOROMETHANE	ND	5.6	.088
ETHYLBENZENE	ND	5.6	.44
MTBE	ND	11	.41
METHYLENE CHLORIDE	3.7JB	5.6	.46
STYRENE	ND	5.6	.49
TETRACHLOROETHENE	ND	5.6	.27
TOLUENE	ND	5.6	.35
TRANS-1,2-DICHLOROETHENE	ND	5.6	.32
TRANS-1,3-DICHLOROPROPENE	ND	5.6	.74
TRICHLOROETHENE	ND	5.6	.28
VINYL ACETATE	ND	56	.8
VINYL CHLORIDE	ND	5.6	1.1
XYLENES	ND	5.6	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	101	52-149
TOLUENE-D8	97	65-135
BROMOFLUOROBENZENE	88	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2011

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
Batch No. : 99L066	Date Extracted: 12/23/99 06:18
Sample ID: 18609-2521	Date Analyzed: 12/23/99 06:18
Lab Samp ID: L066-09	Dilution Factor: 1
Lab File ID: RLP239	Matrix : SOIL
Ext Btch ID: VOL1602	% Moisture : 5.7
Calib. Ref.: RLP230	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.3	.35
1,1,2,2-TETRACHLOROETHANE	ND	5.3	.35
1,1,2-TRICHLOROETHANE	ND	5.3	.25
1,1-DICHLOROETHANE	ND	5.3	.32
1,1-DICHLOROETHENE	ND	5.3	.57
1,2-DICHLOROETHANE	ND	5.3	.35
1,2-DICHLOROPROPANE	ND	5.3	.4
2-BUTANONE	ND	53	5.4
2-CHLOROETHYLVINYLETHER	ND	53	.18
2-HEXANONE	ND	53	1.3
4-METHYL-2-PENTANONE	ND	53	1.2
ACETONE	ND	53	4.3
BENZENE	ND	5.3	.26
BROMODICHLOROMETHANE	ND	5.3	.27
BROMOFORM	ND	5.3	.3
BROMOMETHANE	ND	5.3	.68
CARBON DISULFIDE	ND	5.3	.13
CARBON TETRACHLORIDE	ND	5.3	.84
CHLOROBENZENE	ND	5.3	.21
CHLOROETHANE	ND	5.3	1.9
CHLOROFORM	ND	5.3	.45
CHLOROMETHANE	ND	5.3	2.2
CIS-1,2-DICHLOROETHENE	ND	5.3	.31
CIS-1,3-DICHLOROPROPENE	ND	5.3	.24
DIBROMOCHLOROMETHANE	ND	5.3	.084
ETHYLBENZENE	ND	5.3	.42
MTBE	ND	11	.39
METHYLENE CHLORIDE	3JB	5.3	.43
STYRENE	ND	5.3	.46
TETRACHLOROETHENE	ND	5.3	.26
TOLUENE	ND	5.3	.33
TRANS-1,2-DICHLOROETHENE	ND	5.3	.31
TRANS-1,3-DICHLOROPROPENE	ND	5.3	.71
TRICHLOROETHENE	ND	5.3	.27
VINYL ACETATE	ND	53	.76
VINYL CHLORIDE	ND	5.3	1.1
XYLENES	ND	5.3	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	52-149
TOLUENE-D8	98	65-135
BROMOFLUOROBENZENE	92	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2012

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
Batch No.	: 99L066	Date Extracted:	12/23/99 18:23
Sample ID	: 18609-2522	Date Analyzed:	12/23/99 18:23
Lab Samp ID	: L066-10	Dilution Factor:	1
Lab File ID	: RLP257	Matrix :	SOIL
Ext Btch ID	: VOL1702	% Moisture :	9.8
Calib. Ref.	: RLP252	Instrument ID :	T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.5	.37
1,1,2,2-TETRACHLOROETHANE	ND	5.5	.37
1,1,2-TRICHLOROETHANE	ND	5.5	.26
1,1-DICHLOROETHANE	ND	5.5	.34
1,1-DICHLOROETHENE	ND	5.5	.6
1,2-DICHLOROETHANE	ND	5.5	.36
1,2-DICHLOROPROPANE	ND	5.5	.42
2-BUTANONE	ND	55	5.7
2-CHLOROETHYLVINYLETHER	ND	55	.19
2-HEXANONE	ND	55	1.4
4-METHYL-2-PENTANONE	ND	55	1.3
ACETONE	18J	55	4.5
BENZENE	ND	5.5	.27
BROMODICHLOROMETHANE	ND	5.5	.29
BROMOFORM	ND	5.5	.31
BROMOMETHANE	ND	5.5	.71
CARBON DISULFIDE	ND	5.5	.14
CARBON TETRACHLORIDE	ND	5.5	.88
CHLOROBENZENE	ND	5.5	.22
CHLOROETHANE	ND	5.5	2
CHLOROFORM	ND	5.5	.47
CHLOROMETHANE	ND	5.5	2.3
CIS-1,2-DICHLOROETHENE	ND	5.5	.32
CIS-1,3-DICHLOROPROPENE	ND	5.5	.25
DIBROMOCHLOROMETHANE	ND	5.5	.088
ETHYLBENZENE	ND	5.5	.43
MTBE	ND	11	.41
METHYLENE CHLORIDE	2J	5.5	.45
STYRENE	ND	5.5	.49
TETRACHLOROETHENE	ND	5.5	.27
TOLUENE	ND	5.5	.35
TRANS-1,2-DICHLOROETHENE	ND	5.5	.32
TRANS-1,3-DICHLOROPROPENE	ND	5.5	.74
TRICHLOROETHENE	ND	5.5	.28
VINYL ACETATE	ND	55	.79
VINYL CHLORIDE	ND	5.5	1.1
XYLENES	ND	5.5	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	103	52-149
TOLUENE-D8	97	65-135
BROMOFLUOROBENZENE	88	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
: Value exceed the upper level of the initial calibration
: Found in the associated blank
: Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
Batch No.	: 99L066	Date Extracted:	12/23/99 07:25
Sample ID	: 18609-2523	Date Analyzed:	12/23/99 07:25
Lab Samp ID	: L066-11	Dilution Factor:	1
Lab File ID	: RLP241	Matrix	: SOIL
Ext Btch ID	: VOL1602	% Moisture	: 13.1
Calib. Ref.:	RLP230	Instrument ID	: T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.8	.38
1,1,2,2-TETRACHLOROETHANE	ND	5.8	.38
1,1,2-TRICHLOROETHANE	ND	5.8	.27
1,1-DICHLOROETHANE	ND	5.8	.35
1,1-DICHLOROETHENE	ND	5.8	.62
1,2-DICHLOROETHANE	ND	5.8	.38
1,2-DICHLOROPROPANE	ND	5.8	.43
2-BUTANONE	ND	58	5.9
2-CHLOROETHYLVINYLETHER	ND	58	.2
2-HEXANONE	ND	58	1.4
4-METHYL-2-PENTANONE	ND	58	1.3
ACETONE	ND	58	4.7
BENZENE	ND	5.8	.29
BROMODICHLOROMETHANE	ND	5.8	.3
BROMOFORM	ND	5.8	.32
BROMOMETHANE	ND	5.8	.74
CARBON DISULFIDE	ND	5.8	.14
CARBON TETRACHLORIDE	ND	5.8	.91
CHLOROBENZENE	ND	5.8	.23
CHLOROETHANE	ND	5.8	2
CHLOROFORM	ND	5.8	.49
CHLOROMETHANE	ND	5.8	2.4
CIS-1,2-DICHLOROETHENE	ND	5.8	.33
CIS-1,3-DICHLOROPROPENE	ND	5.8	.26
DIBROMOCHLOROMETHANE	ND	5.8	.091
ETHYLBENZENE	ND	5.8	.45
MTBE	ND	12	.43
METHYLENE CHLORIDE	ND	5.8	.47
STYRENE	ND	5.8	.5
TETRACHLOROETHENE	ND	5.8	.28
TOLUENE	ND	5.8	.36
TRANS-1,2-DICHLOROETHENE	ND	5.8	.33
TRANS-1,3-DICHLOROPROPENE	ND	5.8	.77
TRICHLOROETHENE	ND	5.8	.29
VINYL ACETATE	ND	58	.82
VINYL CHLORIDE	ND	5.8	1.2
XYLENES	ND	5.8	1.3

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	102	52-149
TOLUENE-D8	95	65-135
BROMOFLUOROBENZENE	82	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2014

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
ch No. : 99L066	Date Extracted: 12/23/99 09:50
ple ID: 18609-2524	Date Analyzed: 12/23/99 09:50
Lab Samp ID: L066-12	Dilution Factor: 1
Lab File ID: RLP245	Matrix : SOIL
Ext Btch ID: VOL1602	% Moisture : 2.9
Calib. Ref.: RLP230	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.1	.34
1,1,2,2-TETRACHLOROETHANE	ND	5.1	.34
1,1,2-TRICHLOROETHANE	ND	5.1	.24
1,1-DICHLOROETHANE	ND	5.1	.31
1,1-DICHLOROETHENE	ND	5.1	.55
1,2-DICHLOROETHANE	ND	5.1	.34
1,2-DICHLOROPROPANE	ND	5.1	.39
2-BUTANONE	ND	51	5.3
2-CHLOROETHYLVINYLETHER	ND	51	.18
2-HEXANONE	ND	51	1.3
4-METHYL-2-PENTANONE	ND	51	1.2
ACETONE	ND	51	4.2
BENZENE	ND	5.1	.26
BROMODICHLOROMETHANE	ND	5.1	.27
BROMOFORM	ND	5.1	.29
BROMOMETHANE	ND	5.1	.66
CARBON DISULFIDE	ND	5.1	.13
CARBON TETRACHLORIDE	ND	5.1	.81
CHLOROBENZENE	ND	5.1	.2
CHLOROETHANE	ND	5.1	1.8
CHLOROFORM	ND	5.1	.44
CHLOROMETHANE	ND	5.1	2.1
CIS-1,2-DICHLOROETHENE	ND	5.1	.3
CIS-1,3-DICHLOROPROPENE	ND	5.1	.23
DIBROMOCHLOROMETHANE	ND	5.1	.081
ETHYLBENZENE	ND	5.1	.4
MTBE	ND	10	.38
METHYLENE CHLORIDE	ND	5.1	.42
STYRENE	ND	5.1	.45
TETRACHLOROETHENE	ND	5.1	.25
TOLUENE	ND	5.1	.32
TRANS-1,2-DICHLOROETHENE	ND	5.1	.3
TRANS-1,3-DICHLOROPROPENE	ND	5.1	.69
TRICHLOROETHENE	ND	5.1	.26
VINYL ACETATE	ND	51	.74
VINYL CHLORIDE	ND	5.1	1
XYLENES	ND	5.1	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	102	52-149
TOLUENE-D8	96	65-135
BROMOFLUOROBENZENE	92	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
: Value exceed the upper level of the initial calibration
: Found in the associated blank
: Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
Batch No. : 99L066	Date Extracted: 12/22/99 21:53
Sample ID: 18609-2525	Date Analyzed: 12/22/99 21:53
Lab Samp ID: L066-13	Dilution Factor: 1
Lab File ID: RLP224	Matrix : WATER
Ext Btch ID: VOL1502	% Moisture : NA
Calib. Ref.: RLP208	Instrument ID : T-002

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	1.1
1,1,2,2-TETRACHLOROETHANE	ND	5	.49
1,1,2-TRICHLOROETHANE	ND	5	.52
1,1-DICHLOROETHANE	ND	5	1.2
1,1-DICHLOROETHENE	ND	5	2
1,2-DICHLOROETHANE	ND	5	.58
1,2-DICHLOROPROPANE	ND	5	.53
2-BUTANONE	ND	50	7.9
2-CHLOROETHYLVINYLETHER	ND	50	.83
2-HEXANONE	ND	50	1
4-METHYL-2-PENTANONE	ND	50	1
ACETONE	ND	50	10
BENZENE	ND	5	.85
BROMODICHLOROMETHANE	ND	5	.33
BROMOFORM	ND	5	.29
BROMOMETHANE	ND	5	1.5
CARBON DISULFIDE	ND	5	1.3
CARBON TETRACHLORIDE	ND	5	1.3
CHLOROBENZENE	ND	5	.68
CHLOROETHANE	ND	5	2.9
CHLOROFORM	ND	5	.85
CHLOROMETHANE	ND	5	1.7
CIS-1,2-DICHLOROETHENE	ND	5	.97
CIS-1,3-DICHLOROPROPENE	ND	5	.47
DIBROMOCHLOROMETHANE	ND	5	.29
ETHYLBENZENE	ND	5	.72
MTBE	ND	10	.96
METHYLENE CHLORIDE	3.7JB	5	1.8
STYRENE	ND	5	.58
TETRACHLOROETHENE	ND	5	1.2
TOLUENE	ND	5	.92
TRANS-1,2-DICHLOROETHENE	ND	5	1.5
TRANS-1,3-DICHLOROPROPENE	ND	5	.45
TRICHLOROETHENE	ND	5	.9
VINYL ACETATE	ND	50	6.2
VINYL CHLORIDE	ND	5	1.7
XYLENES	ND	5	2.4

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	99	62-139
TOLUENE-D8	97	75-125
BROMOFLUOROBENZENE	93	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/22/99
Batch No. : 99L066	Date Extracted: 12/22/99 15:04
Sample ID: MBLK1W	Date Analyzed: 12/22/99 15:04
Lab Samp ID: VOL1502Q	Dilution Factor: 1
Lab File ID: RLP212	Matrix : WATER
Ext Btch ID: VOL1502	% Moisture : NA
Calib. Ref.: RLP208	Instrument ID : T-002

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	1.1
1,1,2,2-TETRACHLOROETHANE	ND	5	.49
1,1,2-TRICHLOROETHANE	ND	5	.52
1,1-DICHLOROETHANE	ND	5	1.2
1,1-DICHLOROETHENE	ND	5	2
1,2-DICHLOROETHANE	ND	5	.58
1,2-DICHLOROPROPANE	ND	5	.53
2-BUTANONE	ND	50	7.9
2-CHLOROETHYLVINYLETHER	ND	50	.83
2-HEXANONE	ND	50	1
4-METHYL-2-PENTANONE	ND	50	1
ACETONE	ND	50	10
BENZENE	ND	5	.85
BROMODICHLOROMETHANE	ND	5	.33
BROMOFORM	ND	5	.29
BROMOMETHANE	ND	5	1.5
CARBON DISULFIDE	ND	5	1.3
CARBON TETRACHLORIDE	ND	5	1.3
CHLOROBENZENE	ND	5	.68
CHLOROETHANE	ND	5	2.9
CHLOROFORM	ND	5	.85
CHLOROMETHANE	ND	5	1.7
CIS-1,2-DICHLOROETHENE	ND	5	.97
CIS-1,3-DICHLOROPROPENE	ND	5	.47
DIBROMOCHLOROMETHANE	ND	5	.29
ETHYLBENZENE	ND	5	.72
MTBE	ND	10	.96
METHYLENE CHLORIDE	3.8J	5	1.8
STYRENE	ND	5	.58
TETRACHLOROETHENE	ND	5	1.2
TOLUENE	ND	5	.92
TRANS-1,2-DICHLOROETHENE	ND	5	1.5
TRANS-1,3-DICHLOROPROPENE	ND	5	.45
TRICHLOROETHENE	ND	5	.9
VINYL ACETATE	ND	50	6.2
VINYL CHLORIDE	ND	5	1.7
XYLENES	ND	5	2.4

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	62-139
TOLUENE-D8	98	75-125
BROMOFLUOROBENZENE	96	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2020

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.C. 70
BATCH NO.: 99L066
METHOD: METHOD 5030A/8260A

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VOL1502Q	VOL1502L	VOL1502C		
LAB FILE ID:	RLP212	RLP209	RLP210		
DATE EXTRACTED:	12/22/9915:04	12/22/9913:20	12/22/9913:54	DATE COLLECTED:	NA
DATE ANALYZED:	12/22/9915:04	12/22/9913:20	12/22/9913:54	DATE RECEIVED:	12/22/99
PREP. BATCH:	VOL1502	VOL1502	VOL1502		
CALIB. REF:	RLP208	RLP208	RLP208		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	20.5	102	20	20.8	104	1	75-125	20
Benzene	ND	20	20	100	20	20	100	0	75-125	20
Chlorobenzene	ND	20	20.3	102	20	20.4	102	0	75-125	20
Toluene	ND	20	19.9	99	20	20.3	101	2	74-125	20
Trichloroethene	ND	20	19.7	99	20	19.9	99	1	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	49.7	99	50	49.1	98	62-139
Toluene-d8	50	48.6	97	50	48.4	97	75-125
Bromofluorobenzene	50	48.2	96	50	47.2	94	75-125

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
ect : MCAS EL TORO/18609/D.O. 70	Date Received: 12/22/99
h No. : 99L066	Date Extracted: 12/22/99 15:04
Sample ID: MBLK1S	Date Analyzed: 12/22/99 15:04
Lab Samp ID: VOL1502Q	Dilution Factor: 1
Lab File ID: RLP212	Matrix : SOIL
Ext Btch ID: VOL1502	% Moisture : NA
Calib. Ref.: RLP208	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5	.33
,1,2,2-TETRACHLOROETHANE	ND	5	.33
1,1,2-TRICHLOROETHANE	ND	5	.23
1,1-DICHLOROETHANE	ND	5	.3
1,1-DICHLOROETHENE	ND	5	.54
1,2-DICHLOROETHANE	ND	5	.33
1,2-DICHLOROPROPANE	ND	5	.38
2-BUTANONE	ND	50	5.1
2-CHLOROETHYLVINYLETHER	ND	50	.17
2-HEXANONE	ND	50	1.2
-METHYL-2-PENTANONE	ND	50	1.1
ACETONE	ND	50	4.1
BENZENE	ND	5	.25
BROMODICHLOROMETHANE	ND	5	.26
BROMOFORM	ND	5	.28
BROMOMETHANE	ND	5	.64
CARBON DISULFIDE	ND	5	.13
CARBON TETRACHLORIDE	ND	5	.79
CHLOROBENZENE	ND	5	.2
CHLOROETHANE	ND	5	1.8
CHLOROFORM	ND	5	.42
CHLOROMETHANE	ND	5	2.1
CIS-1,2-DICHLOROETHENE	ND	5	.29
1,3-DICHLOROPROPENE	ND	5	.22
OMOCHLOROMETHANE	ND	5	.079
THYLBENZENE	ND	5	.39
MTBE	ND	10	.37
METHYLENE CHLORIDE	3.8J	5	.41
STYRENE	ND	5	.44
ETRACHLOROETHENE	ND	5	.24
OLUENE	ND	5	.31
TRANS-1,2-DICHLOROETHENE	ND	5	.29
TRANS-1,3-DICHLOROPROPENE	ND	5	.67
RICHLOROETHENE	ND	5	.25
VINYL ACETATE	ND	50	.72
VINYL CHLORIDE	ND	5	1
XYLENES	ND	5	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	52-149
TOLUENE-D8	98	65-135
ROMOFLUOROBENZENE	96	65-135

RL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
: Value exceed the upper level of the initial calibration
: Found in the associated blank
D : Value from dilution analysis

2022

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066
METHOD: METHOD 5030A/8260A

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: VOL1502Q VOL1502L VOL1502C
LAB FILE ID: RLP212 RLP209 RLP210
DATE EXTRACTED: 12/22/9915:04 12/22/9913:20 12/22/9913:54 DATE COLLECTED: NA
DATE ANALYZED: 12/22/9915:04 12/22/9913:20 12/22/9913:54 DATE RECEIVED: 12/22/99
PREP. BATCH: VOL1702 VOL1702 VOL1702
CALIB. REF: RLP208 RLP208 RLP208

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	20.5	102	20	20.8	104	1	65-135	30
Benzene	ND	20	20	100	20	20	100	0	65-135	30
Chlorobenzene	ND	20	20.3	102	20	20.4	102	0	65-135	30
Toluene	ND	20	19.9	99	20	20.3	101	2	64-135	30
Trichloroethene	ND	20	19.7	99	20	19.9	99	1	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	49.7	99	50	49.1	98	52-149
Toluene-d8	50	48.6	97	50	48.4	97	65-135
Bromofluorobenzene	50	48.2	96	50	47.2	94	65-135

2023

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

ient	: IT CORPORATION	Date Collected:	NA
ect	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/23/99
h No.	: 99L066	Date Extracted:	12/23/99 03:30
Sample ID:	MBLK2S	Date Analyzed:	12/23/99 03:30
ab Samp ID:	VOL1602Q	Dilution Factor:	1
ab File ID:	RLP234	Matrix	: SOIL
xt Btch ID:	VOL1602	% Moisture	: NA
Calib. Ref.:	RLP230	Instrument ID	: T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
,1,1-TRICHLOROETHANE	ND	5	.33
,1,2,2-TETRACHLOROETHANE	ND	5	.33
1,1,2-TRICHLOROETHANE	ND	5	.23
1,1-DICHLOROETHANE	ND	5	.3
1,1-DICHLOROETHENE	ND	5	.54
,2-DICHLOROETHANE	ND	5	.33
,2-DICHLOROPROPANE	ND	5	.38
2-BUTANONE	ND	50	5.1
2-CHLOROETHYLVINYLETHER	ND	50	.17
-HEXANONE	ND	50	1.2
-METHYL-2-PENTANONE	ND	50	1.1
CETONE	ND	50	4.1
BENZENE	ND	5	.25
BROMODICHLOROMETHANE	ND	5	.26
ROMOFORM	ND	5	.28
ROMOMETHANE	ND	5	.64
ARBON DISULFIDE	ND	5	.13
CARBON TETRACHLORIDE	ND	5	.79
CHLOROBENZENE	ND	5	.2
HLOROETHANE	ND	5	1.8
HLOROFORM	ND	5	.42
CHLOROMETHANE	ND	5	2.1
IS-1,2-DICHLOROETHENE	ND	5	.29
1,3-DICHLOROPROPENE	ND	5	.22
OMOCHLOROMETHANE	ND	5	.079
THYLBENZENE	ND	5	.39
MTBE	ND	10	.37
METHYLENE CHLORIDE	3.9J	5	.41
TYRENE	ND	5	.44
ETRACHLOROETHENE	ND	5	.24
OLUENE	ND	5	.31
TRANS-1,2-DICHLOROETHENE	ND	5	.29
TRANS-1,3-DICHLOROPROPENE	ND	5	.67
RICHLOROETHENE	ND	5	.25
VINYL ACETATE	ND	50	.72
VINYL CHLORIDE	ND	5	1
XYLENES	ND	5	1.1

URROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	98	52-149
TOLUENE-D8	91	65-135
ROMOFLUOROBENZENE	87	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2024

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066
METHOD: METHOD 5030A/8260A

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK2S
LAB SAMP ID: VOL1602Q VOL1602L VOL1602C
LAB FILE ID: RLP234 RLP231 RLP232
DATE EXTRACTED: 12/23/9903:30 12/23/9901:50 12/23/9902:23 DATE COLLECTED: NA
DATE ANALYZED: 12/23/9903:30 12/23/9901:50 12/23/9902:23 DATE RECEIVED: 12/23/99
PREP. BATCH: VOL1702 VOL1702 VOL1702
CALIB. REF: RLP230 RLP230 RLP230

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	20.8	104	20	21.4	107	3	65-135	30
Benzene	ND	20	19.2	96	20	20	100	4	65-135	30
Chlorobenzene	ND	20	20.4	102	20	20.4	102	0	65-135	30
Toluene	ND	20	18.8	94	20	19.7	99	5	64-135	30
Trichloroethene	ND	20	21	105	20	20.9	105	0	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	50.9	102	50	52.3	105	52-149
Toluene-d8	50	45.7	91	50	47.9	96	65-135
Bromofluorobenzene	50	43.9	88	50	45.5	91	65-135

2025

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
LAB NO.: 99L066
METHOD: METHOD 5030A/8260A

MATRIX: SOIL % MOISTURE: 2.9

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	18609-2524				
LAB SAMP ID:	L066-12	L066-12M	L066-12S		
LAB FILE ID:	RLP245	RLP243	RLP244		
DATE EXTRACTED:	12/23/9909:50	12/23/9908:32	12/23/9909:16	DATE COLLECTED:	12/10/99
DATE ANALYZED:	12/23/9909:50	12/23/9908:32	12/23/9909:16	DATE RECEIVED:	12/10/99
PREP. BATCH:	VOL1702	VOL1702	VOL1702		
CALIB. REF:	RLP230	RLP230	RLP230		

ACCESSION:

PARAMETER	SMPL RSLT (ug/kg)	SPIKE AMT (ug/kg)	MS RSLT (ug/kg)	MS % REC	SPIKE AMT (ug/kg)	MSD RSLT (ug/kg)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	51.5	53.6	104	51.5	52.2	101	3	65-135	30
Benzene	ND	51.5	49.5	96	51.5	49.3	96	1	65-135	30
Chlorobenzene	ND	51.5	49.7	97	51.5	50.8	99	2	65-135	30
Toluene	ND	51.5	49	95	51.5	50.1	97	2	64-135	30
Trichloroetnene	ND	51.5	52.9	103	51.5	51.3	100	3	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	MS RSLT (ug/kg)	MS % REC	SPIKE AMT (ug/kg)	MSD RSLT (ug/kg)	MSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	51.5	53.1	103	51.5	51.7	100	52-149
Toluene-d8	51.5	50.3	98	51.5	50.4	98	65-135
Bromofluorobenzene	51.5	46.3	90	51.5	46.4	90	65-135

Out side of QC Limit

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: NA
Project : MCAS EL TORO/18600/D.O. 70	Date Received: 12/23/99
Batch No. : 99L066	Date Extracted: 12/23/99 17:15
Sample ID: MBLK3S	Date Analyzed: 12/23/99 17:15
Lab Samp ID: VOL1702B	Dilution Factor: 1
Lab File ID: RLP255	Matrix : SOIL
Ext Btch ID: VOL1702	% Moisture : NA
Calib. Ref.: RLP252	Instrument ID : T-002

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5	.33
1,1,2,2-TETRACHLOROETHANE	ND	5	.33
1,1,2-TRICHLOROETHANE	ND	5	.23
1,1-DICHLOROETHANE	ND	5	.3
1,1-DICHLOROETHENE	ND	5	.54
1,2-DICHLOROETHANE	ND	5	.33
1,2-DICHLOROPROPANE	ND	5	.38
2-BUTANONE	ND	50	5.1
2-CHLOROETHYLVINYLETHER	ND	50	.17
2-HEXANONE	ND	50	1.2
4-METHYL-2-PENTANONE	ND	50	1.1
ACETONE	ND	50	4.1
BENZENE	ND	5	.25
BROMODICHLOROMETHANE	ND	5	.26
BROMOFORM	ND	5	.28
BROMOMETHANE	ND	5	.64
CARBON DISULFIDE	ND	5	.13
CARBON TETRACHLORIDE	ND	5	.79
CHLOROBENZENE	ND	5	.2
CHLOROETHANE	ND	5	1.8
CHLOROFORM	ND	5	.42
CHLOROMETHANE	ND	5	2.1
CIS-1,2-DICHLOROETHENE	ND	5	.29
CIS-1,3-DICHLOROPROPENE	ND	5	.22
DIBROMOCHLOROMETHANE	ND	5	.079
ETHYLBENZENE	ND	5	.39
MTBE	ND	10	.37
METHYLENE CHLORIDE	ND	5	.41
STYRENE	ND	5	.44
TETRACHLOROETHENE	ND	5	.24
TOLUENE	ND	5	.31
TRANS-1,2-DICHLOROETHENE	ND	5	.29
TRANS-1,3-DICHLOROPROPENE	ND	5	.67
TRICHLOROETHENE	ND	5	.25
VINYL ACETATE	ND	50	.72
VINYL CHLORIDE	ND	5	1
XYLENES	ND	5	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	94	52-149
TOLUENE-D8	93	65-135
BROMOFLUOROBENZENE	89	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
NO.: 99L066
D: METHOD 5030A/8260A

ATRIX: SOIL % MOISTURE: NA
ILUTION FACTOR: 1 1 1
SAMPLE ID: M8LK3S
AB SAMP ID: VOL1702B VOL1702L VOL1702C
AB FILE ID: RLP255 RLP253 RLP254
ATE EXTRACTED: 12/23/9917:15 12/23/9916:08 12/23/9916:41 DATE COLLECTED: NA
DATE ANALYZED: 12/23/9917:15 12/23/9916:08 12/23/9916:41 DATE RECEIVED: 12/23/99
PREP. BATCH: VOL1702 VOL1702 VOL1702
ALIB. REF: RLP252 RLP252 RLP252

CCESSION:

ARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
,1-Dichloroethene	ND	20	20.8	104	20	20.3	101	3	65-135	30
Benzene	ND	20	20.4	102	20	20.1	100	1	65-135	30
hlorobenzene	ND	20	20.9	104	20	20.2	101	4	65-135	30
oluene	ND	20	20.3	101	20	19.8	99	2	64-135	30
richloroethene	ND	20	19.8	99	20	19.3	96	3	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
,2-Dichlorethane-d4	50	49.9	100	50	48.1	96	52-149
oluene-d8	50	48.1	96	50	47	94	65-135
romofluorobenzene	50	46.4	93	50	44.9	90	65-135

METHOD 5030A/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 99L066

Matrix : WATER
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	VAL2539B	ND	80	1	NA	.1	.018	12/15/9914:59	12/15/9914:59	EL10-3	EL10-2	VAL2539	NA	NA
LCS1W	VAL2539L	.96	97	1	NA	.1	.018	12/15/9915:35	12/15/9915:35	EL10-4	EL10-2	VAL2539	NA	NA
LCD1W	VAL2539C	1	85	1	NA	.1	.018	12/15/9916:10	12/15/9916:10	EL10-5	EL10-2	VAL2539	NA	NA
18609-2513	L066-01	ND	87	1	NA	.1	.018	12/15/9917:22	12/15/9917:22	EL10-7	EL10-2	VAL2539	12/10/99	12/10/99
18609-2525	L066-13	ND	83	1	NA	.1	.018	12/15/9917:57	12/15/9917:57	EL10-8	EL10-2	VAL2539	12/10/99	12/10/99
18609-2525MS	L066-13M	1.2	91	1	NA	.1	.018	12/15/9918:32	12/15/9918:32	EL10-9	EL10-2	VAL2539	12/10/99	12/10/99
18609-2525MSD	L066-13S	1	90	1	NA	.1	.018	12/15/9919:08	12/15/9919:08	EL10-10	EL10-2	VAL2539	12/10/99	12/10/99

SURR : Bromofluorobenzene
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution

METHOD 5030A/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 99L066
Matrix : SOIL
Instrument ID : GCT039

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	SURR (%)	DLF	MOIST	PRL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	VAL2739B	ND	92	1	NA	1	.088	12/16/9922:09	12/16/9922:09	EL11-3	EL11-2	VAL2739	NA	NA
LCS1S	VAL2739L	5.9	111	1	NA	1	.088	12/16/9922:44	12/16/9922:44	EL11-4	EL11-2	VAL2739	NA	NA
LCD1S	VAL2739C	6	107	1	NA	1	.088	12/16/9923:19	12/16/9923:19	EL11-5	EL11-2	VAL2739	NA	NA
MBLK2S	VAL2839B	ND	97	1	NA	1	.088	12/17/9913:55	12/17/9913:55	EL11-30	EL11-26	VAL2839	NA	NA
LCS2S	VAL2839L	5.7	111	1	NA	1	.088	12/17/9914:31	12/17/9914:31	EL11-31	EL11-26	VAL2839	NA	NA
LCD2S	VAL2839C	6	116	1	NA	1	.088	12/17/9915:07	12/17/9915:07	EL11-32	EL11-26	VAL2839	NA	NA
18609-2514	L066-02	ND	88	1	13.6	1.2	.1	12/17/9912:08	12/17/9912:08	EL11-27	EL11-26	VAL2739	12/10/99	12/10/99
18609-2515	L066-03	ND	97	1	12.1	1.1	.1	12/17/9912:43	12/17/9912:43	EL11-28	EL11-26	VAL2739	12/10/99	12/10/99
18609-2516	L066-04	ND	97	1	1.8	1	.09	12/17/9915:41	12/17/9915:41	EL11-33	EL11-26	VAL2839	12/10/99	12/10/99
18609-2516MS	L066-04M	6.5	110	1	1.8	1	.09	12/17/9916:17	12/17/9916:17	EL11-34	EL11-26	VAL2839	12/10/99	12/10/99
18609-2516MSD	L066-04S	6.3	109	1	1.8	1	.09	12/17/9916:52	12/17/9916:52	EL11-35	EL11-26	VAL2839	12/10/99	12/10/99
18609-2517	L066-05	ND	96	1	18.1	1.2	.11	12/17/9913:19	12/17/9913:19	EL11-29	EL11-26	VAL2739	12/10/99	12/10/99
18609-2518	L066-06	ND	95	1	4.4	1	.092	12/17/9917:28	12/17/9917:28	EL11-36	EL11-26	VAL2839	12/10/99	12/10/99
18609-2519	L066-07	ND	97	1	9.5	1.1	.097	12/17/9919:15	12/17/9919:15	EL11-39	EL11-38	VAL2839	12/10/99	12/10/99
18609-2520	L066-08	ND	95	1	10.4	1.1	.098	12/17/9919:50	12/17/9919:50	EL11-40	EL11-38	VAL2839	12/10/99	12/10/99
18609-2521	L066-09	ND	95	1	5.7	1.1	.093	12/17/9920:26	12/17/9920:26	EL11-41	EL11-38	VAL2839	12/10/99	12/10/99
18609-2522	L066-10	ND	96	1	9.8	1.1	.098	12/17/9921:02	12/17/9921:02	EL11-42	EL11-38	VAL2839	12/10/99	12/10/99
18609-2523	L066-11	ND	94	1	13.1	1.2	.1	12/17/9921:37	12/17/9921:37	EL11-43	EL11-38	VAL2839	12/10/99	12/10/99
18609-2524	L066-12	ND	95	1	2.9	1	.091	12/17/9922:12	12/17/9922:12	EL11-44	EL11-38	VAL2839	12/10/99	12/10/99

SURR : Bromofluorobenzene
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/310 70
SDG NO.: 99L066
METHOD: METHOD 5030A/M8015

MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1 1 1
SAMPLE ID: MBLK1W
CONTROL NO.: VAL2539B VAL2539L VAL2539C
LAB FILE ID: EL10-3 EL10-4 EL10-5
DATIME EXTRCTD: 12/15/9914:59 12/15/9915:35 12/15/9916:10 DATE COLLECTED: NA
DATIME ANALYZD: 12/15/9914:59 12/15/9915:35 12/15/9916:10 DATE RECEIVED:
PREP. BATCH: VAL2539 VAL2539 VAL2539
CALIB. REF: EL10-2 EL10-2 EL10-2

ACCESSION:

PARAMETER	BLNK RSLT mg/L	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Gasoline	ND	1.1	.965	88	1.1	1.04	94	7	67-136	30

SURROGATE PARAMETER	SPIKE AMT mg/L	BS RSLT mg/L	BS % REC	SPIKE AMT mg/L	BSD RSLT mg/L	BSD % REC	QC LIMIT %
Bromofluorobenzene	.05	.0483	97	.05	.0423	85	65-135

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066
METHOD: METHOD 5030A/M8015

MATRIX: WATER % MOISTURE: NA

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	18609-2525				
LAB SAMP ID:	L066-13	L066-13M	L066-13S		
LAB FILE ID:	EL10-8	EL10-9	EL10-10		
DATE EXTRACTED:	12/15/9917:57	12/15/9918:32	12/15/9919:08	DATE COLLECTED:	12/10/99
DATE ANALYZED:	12/15/9917:57	12/15/9918:32	12/15/9919:08	DATE RECEIVED:	12/10/99
PREP. BATCH:	VAL2539	VAL2539	VAL2539		
CALIB. REF:	EL10-2	EL10-2	EL10-2		

ACCESSION:

PARAMETER	SMPL RSLT (mg/L)	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	SPIKE AMT (mg/L)	MSD RSLT (mg/L)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Isoline	ND	1.1	1.24	113	1.1	1.04	94	18	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	MS RSLT (mg/L)	MS % REC	SPIKE AMT (mg/L)	MSD RSLT (mg/L)	MSD % REC	QC LIMIT (%)
Bromofluorobenzene	.05	.0455	91	.05	.045	90	65-135

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066
METHOD: METHOD 5030A/M8015

MATRIX:	SOIL			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
CONTROL NO.:	VAL2739B	VAL2739L	VAL2739C		
LAB FILE ID:	EL11-3	EL11-4	EL11-5		
DATIME EXTRCTD:	12/16/9922:09	12/16/9922:44	12/16/9923:19	DATE COLLECTED:	NA
DATIME ANALYZD:	12/16/9922:09	12/16/9922:44	12/16/9923:19	DATE RECEIVED:	
PREP. BATCH:	VAL2739	VAL2739	VAL2739		
CALIB. REF:	EL11-2	EL11-2	EL11-2		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Gasoline	ND	5.5	5.94	108	5.5	5.97	109	1	57-146	50

SURROGATE PARAMETER	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	QC LIMIT %
Bromofluorobenzene	.25	.277	111	.25	.269	107	60-140

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/C.O. 70
SDG NO.: 99L066
METHOD: METHOD 5030A/M8015

MATRIX: SOIL % MOISTURE: NA

DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK2S				
QC CONTROL NO.:	VAL2839B	VAL2839L	VAL2839C		
LAB FILE ID:	EL11-30	EL11-31	EL11-32		
ANATIME EXTRCTD:	12/17/9913:55	12/17/9914:31	12/17/9915:07	DATE COLLECTED:	NA
ANATIME ANALYZD:	12/17/9913:55	12/17/9914:31	12/17/9915:07	DATE RECEIVED:	
PREP. BATCH:	VAL2839	VAL2839	VAL2839		
CALIB. REF:	EL11-26	EL11-26	EL11-26		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Gasoline	ND	5.5	5.69	103	5.5	6.01	109	5	57-146	50

SURROGATE PARAMETER	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	QC LIMIT %
Bromofluorobenzene	.25	.279	111	.25	.289	116	60-140

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066
METHOD: METHOD 5030A/M8015

MATRIX: SOIL % MOISTURE: 1.8

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	18609-2516				
LAB SAMP ID:	L066-04	L066-04M	L066-04S		
LAB FILE ID:	EL11-33	EL11-34	EL11-35		
DATE EXTRACTED:	12/17/9915:41	12/17/9916:17	12/17/9916:52	DATE COLLECTED:	12/10/99
DATE ANALYZED:	12/17/9915:41	12/17/9916:17	12/17/9916:52	DATE RECEIVED:	12/10/99
PREP. BATCH:	VAL2839	VAL2839	VAL2839		
CALIB. REF:	EL11-26	EL11-26	EL11-26		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	5.6	6.46	115	5.6	6.26	112	3	57-146	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	QC LIMIT (%)
Bromofluorobenzene	.255	.279	110	.255	.276	109	60-140

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 99L066

Matrix : WATER
Instrument ID : GCT043

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SUR1 (%)	SUR2 (%)	DLF	MOIST	RL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	DSL020WB	ND	99	88	1	NA	.1	.038	12/22/9902:00	12/14/9914:00	DL09-16	DL09-14	DSL020W	NA	12/14/99
LCS1W	DSL020WL	4.65	94	89	1	NA	.1	.038	12/22/9902:39	12/14/9914:00	DL09-17	DL09-14	DSL020W	NA	12/14/99
LCD1W	DSL020WC	5.05	97	90	1	NA	.1	.038	12/22/9903:19	12/14/9914:00	DL09-18	DL09-14	DSL020W	NA	12/14/99
18609-2525	L066-13	ND	102	84	.98	NA	.098	.037	12/22/9903:59	12/14/9914:00	DL09-19	DL09-14	DSL020W	12/10/99	12/10/99

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit
H-C RANGE: C7-C18 = JP-5
C6-C12 = Gas
C10-C24 = Diesel
C18-C34 = Motor Oil
E : Value exceed the upper level of the initial calibration
D : Value from dilution

5004

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 99L066

Matrix : SOIL
Instrument ID : GCT043

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	SUR1 (%)	SUR2 (%)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	DSL019SB	ND	98	72	1	NA	10	2.1	12/22/9904:38	12/13/9915:00	DL09-20	DL09-14	DSL019S	NA	12/13/99
LCS1S	DSL019SL	443	100	73	1	NA	10	2.1	12/22/9905:18	12/13/9915:00	DL09-21	DL09-14	DSL019S	NA	12/13/99
LCD1S	DSL019SC	411	97	71	1	NA	10	2.1	12/22/9905:57	12/13/9915:00	DL09-22	DL09-14	DSL019S	NA	12/13/99
18609-2514	L066-02	ND	119	91	1	13.6	12	2.4	12/22/9906:36	12/13/9915:00	DL09-23	DL09-14	DSL019S	12/10/99	12/10/99
18609-2515	L066-03	ND	116	87	1	12.1	11	2.4	12/22/9907:16	12/13/9915:00	DL09-24	DL09-14	DSL019S	12/10/99	12/10/99
18609-2516	L066-04	ND	118	88	1	1.8	10	2.1	12/22/9909:14	12/13/9915:00	DL09-27	DL09-26	DSL019S	12/10/99	12/10/99
18609-2517	L066-05	ND	109	78	1	18.1	12	2.4	12/22/9909:54	12/13/9915:00	DL09-28	DL09-26	DSL019S	12/10/99	12/10/99
18609-2518	L066-06	ND	111	84	1	4.4	10	2.2	12/22/9910:34	12/13/9915:00	DL09-29	DL09-26	DSL019S	12/10/99	12/10/99
18609-2519	L066-07	ND	123	93	1	9.5	11	2.3	12/22/9911:13	12/13/9915:00	DL09-30	DL09-26	DSL019S	12/10/99	12/10/99
18609-2520	L066-08	ND	114	96	1	10.4	11	2.3	12/22/9919:52	12/13/9915:00	DL09-43	DL09-38	DSL019S	12/10/99	12/10/99
18609-2521	L066-09	ND	139	111	1	5.7	11	2.2	12/22/9912:33	12/13/9915:00	DL09-32	DL09-26	DSL019S	12/10/99	12/10/99
18609-2522	L066-10	ND	109	83	1	9.8	11	2.3	12/22/9913:12	12/13/9915:00	DL09-33	DL09-26	DSL019S	12/10/99	12/10/99
18609-2523	L066-11	ND	115	86	1	13.1	12	2.4	12/22/9913:52	12/13/9915:00	DL09-34	DL09-26	DSL019S	12/10/99	12/10/99
18609-2524	L066-12	ND	125	98	1	2.9	10	2.2	12/22/9914:32	12/13/9915:00	DL09-35	DL09-26	DSL019S	12/10/99	12/10/99
18609-2524MS	L066-12M	553	123	94	1	2.9	10.3	2.16	12/22/9915:12	12/13/9915:00	DL09-36	DL09-26	DSL019S	12/10/99	12/10/99
18609-2524MSD	L066-12S	546	124	96	1	2.9	10.3	2.16	12/22/9917:12	12/13/9915:00	DL09-39	DL09-38	DSL019S	12/10/99	12/10/99

* Chromatogram exhibits a non-diesel pattern

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

LIENT: IT CORPORATION
CT: MCAS EL TORO/18609/D.O. 70
NO.: 99L066
METHOD: METHOD M8015

MATRIX: WATER % MOISTURE: NA

ILUTION FACTOR:	1	1	1		
AMPLE ID:	MBLK1W				
AB SAMP ID:	DSL020WB	DSL020WL	DSL020WC		
LAB FILE ID:	DL09-16	DL09-17	DL09-18		
ATE EXTRACTED:	12/14/9914:00	12/14/9914:00	12/14/9914:00	DATE COLLECTED:	NA
ATE ANALYZED:	12/22/9902:00	12/22/9902:39	12/22/9903:19	DATE RECEIVED:	12/14/99
PREP. BATCH:	DSL020W	DSL020W	DSL020W		
CALIB. REF:	DL09-14	DL09-14	DL09-14		

CCESSION:

ARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	5	4.65	93	5	5.05	101	8	61-143	30

URROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
mobenzene	1	.938	94	1	.97	97	65-135
cosane	1	.893	89	1	.9	90	60-145

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EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066
METHOD: METHOD M8015

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: DSL019SB DSL019SL DSL019SC
LAB FILE ID: DL09-20 DL09-21 DL09-22
DATE EXTRACTED: 12/13/9915:00 12/13/9915:00 12/13/9915:00 DATE COLLECTED: NA
DATE ANALYZED: 12/22/9904:38 12/22/9905:18 12/22/9905:57 DATE RECEIVED: 12/13/99
PREP. BATCH: DSL019S DSL019S DSL019S
CALIB. REF: DL09-14 DL09-14 DL09-14

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	500	443	89	500	411	82	8	51-153	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromobenzene	100	99.9	100	100	96.8	97	60-140
Hexacosane	100	73	73	100	71.3	71	55-150

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

LIENT: IT CORPORATION
CT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066
METHOD: METHOD M8015

MATRIX: SOIL % MOISTURE: 2.9

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	18609-2524				
LAB SAMP ID:	L066-12	L066-12M	L066-12S		
LAB FILE ID:	DL09-35	DL09-36	DL09-39		
DATE EXTRACTED:	12/13/9915:00	12/13/9915:00	12/13/9915:00	DATE COLLECTED:	12/10/99
DATE ANALYZED:	12/22/9914:32	12/22/9915:12	12/22/9917:12	DATE RECEIVED:	12/10/99
PREP. BATCH:	DSL019S	DSL019S	DSL019S		
CALIB. REF:	DL09-26	DL09-26	DL09-38		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	515	553	107	515	546	106	1	51-153	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	QC LIMIT (%)
Fluorobenzene	103	127	123	103	127	124	60-140
Hexacosane	103	97.2	94	103	98.5	96	55-150

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/A.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID	: 18609-2514	Date Analyzed:	12/18/99 01:22
Lab Samp ID	: L066-02	Dilution Factor:	1
Lab File ID	: I07L046028	Matrix	: SOIL
Ext Btch ID	: IPL018S	% Moisture	: 13.6
Calib. Ref.	: I07L046019	Instrument ID	: EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	11.6	4.14
Barium	99.2	1.16	.15
Beryllium	.505	.231	.0231
Cadmium	ND	1.16	.081
Chromium	12.2	1.16	.694
Cobalt	5.22	1.16	.706
Copper	7.48	1.16	.856
Manganese	233	2.31	.139
Molybdenum	ND	2.31	.752
Nickel	8.47	2.31	.532
Silver	ND	2.31	1.63
Vanadium	30.3	1.16	.961
Zinc '	30.3	1.16	.301

RL: Reporting Limit
': Analyzed on 12-20-99 File #I31L051

7004

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 7C	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID	: 18609-2514	Date Analyzed:	12/20/99 19:40
Lab Samp ID	: L066-02	Dilution Factor:	1
Lab File ID	: I31L051014	Matrix	: SOIL
Ext Btch ID	: IPL018S	% Moisture	: 13.6
Calib. Ref.	: I31L051008	Instrument ID	: EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	2.67	1.16	.594
Lead	3.17	1.16	.306
Selenium	ND	1.16	.524
Thallium	1.19	1.16	.539

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

lient	: IT CORPORATION	Date Collected:	12/10/99
roject	: MCAS EL TORO/18609/B.O. 70	Date Received:	12/10/99
DG NO.	: 99L066	Date Extracted:	12/13/99 14:20
ample ID	: 18609-2515	Date Analyzed:	12/18/99 01:28
ab Samp ID	: L066-03	Dilution Factor:	1
ab File ID	: I07L046029	Matrix :	SOIL
xt Btch ID	: IPL018S	% Moisture :	12.1
alib. Ref.	: I07L046019	Instrument ID :	EMAXTI07

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
ntimony	ND	11.4	4.07
arium	75.2	1.14	.148
eryllium	.419	.228	.0228
admium	ND	1.14	.0796
hromium	9.81	1.14	.683
obalt	2.67	1.14	.694
opper	4.86	1.14	.842
anganese	75.4	2.28	.137
olybdenum	ND	2.28	.739
ickel	5.37	2.28	.523
ilver	ND	2.28	1.6
anadium	23	1.14	.944
inc	23.4	1.14	.296

L: Reporting Limit
: Analyzed on 12-20-99 File #I3[illegible]L051

7006

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2515	Date Analyzed:	12/20/99 19:44
Lab Samp ID:	L066-03	Dilution Factor:	1
Lab File ID:	I31L051015	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	12.1
Calib. Ref.:	I31L051008	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	2.57	1.14	.584
Lead	2.76	1.14	.3
Selenium	ND	1.14	.515
Thallium	ND	1.14	.53

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/P.O. 70	Date Received: 12/10/99
SDG NO. : 99L066	Date Extracted: 12/13/99 14:20
Sample ID: 18609-2516	Date Analyzed: 12/18/99 01:33
Lab Samp ID: L066-04	Dilution Factor: 1
Lab File ID: I07L046030	Matrix : SOIL
Ext Btch ID: IPL018S	% Moisture : 1.8
Calib. Ref.: I07L046019	Instrument ID : EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10.2	3.65
Barium	11.8	1.02	.132
Beryllium	ND	.204	.0204
Cadmium	ND	1.02	.0713
Chromium	ND	1.02	.611
Cobalt	ND	1.02	.621
Copper	ND	1.02	.754
Manganese	31.7	2.04	.122
Molybdenum	ND	2.04	.662
Nickel	ND	2.04	.468
Silver	ND	2.04	1.44
Vanadium	3.27	1.02	.845
Zinc *	4.09	1.02	.265

RL: Reporting Limit
*: Analyzed on 12-20-99 File #I31L051

7008

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2516	Date Analyzed:	12/20/99 19:48
Lab Samp ID:	L066-04	Dilution Factor:	1
Lab File ID:	I31L051016	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	1.8
Calib. Ref.:	I31L051008	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	1.02	.522
Lead	ND	1.02	.269
Selenium	ND	1.02	.461
Thallium	ND	1.02	.475

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2517	Date Analyzed:	12/18/99 01:49
Lab Samp ID:	L066-05	Dilution Factor:	1
Lab File ID:	I07L046033	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	18.1
Calib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	12.2	4.37
Barium	144	1.22	.159
Beryllium	.618	.244	.0244
Cadmium	ND	1.22	.0855
Chromium	13.5	1.22	.733
Cobalt	5.45	1.22	.745
Copper	8.25	1.22	.904
Manganese	239	2.44	.147
Molybdenum	ND	2.44	.794
Nickel	9.3	2.44	.562
Silver	ND	2.44	1.72
Vanadium	36.2	1.22	1.01
Zinc '	40	1.22	.317

RL: Reporting Limit
': Analyzed on 12-20-99 File #I31L051

7010

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
S.D.G.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2517	Date Analyzed:	12/20/99 19:53
Lab Samp ID:	L066-05	Dilution Factor:	1
Lab File ID:	I31L051017	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	18.1
Calib. Ref.:	I31L051008	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	3.57	1.22	.626
Lead	3.42	1.22	.322
Selenium	ND	1.22	.553
Thallium	ND	1.22	.569

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/P.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2518	Date Analyzed:	12/18/99 01:54
Lab Samp ID:	L066-06	Dilution Factor:	1
Lab File ID:	I07L046034	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	4.4
Calib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10.5	3.74
Barium	56.8	1.05	.136
Beryllium	.255	.209	.0209
Cadmium	ND	1.05	.0732
Chromium	5.68	1.05	.628
Cobalt	2.01	1.05	.638
Copper	3.23	1.05	.774
Manganese	132	2.09	.126
Molybdenum	ND	2.09	.68
Nickel	3.8	2.09	.481
Silver	ND	2.09	1.47
Vanadium	17	1.05	.868
Zinc '	21.4	1.05	.272

RL: Reporting Limit
': Analyzed on 12-20-99 File #I31L051

7012

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
Lab NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2518	Date Analyzed:	12/20/99 19:58
Lab Samp ID:	L066-06	Dilution Factor:	1
Lab File ID:	I31L051018	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	4.4
Calib. Ref.:	I31L051008	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	1.87	1.05	.537
Lead*	1.5	1.05	.276
Selenium	ND	1.05	.474
Thallium	ND	1.05	.487

RL: Reporting Limit
* Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2519	Date Analyzed:	12/18/99 01:59
Lab Samp ID:	L066-07	Dilution Factor:	1
Lab File ID:	I07L046035	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	9.5
Calib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	11	3.96
Barium	61.2	1.1	.144
Beryllium	.275	.221	.0221
Cadmium	ND	1.1	.0773
Chromium	6.65	1.1	.663
Cobalt	2.91	1.1	.674
Copper	3.89	1.1	.818
Manganese	153	2.21	.133
Molybdenum	ND	2.21	.718
Nickel	4.33	2.21	.508
Silver	ND	2.21	1.56
Vanadium	20	1.1	.917
Zinc `	22.4	1.1	.287

RL: Reporting Limit
`: Analyzed on 12-20-99 File #131L051

7014

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
SDG NO. : 99L066	Date Extracted: 12/13/99 14:20
Sample ID: 18609-2519	Date Analyzed: 12/20/99 20:02
Lab Samp ID: L066-07	Dilution Factor: 1
Lab File ID: I31L051019	Matrix : SOIL
Ext Btch ID: IPL018S	% Moisture : 9.5
Calib. Ref.: I31L051008	Instrument ID : EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	2.33	1.1	.567
Lead	1.71	1.1	.292
Selenium	ND	1.1	.501
Thallium	ND	1.1	.515

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

ient	: IT CORPORATION	Date Collected:	12/10/99
oject	: MCAS EL TORO/18609/D	Date Received:	12/10/99
IG NO.	: 99L066	Date Extracted:	12/13/99 14:20
ample ID:	18609-2520	Date Analyzed:	12/18/99 02:05
ab Samp ID:	L066-08	Dilution Factor:	1
ab File ID:	I07L046036	Matrix :	SOIL
xt Btch ID:	IPL018S	% Moisture :	10.4
alib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
ntimony	ND	11.2	4
arium	76	1.12	.145
eryllium	.331	.223	.0223
admium	ND	1.12	.0781
hromium	7.43	1.12	.67
obalt	3.05	1.12	.681
opper	4.42	1.12	.826
anganese	163	2.23	.134
olybdenum	ND	2.23	.725
ickel	4.89	2.23	.513
Silver	ND	2.23	1.57
anadium	22.8	1.12	.926
inc	25.7	1.12	.29

RL: Reporting Limit
': Analyzed on 12-20-99 File #I31L051

7016

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2520	Date Analyzed:	12/20/99 20:18
Lab Samp ID:	L066-08	Dilution Factor:	1
Lab File ID:	I31L051023	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	10.4
Calib. Ref.:	I31L051020	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	2.37	1.12	.573
Lead	1.76	1.12	.295
Selenium	ND	1.12	.506
Thallium	1.41	1.12	.52

RL: Reporting Limit
Analyzed on 12/21/99, File I31LC55

METHOD 3050A/6010A
CAM METALS BY ICP

lient	: IT CORPORATION	Date Collected:	12/10/99
roject	: MCAS EL TORO/18609/D.O. 202	Date Received:	12/10/99
)G NO.	: 99L066	Date Extracted:	12/13/99 14:20
ample ID:	18609-2521	Date Analyzed:	12/18/99 02:10
ab Samp ID:	L066-09	Dilution Factor:	1
ab File ID:	I07L046037	Matrix :	SOIL
xt Btch ID:	IPL018S	% Moisture :	5.7
alib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
ntimony	ND	10.6	3.8
arium	45.9	1.06	.138
eryllium	ND	.212	.0212
admium	ND	1.06	.0742
hromium	5.32	1.06	.636
obalt	1.77	1.06	.647
opper	3.02	1.06	.785
anganese	87.7	2.12	.127
olybdenum	ND	2.12	.689
ickel	4.81	2.12	.488
ilver	ND	2.12	1.5
anadium	15.2	1.06	.88
inc *	15.1	1.06	.276

L: Reporting Limit
*: Analyzed on 12-20-99 File #I31L051

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2521	Date Analyzed:	12/20/99 20:23
Lab Samp ID:	L066-09	Dilution Factor:	1
Lab File ID:	I31L051024	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	5.7
Calib. Ref.:	I31L051020	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	1.7	1.06	.544
Lead	ND	1.06	.28
Selenium	ND	1.06	.48
Thallium	ND	1.06	.494

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2522	Date Analyzed:	12/18/99 02:15
Lab Samp ID:	L066-10	Dilution Factor:	1
Lab File ID:	I07L046038	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	9.8
Calib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	11.1	3.97
Barium	112	1.11	.144
Beryllium	.502	.222	.0222
Cadmium	ND	1.11	.0776
Chromium	11.1	1.11	.665
Cobalt	4.55	1.11	.676
Copper	6.89	1.11	.82
Manganese	214	2.22	.133
Molybdenum	ND	2.22	.721
Nickel	7.39	2.22	.51
Silver	ND	2.22	1.56
Vanadium	28.7	1.11	.92
Zinc `	36	1.11	.288

RL: Reporting Limit
`: Analyzed on 12-20-99 File # I31L051

7020

METHOD 3050A/6010A
METALS BY TRACE-ICP

lient	: IT CORPORATION	Date Collected:	12/10/99
ct	: MCAS EL TORO/18609/D.O. 7C	Date Received:	12/10/99
J.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2522	Date Analyzed:	12/20/99 20:27
ab Samp ID:	L066-10	Dilution Factor:	1
ab File ID:	I31L051025	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	9.8
Calib. Ref.:	I31L051020	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
rsenic	2.84	1.11	.569
ead	2.63	1.11	.293
Selenium	ND	1.11	.502
Thallium	ND	1.11	.517

: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS E. TORO/18609/000.70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2523	Date Analyzed:	12/18/99 02:21
Lab Samp ID:	L066-11	Dilution Factor:	1
Lab File ID:	I07L046039	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	13.1
Calib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	11.5	4.12
Barium	113	1.15	.15
Beryllium	.529	.23	.023
Cadmium	ND	1.15	.0806
Chromium	12.2	1.15	.69
Cobalt	4.34	1.15	.702
Copper	6.9	1.15	.852
Manganese	223	2.3	.138
Molybdenum	ND	2.3	.748
Nickel	8.04	2.3	.529
Silver	ND	2.3	1.62
Vanadium	32.3	1.15	.955
Zinc *	38.2	1.15	.299

RL: Reporting Limit
*: Analyzed on 12-20-99 File #I31L051

7022

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client : IT CORPORATION	Date Collected: 12/10/99
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 12/10/99
SDG NO. : 99L066	Date Extracted: 12/13/99 14:20
Sample ID: 18609-2523	Date Analyzed: 12/20/99 20:31
Lab Samp ID: L066-11	Dilution Factor: 1
Lab File ID: I31L051026	Matrix : SOIL
Ext Btch ID: IPL018S	% Moisture : 13.1
Calib. Ref.: I31L051020	Instrument ID : EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	3.27	1.15	.59
Lead	2.76	1.15	.304
Selenium	ND	1.15	.521
Thallium	ND	1.15	.536

RL: Reporting Limit
Analyzed on 12/21/99, File I31LC55

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/SO. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2524	Date Analyzed:	12/18/99 02:26
Lab Samp ID:	L066-12	Dilution Factor:	1
Lab File ID:	I07L046040	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	2.9
Calib. Ref.:	I07L046031	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10.3	3.69
Barium	25.3	1.03	.134
Beryllium	ND	.206	.0206
Cadmium	ND	1.03	.0721
Chromium	3.38	1.03	.618
Cobalt	1.32	1.03	.628
Copper	1.82	1.03	.762
Manganese	76.4	2.06	.124
Molybdenum	ND	2.06	.669
Nickel	2.08	2.06	.474
Silver	ND	2.06	1.45
Vanadium	8.97	1.03	.855
Zinc '	9.3	1.03	.268

RL: Reporting Limit
': Analyzed on 12-20-99 File #I31L051

7024

METHOD 3050A/6010A
METALS BY TRACE-ICP

lient	: IT CORPORATION	Date Collected:	12/10/99
ct	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
O.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	18609-2524	Date Analyzed:	12/20/99 20:35
ab Samp ID:	L066-12	Dilution Factor:	1
ab File ID:	I31L051027	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	2.9
Calib. Ref.:	I31L051020	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
senic	1.2	1.03	.528
ead	ND	1.03	.272
Selenium	ND	1.03	.467
hallium	ND	1.03	.48

L: Reporting Limit
Analyzed on 12/21/99, File I31L055

METHOD 3010A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/0909 70	Date Received:	12/10/99
SDG NO.	: 99L066 002	Date Extracted:	12/15/99 17:30
Sample ID:	18609-2525	Date Analyzed:	12/15/99 20:42
Lab Samp ID:	L066-13	Dilution Factor:	1
Lab File ID:	I07L039030	Matrix :	WATER
Ext Btch ID:	IPL022W	% Moisture :	NA
Calib. Ref.:	I07L039024	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
Antimony	ND	500	39.8
Barium	ND	100	1.41
Beryllium	ND	10	.12
Cadmium	ND	10	2.06
Chromium	ND	50	4.77
Cobalt	ND	50	6.64
Copper	ND	50	6.47
Manganese	ND	20	.64
Molybdenum	ND	100	9.37
Nickel	ND	150	3.93
Silver	ND	50	4.69
Vanadium	ND	100	4.7
Zinc	75.4	20	2.47

RL: Reporting Limit

METHOD 3010A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	12/10/99
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/10/99
SDG NO.	: 99L066	Date Extracted:	12/15/99 17:30
Sample ID:	18609-2525	Date Analyzed:	12/17/99 13:12
Lab Samp ID:	L066-13	Dilution Factor:	1
Lab File ID:	I31L041021	Matrix :	WATER
Ext Btch ID:	IPL022W	% Moisture :	NA
Calib. Ref.:	I31L041014	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
Arsenic	33.5	10	4.37
Lead	ND	10	1.42
Selenium	ND	10	4.21
Thallium	ND	400	3.31

RL: Reporting Limit

METHOD 3010A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18[illegible]D.O. 70	Date Received:	12/15/99
SDG NO.	: 99L066	Date Extracted:	12/15/99 17:30
Sample ID:	MBLK1W	Date Analyzed:	12/15/99 19:21
Lab Samp ID:	IPL022WB	Dilution Factor:	1
Lab File ID:	I07L039015	Matrix :	WATER
Ext Btch ID:	IPL022W	% Moisture :	NA
Calib. Ref.:	I07L039013	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
Antimony	ND	500	39.8
Barium	ND	100	1.41
Beryllium	ND	10	.12
Cadmium	ND	10	2.06
Chromium	ND	50	4.77
Cobalt	ND	50	6.64
Copper	ND	50	6.47
Manganese	ND	20	.64
Molybdenum	ND	100	9.37
Nickel	ND	150	3.93
Silver	ND	50	4.69
Vanadium	ND	100	4.7
Zinc	ND	20	2.47

RL: Reporting Limit

METHOD 3010A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/15/99
LIMS NO.	: 99L066	Date Extracted:	12/15/99 17:30
Sample ID:	MBLK1W	Date Analyzed:	12/17/99 12:49
Lab Samp ID:	IPL022WB	Dilution Factor:	1
Lab File ID:	I31L041016	Matrix :	WATER
Ext Btch ID:	IPL022W	% Moisture :	NA
Calib. Ref.:	I31L041014	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
Arsenic	ND	10	4.37
Lead	ND	10	1.42
Selenium	ND	10	4.21
Thallium	ND	400	3.31

RL: Reporting Limit

METHOD 3050A/6010A
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609.C. 70	Date Received:	12/13/99
SDG NO.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	MBLK1S	Date Analyzed:	12/17/99 23:42
Lab Samp ID:	IPL018SB	Dilution Factor:	1
Lab File ID:	I07L046009	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	NA
Calib. Ref.:	I07L046007	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10	3.58
Barium	ND	1	.13
Beryllium	ND	.2	.02
Cadmium	ND	1	.07
Chromium	ND	1	.6
Cobalt	ND	1	.61
Copper	ND	1	.74
Manganese	ND	2	.12
Molybdenum	ND	2	.65
Nickel	ND	2	.46
Silver	ND	2	1.41
Vanadium	ND	1	.83
Zinc *	ND	1	.26

RL: Reporting Limit
*: Analyzed on 12-20-99 File #I31L051

METHOD 3050A/6010A
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	12/13/99
LIMS ID.	: 99L066	Date Extracted:	12/13/99 14:20
Sample ID:	MBLK1S	Date Analyzed:	12/20/99 19:23
Lab Samp ID:	IPL018SB	Dilution Factor:	1
Lab File ID:	I31L051010	Matrix :	SOIL
Ext Btch ID:	IPL018S	% Moisture :	NA
Calib. Ref.:	I31L051008	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	1	.513
Lead	ND	1	.264
Selenium	ND	1	.453
Thallium	ND	1	.466

RL: Reporting Limit
Analyzed on 12/21/99, File I31L055

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066
METHOD: METHOD 3010A/6010A

MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1 1 1
SAMPLE ID: MBLK1W
CONTROL NO.: IPL022WB IPL022WL IPL022WC
LAB FILE ID: I07L039015 I07L039016 I07L039017
DATIME EXTRCTD: 12/15/9917:30 12/15/9917:30 12/15/9917:30 DATE COLLECTED: NA
DATIME ANALYZD: 12/15/9919:21 12/15/9919:26 12/15/9919:31 DATE RECEIVED: 12/15/99
PREP. BATCH: IPL022W IPL022W IPL022W
CALIB. REF: I07L039013 I07L039013 I07L039013

ACCESSION:

PARAMETER	BLNK RSLT ug/L	SPIKE AMT ug/L	BS RSLT ug/L	BS % REC	SPIKE AMT ug/L	BSD RSLT ug/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	5000	5130	103	5000	5190	104	1	80-120	20
Barium	ND	1000	1070	107	1000	1100	110	2	80-120	20
Beryllium	ND	1000	1070	107	1000	1090	109	2	80-120	20
Cadmium	ND	1000	1020	102	1000	1040	104	2	80-120	20
Chromium	ND	1000	1020	102	1000	1040	104	2	80-120	20
Cobalt	ND	1000	1020	102	1000	1040	104	2	80-120	20
Copper	ND	1000	1080	108	1000	1100	110	2	80-120	20
Manganese	ND	1000	1000	100	1000	1020	102	2	80-120	20
Molybdenum	ND	1000	1010	101	1000	1040	104	3	80-120	20
Nickel	ND	1000	1010	101	1000	1030	103	2	80-120	20
Silver	ND	1000	1030	103	1000	1060	106	2	80-120	20
Vanadium	ND	1000	1030	103	1000	1060	106	3	80-120	20
Zinc	ND	1000	1100	110	1000	1090	109	0	80-120	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/C.O. 70
NO.: 99L066
OD: METHOD 3010A/6010A

MATRIX:	WATER			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1W				
CONTROL NO.:	IPL022WB	IPL022WL	IPL022WC		
LAB FILE ID:	I31L041016	I31L041017	I31L041018		
DATIME EXTRCTD:	12/15/9917:30	12/15/9917:30	12/15/9917:30	DATE COLLECTED:	NA
DATIME ANALYZD:	12/17/9912:49	12/17/9912:53	12/17/9912:57	DATE RECEIVED:	12/15/99
PREP. BATCH:	IPL022W	IPL022W	IPL022W		
CALIB. REF:	I31L041014	I31L041014	I31L041014		

ACCESSION:

PARAMETER	BLNK RSLT ug/L	SPIKE AMT ug/L	BS RSLT ug/L	BS % REC	SPIKE AMT ug/L	BSD RSLT ug/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	1000	1050	105	1000	1020	102	2	80-120	20
Lead	ND	1000	1050	105	1000	1020	102	3	80-120	20
Selenium	ND	1000	1070	107	1000	1030	103	4	80-120	20
Thallium	ND	1000	1140	114	1000	1110	111	2	80-120	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066
METHOD: METHOD 3050A/6010A

MATRIX: SOIL % MOISTURE: NA

DILTN FACTR:	1	1	1
SAMPLE ID:	MBLK1S		
CONTROL NO.:	IPL018SB	IPL018SL	IPL018SC
LAB FILE ID:	I07L046009	I07L046010	I07L046011
DATIME EXTRCTD:	12/13/9914:20	12/13/9914:20	12/13/9914:20
DATIME ANALYZD:	12/17/9923:42	12/17/9923:47	12/17/9923:52
PREP. BATCH:	IPL018S	IPL018S	IPL018S
CALIB. REF:	I07L046007	I07L046007	I07L046007

DATE COLLECTED: NA
DATE RECEIVED: 12/13/99

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	500	451	90	500	453	91	0	80-120	20
Barium	ND	100	100	100	100	99.9	100	0	80-120	20
Beryllium	ND	100	98.8	99	100	98.6	99	0	80-120	20
Cadmium	ND	100	91	91	100	91.8	92	1	80-120	20
Chromium	ND	100	96.8	97	100	96.9	97	0	80-120	20
Cobalt	ND	100	95.9	96	100	96.1	96	0	80-120	20
Copper	ND	100	96.6	97	100	96.2	96	0	80-120	20
Manganese	ND	100	94.3	94	100	94.4	94	0	80-120	20
Molybdenum	ND	100	97.1	97	100	98	98	1	80-120	20
Nickel	ND	100	94.2	94	100	94	94	0	80-120	20
Silver	ND	100	95.3	95	100	95.3	95	0	80-120	20
Vanadium	ND	100	97.4	97	100	97.4	97	0	80-120	20
Zinc^	ND	100	82.6	83	100	82.9	83	0	80-120	20

^: Analyzed on 12-20-99 File #I31L051

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
OJECT: MCAS EL TORO/18609/C.O. 70
.: 99L066
M : METHOD 3050A/6010A

TRIX: SOIL % MOISTURE: NA

DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
NTROL NO.:	IPL018SB	IPL018SL	IPL018SC		
B FILE ID:	I31L051010	I31L051011	I31L051012		
DATIME EXTRCTD:	12/13/9914:20	12/13/9914:20	12/13/9914:20	DATE COLLECTED:	NA
DATIME ANALYZD:	12/20/9919:23	12/20/9919:27	12/20/9919:31	DATE RECEIVED:	12/13/99
EP. BATCH:	IPL018S	IPL018S	IPL018S		
LIB. REF:	I31L051008	I31L051008	I31L051008		

ACCESSION:

RAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	100	83.5	84	100	83.6	84	0	80-120	20
ead	ND	100	86.1	86	100	86.3	86	0	80-120	20
lenium	ND	100	83.2	83	100	83.6	84	1	80-120	20
Thallium	ND	100	89.1	89	100	89.1	89	0	80-120	20

Analyzed on 12/21/99, File I31L055

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066 , 002
METHOD: METHOD 3010A/6010A

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MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1 1
SAMPLE ID: 779679-003
CONTROL NO.: L064-01 L064-01A
LAB FILE ID: I07L039027 I07L039033
DATIME EXTRCTD: 12/15/9917:30 12/15/9917:30 DATE COLLECTED: 12/10/99
DATIME ANALYZD: 12/15/9920:24 12/15/9920:58 DATE RECEIVED: 12/10/99
PREP. BATCH: IPL022W IPL022W
CALIB. REF: I07L039024 I07L039024

ACCESSION:

PARAMETER	SMPL RSLT (ug/L)	SPIKE AMT (ug/L)	AS RSLT (ug/L)	AS % REC	QC LIMIT (%)
Antimony	ND	500	556	111	75-125
Barium	451	1000	1440	99	75-125
Beryllium	ND	1000	1000	100	75-125
Cadmium	ND	1000	1110	111	75-125
Chromium	ND	1000	1090	109	75-125
Cobalt	224	1000	1290	107	75-125
Copper	ND	1000	1070	107	75-125
Manganese	1110	1000	2150	104	75-125
Molybdenum	ND	1000	1100	110	75-125
Nickel	ND	1000	1070	107	75-125
Silver	ND	1000	914	91	75-125
Vanadium	304	1000	1370	107	75-125
Zinc	142	1000	1200	106	75-125

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.C. 70
NO.: 99L066
MOD: METHOD 3010A/6010A

MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1 1
SAMPLE ID: 18609-2525
CONTROL NO.: L066-13 L066-13A
LAB FILE ID: I31L041021 I31L041023
DATIME EXTRCTD: 12/15/9917:30 12/15/9917:30 DATE COLLECTED: 12/10/99
DATIME ANALYZD: 12/17/9913:12 12/17/9913:19 DATE RECEIVED: 12/10/99
PREP. BATCH: IPL022W IPL022W
CALIB. REF: I31L041014 I31L041014

ACCESSION:

PARAMETER	SMPL RSLT (ug/L)	SPIKE AMT (ug/L)	AS RSLT (ug/L)	AS % REC	QC LIMIT (%)
Arsenic	33.5	500	490	92	75-125
Lead	ND	500	478	96	75-125
Selenium	ND	500	484	96	75-125
Thallium	ND	500	518	104	75-125

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066
METHOD: METHOD 3050A/6010A

MATRIX: SOIL % MOISTURE: 11.3
DILTN FACTR: 1 1
SAMPLE ID: 020-SB01-SS0.0
CONTROL NO.: L021-12 L021-12A
LAB FILE ID: I07L046017 I07L046014
DATIME EXTRCTD: 12/13/9914:20 12/13/9914:20 DATE COLLECTED: 12/02/99
DATIME ANALYZD: 12/18/9900:24 12/18/9900:08 DATE RECEIVED: 12/03/99
PREP. BATCH: IPL018S IPL018S
CALIB. REF: I07L046007 I07L046007

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS % REC	QC LIMIT (%)
Antimony	ND	56.4	56.5	100	75-125
Barium	65.4	113	180	102	75-125
Beryllium	ND	113	114	101	75-125
Cadmium	ND	113	106	94	75-125
Chromium	12.7	113	124	98	75-125
Cobalt	1.54	113	112	98	75-125
Copper	7.6	113	120	100	75-125
Manganese	60	113	169	97	75-125
Molybdenum	ND	113	112	99	75-125
Nickel	12.1	113	119	95	75-125
Silver	ND	113	90.7	80	75-125
Vanadium	11.5	113	124	99	75-125
Zinc*	86	113	182	85	75-125

*: Analyzed on 12-20-99 File #I31L051

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
NO.: 99L066
METHOD: METHOD 3050A/6010A

MATRIX:	SOIL		% MOISTURE:	11.3
DILTN FACTR:	1	1		
SAMPLE ID:	020-SB01-SS0.0			
CONTROL NO.:	L021-12	L021-12A		
LAB FILE ID:	I31L051034	I31L051029		
DATIME EXTRCTD:	12/13/9914:20	12/13/9914:20	DATE COLLECTED:	12/02/99
DATIME ANALYZD:	12/20/9921:04	12/20/9920:43	DATE RECEIVED:	12/03/99
PREP. BATCH:	IPL018S	IPL018S		
CALIB. REF:	I31L051032	I31L051020		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS % REC	QC LIMIT (%)
Arsenic	3.74	113	107	91	75-125
Lead	3.17	58	51.8	84	75-125
Selenium	ND	113	105	93	75-125
Thallium	ND	113	111	98	75-125

Analyzed on 12/21/99, File I31L055 (L066-02)

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 99L066 002
METHOD: METHOD 3010A/6010A

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1 5
SAMPLE ID: 779679-003 779679-003DL
EMAX SAMP ID: L064-01 L064-01T
LAB FILE ID: I07L039027 I07L039026
DATE EXTRACTED: 12/15/9917:30 12/15/9917:30 DATE COLLECTED: 12/10/99
DATE ANALYZED: 12/15/9920:24 12/15/9920:19 DATE RECEIVED: 12/10/99
PREP. BATCH: IPL022W IPL022W
CALIB. REF: I07L039024 I07L039024

ACCESSION:

PARAMETER	SMPL RSLT (ug/L)	SERIAL DIL RSLT (ug/L)	DIF RSLT %	QC LIMIT (%)
Antimony	ND	ND	0	10
Barium	451	ND	NA	10
Beryllium	ND	ND	0	10
Cadmium	ND	ND	0	10
Chromium	ND	ND	0	10
Cobalt	224	ND	NA	10
Copper	ND	ND	0	10
Manganese	1110	1130	3	10
Molybdenum	ND	ND	0	10
Nickel	ND	ND	0	10
Silver	ND	ND	0	10
Vanadium	304	ND	NA	10
Zinc	142	170	20*	10

* Out of QC limit

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
NO.: 99L066
METHOD: METHOD 3010A/6010A

MATRIX:	WATER		% MOISTURE:	NA
DILUTION FACTOR:	1	5		
SAMPLE ID:	18609-2525	18609-2525DL		
EMAX SAMP ID:	L066-13	L066-13T		
LAB FILE ID:	I31L041021	I31L041020		
DATE EXTRACTED:	12/15/9917:30	12/15/9917:30	DATE COLLECTED:	12/10/99
DATE ANALYZED:	12/17/9913:12	12/17/9913:08	DATE RECEIVED:	12/10/99
PREP. BATCH:	IPL022W	IPL022W		
CALIB. REF:	I31L041014	I31L041014		

ACCESSION:

PARAMETER	SMPL RSLT (ug/L)	SERIAL DIL RSLT (ug/L)	DIF RSLT %	QC LIMIT (%)
Arsenic	33.5	ND	NA	10
Lead	ND	ND	0	10
Selenium	ND	ND	0	10
Thallium	ND	ND	0	10

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18608/D.O. 70
BATCH NO.: 99L066 002
METHOD: METHOD 3050A/6010AM

MATRIX: SOIL % MOISTURE: 11.3
DILUTION FACTOR: 1 5
SAMPLE ID: 020-SB01-SS0.0 020-SB01-SS0.0DL
EMAX SAMP ID: L021-12 L021-12T
LAB FILE ID: I07L046017 I07L046016
DATE EXTRACTED: 12/13/9914:20 12/13/9914:20 DATE COLLECTED: 12/02/99
DATE ANALYZED: 12/18/9900:24 12/18/9900:19 DATE RECEIVED: 12/03/99
PREP. BATCH: IPL018S IPL018S
CALIB. REF: I07L046007 I07L046007

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Antimony	ND	ND	0	10
Barium	65.4	73.1	12*	10
Beryllium	ND	ND	0	10
Cadmium	ND	ND	0	10
Chromium	12.7	17.1	35*	10
Cobalt	1.54	ND	NA	10
Copper	7.6	9.13	20*	10
Manganese	60	70.3	17*	10
Molybdenum	ND	ND	0	10
Nickel	12.1	12.7	5	10
Silver	ND	ND	0	10
Vanadium	11.5	14.1	22*	10
Zinc`	86	96	11*	10

* Out of QC limit
`: Analyzed on 12-20-99 File #I31L051

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
LAB NO.: 99L066
METHOD: METHOD 3050A/6010A

MATRIX: SOIL % MOISTURE: 11.3

DILUTION FACTOR:	1	5		
SAMPLE ID:	020-SB01-SS0.0	020-SB01-SS0.0DL		
EMAX SAMP ID:	L021-12	L021-12T		
LAB FILE ID:	I31L051034	I31L051022		
DATE EXTRACTED:	12/13/9914:20	12/13/9914:20	DATE COLLECTED:	12/02/99
DATE ANALYZED:	12/20/9921:04	12/20/9920:14	DATE RECEIVED:	12/03/99
PREP. BATCH:	IPL018S	IPL018S		
CALIB. REF:	I31L051032	I31L051020		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
Arsenic	3.74	ND	NA	10
Lead	3.17	ND	NA	10
Selenium	ND	ND	0	10
Thallium	ND	ND	0	10

Analyzed on 12/21/99, File I31L055 (L066-02)

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066 HOT
METHOD: METHOD 3010A/6010A

MATRIX: WATER % MOISTURE: NA
DILTN FACTR: 1 1 1
SAMPLE ID: 18609-2525
CONTROL NO.: L066-13 L066-13M L066-13S
LAB FILE ID: I07L039030 I07L039031 I07L039032
DATIME EXTRCTD: 12/15/9917:30 12/15/9917:30 12/15/9917:30 DATE COLLECTED: 12/10/99
DATIME ANALYZD: 12/15/9920:42 12/15/9920:47 12/15/9920:53 DATE RECEIVED: 12/10/99
PREP. BATCH: IPL022W IPL022W IPL022W
CALIB. REF: I07L039024 I07L039024 I07L039024

ACCESSION:

PARAMETER	SMPL RSLT ug/L	SPIKE AMT ug/L	MS RSLT ug/L	MS % REC	SPIKE AMT ug/L	MSD RSLT ug/L	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	5000	5090	102	5000	4860	97	5	80-120	20
Barium	ND	1000	1050	105	1000	1000	100	5	80-120	20
Beryllium	ND	1000	1050	105	1000	1010	101	4	80-120	20
Cadmium	ND	1000	1030	103	1000	991	99	4	80-120	20
Chromium	ND	1000	1030	103	1000	989	99	4	80-120	20
Cobalt	ND	1000	1030	103	1000	992	99	4	80-120	20
Copper	ND	1000	1040	104	1000	991	99	5	80-120	20
Manganese	ND	1000	1010	101	1000	972	97	4	80-120	20
Molybdenum	ND	1000	1020	102	1000	973	97	4	80-120	20
Nickel	ND	1000	1010	101	1000	980	98	3	80-120	20
Silver	ND	1000	1030	103	1000	992	99	4	80-120	20
Vanadium	ND	1000	1030	103	1000	989	99	4	80-120	20
Zinc	75.4	1000	1070	99	1000	1050	98	2	80-120	20

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
NO.: 99L066
METHOD: METHOD 3010A/6010A

MATRIX:	WATER			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	18609-2525				
CONTROL NO.:	L066-13	L066-13M	L066-13S		
LAB FILE ID:	I31L041021	I31L041024	I31L041025		
DATIME EXTRCTD:	12/15/9917:30	12/15/9917:30	12/15/9917:30	DATE COLLECTED:	12/10/99
DATIME ANALYZD:	12/17/9913:12	12/17/9913:23	12/17/9913:32	DATE RECEIVED:	12/10/99
PREP. BATCH:	IPL022W	IPL022W	IPL022W		
CALIB. REF:	I31L041014	I31L041014	I31L041014		

ACCESSION:

PARAMETER	SMPL RSLT ug/L	SPIKE AMT ug/L	MS RSLT ug/L	MS % REC	SPIKE AMT ug/L	MSD RSLT ug/L	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	33.5	1000	1090	106	1000	1090	105	0	80-120	20
Lead	ND	1000	986	99	1000	1050	105	6	80-120	20
Selenium	ND	1000	1010	101	1000	1100	110	9	80-120	20
Thallium	ND	1000	1190	119	1000	1150	115	4	80-120	20

METHOD 7470A
MERCURY BY COLD VAPOR

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 99L066

Matrix : WATER
Instrument ID : TI023

SAMPLE ID		EMAX SAMPLE ID	RESULTS (ug/L)	DLF	MOIST	RL (ug/L)	MDL (ug/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1W	#	HGL015WB	ND	1	NA	.2	.179	12/17/9909:29	12/16/9917:00	M99L020008	M99L020006	HGL015W	NA	12/16/99
LCS1W		HGL015WL	5.17	1	NA	.2	.179	12/17/9909:31	12/16/9917:00	M99L020009	M99L020006	HGL015W	NA	12/16/99
LCD1W		HGL015WC	5.14	1	NA	.2	.179	12/17/9909:33	12/16/9917:00	M99L020010	M99L020006	HGL015W	NA	12/16/99
18609-2525		L066-13	ND	1	NA	.2	.179	12/17/9909:37	12/16/9917:00	M99L020012	M99L020006	HGL015W	12/10/99	12/10/99

RL: Reporting Limit

7201

METHOD 7471A
MERCURY BY COLD VAPOR

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 99L066

Matrix : SOIL
Instrument ID : TI023

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	HGL013SB	ND	1	NA	.1	.028	12/14/9916:09	12/14/9912:00	M99L017015	M99L017006	HGL013S	NA	12/14/99
LCS1S	HGL013SL	.839	1	NA	.1	.028	12/14/9916:11	12/14/9912:00	M99L017016	M99L017006	HGL013S	NA	12/14/99
LCD1S	HGL013SC	.846	1	NA	.1	.028	12/14/9916:14	12/14/9912:00	M99L017017	M99L017006	HGL013S	NA	12/14/99
18609-2514	L066-02	ND	1	13.6	.116	.0324	12/14/9916:23	12/14/9912:00	M99L017021	M99L017018	HGL013S	12/10/99	12/10/99
18609-2514MS	L066-02M	.828	1	13.6	.116	.0324	12/14/9916:26	12/14/9912:00	M99L017022	M99L017018	HGL013S	12/10/99	12/10/99
18609-2514MSD	L066-02S	.863	1	13.6	.116	.0324	12/14/9916:29	12/14/9912:00	M99L017023	M99L017018	HGL013S	12/10/99	12/10/99
18609-2514DL	L066-02T	ND	5	13.6	.58	.162	12/14/9916:31	12/14/9912:00	M99L017024	M99L017018	HGL013S	12/10/99	12/10/99
18609-2514AS	L066-02A	.367	1	13.6	.116	.0324	12/14/9916:34	12/14/9912:00	M99L017025	M99L017018	HGL013S	12/10/99	12/10/99
18609-2515	L066-03	ND	1	12.1	.114	.0319	12/14/9916:36	12/14/9912:00	M99L017026	M99L017018	HGL013S	12/10/99	12/10/99
18609-2516	L066-04	ND	1	1.8	.102	.0285	12/14/9916:38	12/14/9912:00	M99L017027	M99L017018	HGL013S	12/10/99	12/10/99
18609-2517	L066-05	ND	1	18.1	.122	.0342	12/14/9916:40	12/14/9912:00	M99L017028	M99L017018	HGL013S	12/10/99	12/10/99
18609-2518	L066-06	ND	1	4.4	.105	.0293	12/14/9916:43	12/14/9912:00	M99L017029	M99L017018	HGL013S	12/10/99	12/10/99
18609-2519	L066-07	ND	1	9.5	.11	.0309	12/14/9916:51	12/14/9912:00	M99L017032	M99L017030	HGL013S	12/10/99	12/10/99
18609-2520	L066-08	ND	1	10.4	.112	.0313	12/14/9916:53	12/14/9912:00	M99L017033	M99L017030	HGL013S	12/10/99	12/10/99
18609-2521	L066-09	ND	1	5.7	.106	.0297	12/14/9916:56	12/14/9912:00	M99L017034	M99L017030	HGL013S	12/10/99	12/10/99
18609-2522	L066-10	ND	1	9.8	.111	.031	12/14/9916:58	12/14/9912:00	M99L017035	M99L017030	HGL013S	12/10/99	12/10/99
18609-2523	L066-11	ND	1	13.1	.115	.0322	12/14/9917:01	12/14/9912:00	M99L017036	M99L017030	HGL013S	12/10/99	12/10/99
18609-2524	L066-12	ND	1	2.9	.103	.0288	12/14/9917:03	12/14/9912:00	M99L017037	M99L017030	HGL013S	12/10/99	12/10/99

RL: Reporting Limit

7202

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
DG NO.: 99L066
ETHOD: METHOD 7470A

ATRIX:	WATER			% MOISTURE:	NA
ILTN FACTR:	1	1	1		
AMPLE ID:	MBLK1W				
ONTROL NO.:	HGL015WB	HGL015WL	HGL015WC		
AB FILE ID:	M99L020008	M99L020009	M99L020010		
ATIME EXTRCTD:	12/16/9917:00	12/16/9917:00	12/16/9917:00	DATE COLLECTED:	NA
ATIME ANALYZD:	12/17/9909:29	12/17/9909:31	12/17/9909:33	DATE RECEIVED:	12/16/99
REP. BATCH:	HGL015W	HGL015W	HGL015W		
ALIB. REF:	M99L020006	M99L020006	M99L020006		

CCESSION:

ARAMETER	BLNK RSLT ug/L	SPIKE AMT ug/L	BS RSLT ug/L	BS % REC	SPIKE AMT ug/L	BSD RSLT ug/L	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
ercury	ND	5	5.17	103	5	5.14	103	1	77-120	15

7203

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
DG NO.: 99L066
ETHOD: METHOD 7471A

ATRIX:	SOIL			% MOISTURE:	NA
ILTN FACTR:	1	1	1		
AMPLE ID:	MBLK1S				
ONTROL NO.:	HGL013SB	HGL013SL	HGL013SC		
AB FILE ID:	M99L017015	M99L017016	M99L017017		
ATIME EXTRCTD:	12/14/9912:00	12/14/9912:00	12/14/9912:00	DATE COLLECTED:	NA
ATIME ANALYZD:	12/14/9916:09	12/14/9916:11	12/14/9916:14	DATE RECEIVED:	12/14/99
REP. BATCH:	HGL013S	HGL013S	HGL013S		
ALIB. REF:	M99L017006	M99L017006	M99L017006		

CCESSION:

ARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
ercury	ND	.820	.839	102	.820	.846	103	1	77-120	25

7204

EMAX QUALITY CONTROL DATA
SERIAL DILUTION ANALYSIS

LIENT: IT CORPORATION
ROJECT: MCAS EL TORO/18609/D.O. 70
ATCH NO.: 99L066
ETHOD: METHOD 7471A

ATRIX: SOIL % MOISTURE: 13.6

ILUTION FACTOR:	1	5		
AMPLE ID:	18609-2514	18609-2514DL		
MAX SAMP ID:	L066-02	L066-02T		
AB FILE ID:	M99L017021	M99L017024		
ATE EXTRACTED:	12/14/9912:00	12/14/9912:00	DATE COLLECTED:	12/10/99
ATE ANALYZED:	12/14/9916:23	12/14/9916:31	DATE RECEIVED:	12/10/99
REP. BATCH:	HGL013S	HGL013S		
ALIB. REF:	M99L017018	M99L017018		

CCESSION:

ARAMETER	SMPL RSLT (mg/kg)	SERIAL DIL RSLT (mg/kg)	DIF RSLT %	QC LIMIT (%)
ercury	ND	ND	0	10

7205

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

:LIENT: IT CORPORATION
'ROJECT: MCAS EL TORO/18609/D.O. 70
;DG NO.: 99L066
IETHOD: METHOD 7471A

==========

IATRIX: SOIL % MOISTURE: 13.6

)ILTN FACTR:	1	1	1		
SAMPLE ID:	18609-2514				
:ONTROL NO.:	L066-02	L066-02M	L066-02S		
AB FILE ID:	M99L017021	M99L017022	M99L017023		
)ATIME EXTRCTD:	12/14/9912:00	12/14/9912:00	12/14/9912:00	DATE COLLECTED:	12/10/99
)ATIME ANALYZD:	12/14/9916:23	12/14/9916:26	12/14/9916:29	DATE RECEIVED:	12/10/99
'REP. BATCH:	HGL013S	HGL013S	HGL013S		
:ALIB. REF:	M99L017018	M99L017018	M99L017018		

\CCESSION:

'ARAMETER	SMPL RSLT mg/kg	SPIKE AMT mg/kg	MS RSLT mg/kg	MS % REC	SPIKE AMT mg/kg	MSD RSLT mg/kg	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
4ercury	ND	.877	.828	94	.893	.863	97	2	77-120	25

7206

EMAX QUALITY CONTROL DATA
ANALYTICAL SPIKE ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 99L066
METHOD: METHOD 7471A

MATRIX:	SOIL		% MOISTURE:	13.6
DILTN FACTR:	1	1		
SAMPLE ID:	18609-2514			
CONTROL NO.:	L066-02	L066-02A		
LAB FILE ID:	M99L017021	M99L017025		
DATIME EXTRCTD:	12/14/9912:00	12/14/9912:00	DATE COLLECTED:	12/10/99
DATIME ANALYZD:	12/14/9916:23	12/14/9916:34	DATE RECEIVED:	12/10/99
PREP. BATCH:	HGL013S	HGL013S		
CALIB. REF:	M99L017018	M99L017018		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	AS RSLT (mg/kg)	AS % REC	QC LIMIT (%)
Mercury	ND	.367	.364	101	85-115

7201

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: December 10. 1999

LDC Report Date: February 18. 2000

Matrix: Soil/Water

Parameters: Volatiles

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories. Inc.

Sample Delivery Group (SDG): 99L066

Sample Identification

18609-2513
18609-2514
18609-2515
18609-2516
18609-2517
18609-2518
18609-2519
18609-2520
18609-2521
18609-2522
18609-2523**
18609-2524
18609-2525
18609-2524MS
18609-2524MSD

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 13 soil samples and 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding. therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all semivolatile target compounds and system monitoring compounds were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
MBLK1W	12/22/99	Methylene chloride	3.8 ug/L	All water samples in SDG 99L066
MBLK1S	12/22/99	Methylene chloride	3.8 ug/Kg	18609-2514 18609-2515 18609-2516

Method Blank ID	Analysis Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
MBLK2S	12/23/99	Methylene chloride	3.9 ug/Kg	18609-2517 18609-2518 18609-2519 18609-2520 18609-2521 18609-2524 18609-2523**

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
18609-2513	Methylene chloride	4.7 ug/L	5U ug/L
18609-2525	Methylene chloride	3.7 ug/L	5U ug/L
18609-2514	Methylene chloride	4.6 ug/Kg	5.8U ug/Kg
18609-2515	Methylene chloride	3.6 ug/Kg	5.7U ug/Kg
18609-2516	Methylene chloride	3.1 ug/Kg	3.1U ug/Kg
18609-2517	Methylene chloride	4.1 ug/Kg	6.1U ug/Kg
18609-2518	Methylene chloride	3.2 ug/Kg	5.2U ug/Kg
18609-2519	Methylene chloride	3.2 ug/Kg	5.5U ug/Kg
18609-2520	Methylene chloride	3.7 ug/Kg	5.6U ug/Kg
18609-2521	Methylene chloride	3 ug/Kg	5.3U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples 18609-2523** and 18609-2524 were identified as field duplicates. No volatiles were detected in any of the samples.

XVII. Field Blanks

Sample 18609-2513 was identified as a trip blank. No volatile contaminants were found in this blank with the following exceptions:

Trip Blank ID	Compound	Concentration (ug/L)
18609-2513	Methylene chloride	4.7

MCAS El Toro
Volatiles - Data Qualification Summary - SDG 99L066

No Sample Data Qualified in this SDG

MCAS El Toro
Volatiles - Laboratory Blank Data Qualification Summary - SDG 99L066

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
99L066	18609-2513	Methylene chloride	5U ug/L	A
99L066	18609-2525	Methylene chloride	5U ug/L	A
99L066	18609-2514	Methylene chloride	5.6U ug/Kg	A
99L066	18609-2515	Methylene chloride	5.7U ug/Kg	A
99L066	18609-2516	Methylene chloride	3.1U ug/Kg	A
99L066	18609-2517	Methylene chloride	6.1U ug/Kg	A
99L066	18609-2518	Methylene chloride	5.2U ug/Kg	A
99L066	18609-2519	Methylene chloride	5.5U ug/Kg	A
99L066	18609-2520	Methylene chloride	5.6U ug/Kg	A
99L066	18609-2521	Methylene chloride	5.3U ug/Kg	A

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: December 10, 1999

LDC Report Date: February 22, 2000

Matrix: Soil/Water

Parameters: Metals

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 99L066

Sample Identification

18609-2514
18609-2515
18609-2516
18609-2517
18609-2518
18609-2519
18609-2520
18609-2521
18609-2522
18609-2523**
18609-2524
18609-2525
18609-2525MS
18609-2525MSD
18609-2514MS
18609-2514MSD

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 13 soil samples and 3 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7000 for Metals. The metals analyzed were Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Silver, Thallium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
ICB/CCB	Chromium Silver Vanadium	4.34 ug/L 7.10 ug/L 4.73 ug/L	All soil samples in SDG 99L066
ICB/CCB	Zinc	3.65 ug/L	All water samples in SDG 99L066

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Not required by the method.

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples 18609-2523** and 18609-2524 were identified as field duplicates. No metals were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	18609-2523**	18609-2524	
Arsenic	3.27	[illegible]	93
Barium	113	25.3	127
Beryllium	0.529	0.206U	200
Chromium	12.2	3.38	113

Analyte	Concentration (mg/Kg)		RPD
	18609-2523**	18609-2524	
Cobalt	4.34	1.32	107
Copper	6.9	1.82	116
Lead	2.76	1.03U	200
Manganese	223	76.4	98
Nickel	8.04	2.08	118
Vanadium	32.3	8.97	113
Zinc	38.2	9.3	122

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Metals - Data Qualification Summary - SDG 99L066

No Sample Data Qualified in this SDG

MCAS El Toro
Metals - Laboratory Blank Data Qualification Summary - SDG 99L066

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: December 10, 1999

LDC Report Date: February 24, 2000

Matrix: Soil/Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 99L066

Sample Identification

18609-2513
18609-2514
18609-2515
18609-2516
18609-2517
18609-2518
18609-2519
18609-2520
18609-2521
18609-2522
18609-2523**
18609-2524
18609-2525
18609-2516MS
18609-2516MSD
18609-2525MS
18609-2525MSD

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 13 soil samples and 4 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding. therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for eacn matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VII. System Performance

The system performance was within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

Samples 18609-2523** and 18609-2524 were identified as field duplicates. No total petroleum hydrocarbons as gasoline were detected in any of the samples.

X. Field Blanks

Sample 18609-2613 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found in this blank.

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 99L066

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 99L066

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: December 10, 1999

LDC Report Date: February 24, 2000

Matrix: Soil/Water

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C & D

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 99L066

Sample Identification

18609-2514
18609-2515
18609-2516
18609-2517
18609-2518
18609-2519
18609-2520
18609-2521
18609-2522
18609-2523**
18609-2524
18609-2525
18609-2524MS
18609-2524MSD

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 13 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding. therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

All target compound identifications were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VI. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VII. System Performance

The system performance was within validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

Samples 18609-2523** and 18609-2524 were identified as field duplicates. No total petroleum hydrocarbons as extractables were detected in any of the samples.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 99L066

No Sample Data Qualified in this SDG

MCAS El Toro
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 99L066

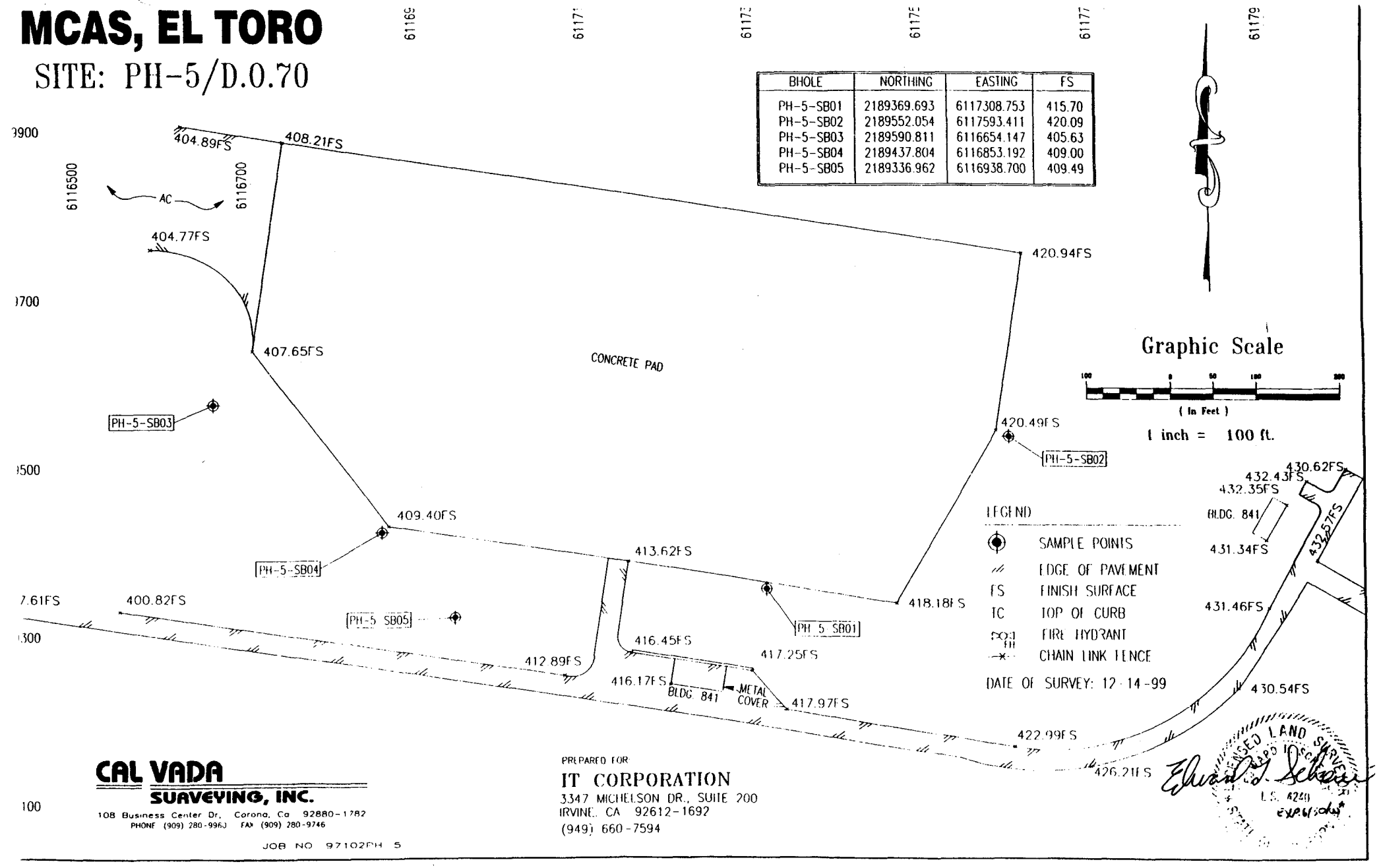
No Sample Data Qualified in this SDG

Appendix J
Land Survey Data

MCAS, EL TORO

SITE: PH-5/D.0.70

BHOLE	NORTHING	EASTING	FS
PH-5-SB01	2189369.693	6117308.753	415.70
PH-5-SB02	2189552.054	6117593.411	420.09
PH-5-SB03	2189590.811	6116654.147	405.63
PH-5-SB04	2189437.804	6116853.192	409.00
PH-5-SB05	2189336.962	6116938.700	409.49



CAL VADA
SURVEYING, INC.
108 Business Center Dr., Corona, Ca 92880-1782
PHONE (909) 280-9960 FAX (909) 280-9746

JOB NO 97102PH 5

PREPARED FOR
IT CORPORATION
3347 MICHELSON DR., SUITE 200
IRVINE, CA 92612-1692
(949) 660-7594

LICENSED LAND SURVEYOR
L.S. 4249
EXP. 6/30/01

Appendix B
Letter from RWQCB and DTSC and Response to Comments

RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL DATED 8 February 2001.

Subject: *Summary Report, Aerial Photograph Anomaly Area 5 (APHO 31, APHO 43, APHO 66, APHO 67 and APHO 68), Former Marine Corps Air Station, El Toro* dated 1 November 2000

Comment	**Response**
Comments prepared by Triss Chesney, Department of Toxic Substances Control, Southern California Branch dated 8 February 2001. Addressee: Mr. Dean Gould, BRAC Environmental Coordinator, MCAS El Toro	
Comment 1. On June 7, 1999, the Department of the Navy (DON) forwarded a letter regarding "Sampling Strategy for Aerial Photograph Anomaly Areas 4 and 5." Following review of the letter, DTSC forwarded comments in a letter dated June 22, 1999. DTSC comment number 5 included, "Should the disturbed earth extend beyond 10 feet bgs [below ground surface], additional samples should be collected at the contact surface between the disturbed and native soil." The report does not indicate whether disturbed or native soil was encountered during sampling activities. Further, information is not provided to determine if samples were collected at the contact surface between the disturbed and native soil as requested. Please address DTSC comment number 5 from the June 22, 1999 letter.	Response 1. Information regarding the presence (or lack thereof) of disturbed soils is provided in the addendum to the summary report.
Comment 2. Section 4.1, Utility Clearance and Geophysical Survey: This section states that a geophysical survey was conducted at Anomaly Area 5 in December 1999. However, the results of the survey are not included in the report. Please forward the results of the geophysical survey to DTSC for review. Additionally, information contained in the geophysical survey may provide useful information regarding disturbed and native soil.	Response 2. A copy of the Anomaly Area 5 geophysical investigation will be provided in the addendum to the summary report.

Department of Toxic Substances Control

Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

February 8, 2001

Mr. Dean Gould
BRAC Environmental Coordinator
Marine Corps Air Station El Toro
Base Realignment and Closure
P.O. Box 51718
Irvine, California 92619-1718

SUMMARY REPORT, AERIAL PHOTOGRAPH ANOMALY AREA 5 (APHO 31, APHO 43, APHO 66, APHO 67 AND APHO 68), MARINE CORPS AIR STATION (MCAS) EL TORO

Dear Mr. Gould:

The Department of Toxic Substances Control (DTSC) reviewed the above document dated November 1, 2000. The document includes an evaluation of historical records, results of visual inspections of the anomaly sites, and the results of field sampling activities. Anomaly Area 5 consists of five aerial photograph anomalies identified as APHO 31, APHO 43, APHO 66, APHO 67 and APHO 68.

APHO 31 (also referenced as Science Applications International Corporation (SAIC) 215) was identified on a 1971 aerial photograph as disturbed ground about 250 by 350 feet in area, dark-toned mounded material, and a probable trench located approximately 1,600 feet west of West Marine and Magazine Roads. APHO 43 (also referenced as SAIC 287) was identified on a 1974 aerial photograph as an excavation about 1,600 feet west of the intersection of Perimeter and Magazine Roads. APHO 66 (also referenced as SAIC 161) was identified on a 1967 photograph as disturbed ground and probable backfilled trenches noted in the western corner of Perimeter and Magazine Roads, and approximately 1,400 feet west of the intersection. APHO 67 (also referenced as SAIC 314) was identified on a 1975 aerial photograph as disturbed ground approximately 1,000 feet northeast of Building 673, near North/East Marine and North 3rd Street. APHO 68 (also referenced as SAIC 542) was identified on a 1988 aerial photograph as a light-colored pad constructed west of Perimeter and Magazine Roads.

After review of the report, DTSC has the following comments.

1. On June 7, 1999, the Department of the Navy (DON) forwarded a letter regarding "Sampling Strategy for Aerial Photograph Anomaly Areas 4 and 5." Following review of the letter, DTSC forwarded comments in a letter dated June 22, 1999. DTSC comment number 5 included, "Should the disturbed earth extend beyond 10 feet bgs [below ground surface], additional samples should be collected at the contact surface between the disturbed and native soil."

   The report does not indicate whether disturbed or native soil was encountered during sampling activities. Further, information is not provided to determine if samples were collected at the contact surface between the disturbed and native soil as requested. Please address DTSC comment number 5 from the June 22, 1999 letter.

2. Section 4.1, Utility Clearance and Geophysical Survey: This section states that a geophysical survey was conducted at Anomaly Area 5 in December 1999. However, the results of the survey are not included in the report.

   Please forward the results of the geophysical survey to DTSC for review. Additionally, information contained in the geophysical survey may provide useful information regarding disturbed and native soil.

The report recommends designating a status of no further action for Anomaly Area 5 based on the results of field verification sampling, record search activities, and visual inspection. Based on review of the report, DTSC does not concur with the recommendation. Please provide the information and clarification as requested.

If you have any questions, please contact me at (714) 484-5395.

Sincerely,

Triss M. Chesney, P.E.
Remedial Project Manager
Southern California Branch
Office of Military Facilities

cc: See next page

cc: Ms. Nicole Moutoux
Remedial Project Manager
U. S. Environmental Protection Agency Region IX
Superfund Division (SFD-8-1)
75 Hawthorne Street
San Francisco, California 94105-3901

Mr. John Broderick
Remedial Project Manager
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, California 92501-3339

Mr. Gregory F. Hurley
Restoration Advisory Board Co-chair
620 Newport Center Drive, Suite 450
Newport Beach, California 92660-8019

Ms. Polin Modanlou
MCAS El Toro Local Redevelopment Authority
10 Civic Center Plaza, 2nd Floor
Santa Ana, California 92703

Mr. Steven Sharp
Orange County Health Care Agency
2009 East Edinger Avenue
Santa Ana, California 92705

Ms. Lynn Hornecker
Remedial Project Manager
Naval Facilities Engineering Command
Southwest Division - Code 06CC.LH
1220 Pacific Highway
San Diego, California 92132-5187

RESPONSES TO COMMENTS FROM THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
DATED 10 January 2001.
Subject: *Summary Report, Aerial Photograph Anomaly Area 5 (APHO 31, APHO 43, APHO 66, APHO 67 and APHO 68), Former Marine Corps Air Station, El Toro* dated 1 November 2000

Comment	Response
Comments prepared by Mr. John Broderick, California Regional Water Quality Control Board, Santa Ana Region dated 17 January 2001. Addressee: Mr. Dean Gould, BRAC Environmental Coordinator, MCAS El Toro	
Comment 1. Section 4.1, Utility Clearance and Geophysical Survey, page 4.1: A geophysical survey was performed at Anomaly Area 5. Results of the geophysical survey should be included in the appendix of this report.	Response 1. A copy of the Anomaly Area 5 geophysical investigation will be provided in the Addendum to the Summary Report.
Comment 2. Section 4.2, Verification Drilling Activities, page 4-1: The boring locations were selected based on a field visit in 1999. APHO 43, APHO 67, and APHO 68 were identified between 1974 and 1988. These anomalies now lie underneath the concrete pad in Anomaly Area 5. No boring locations were selected near these three anomalies.	Response 2. Three additional soil borings were advanced near the APHO 43, APHO 67 and APHO 68 locations. Analytical results and boring locations are provided in the Addendum to the Summary Report.

California Regional Water Quality Control Board
Santa Ana Region

Internet Address: http://www.swrcb.ca.gov/rwqcb8
3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (909) 782-4130 - FAX (909) 781-6288

Gray Davis
Governor

January 17, 2001

Mr. Dean Gould
BRAC Environmental Coordinator
MCAS El Toro
P O Box 51718
Irvine, CA 92619 -1718

COMMENTS ON SUMMARY REPORT, AERIAL PHOTOGRAPH ANOMALY AREA 5, APHO 31, APHO 43, APHO 66, APHO 67, AND APHO 68, FORMER MARINE CORPS AIR STATION, EL TORO

Dear Mr. Gould:

We have completed our review of the above-referenced document, dated November 1, 2000, which we received on November 27, 2000. We do not concur with the recommendation for no further action based on the following comments:

1. **Section 4.1 Utility Clearance and Geophysical Survey**, page 4-1: A geophysical survey was performed at Anomaly Area 5. Results of the geophysical survey should be included in the appendix of this report.
2. **Section 4.2 Verification Drilling Activities**, page 4-1: The boring locations were selected based on a field visit in 1999. APHO 43, APHO 67, and APHO 68 were identified between 1974 and 1988. These anomalies now lie underneath the concrete pad in Anomaly Area 5. No boring locations were selected near these three anomalies.

For any questions on this review or related matters, please call me at (909) 782-4494.

Sincerely,

John Broderick
SLIC/DoD/AGT Section

cc: Ms. Triss Chesney, Department of Toxic Substances Control, OMF
Mr. Gregory F. Hurley, El Toro RAB Co-Chair
Ms. Lynn Hornecker, Naval Facility Engineering Command, SWDIV
Ms. Nicole Moutoux, U.S. EPA, Region IX

Appendix C
Geophysical Survey

GEOVision
geophysical services
a division of Blackhawk GeoServices

GEOPHYSICAL INVESTIGATION

Aerial Photographic Anomaly Area 5
Marine Corps Air Station, El Toro, California

GEOVision Project No. 9254

Prepared for

The IT Group
3347 Michelson Drive, Suite 200
Irvine, California 92612-1692

Prepared by

GEO*Vision* Geophysical Services
1151 Pomona Rd, Unit P
Corona, CA 92882
(909) 549-1234

March 9, 2001

TABLE OF CONTENTS

LIST OF FIGURES

1 INTRODUCTION

A geophysical investigation was conducted from February 23 to March 3, 2001 in an approximate 20-acre area encompassing Aerial Photographic Anomaly Area 5, Marine Corps Air Station (MCAS), El Toro, California. The purpose of the investigation was to screen the site for buried metallic and/or construction debris.

The geophysical survey area consisted of a runway parking apron and surrounding grass field in the northeast portion of the base. The location of the survey area is shown on Figure 1.

There was no surficial evidence of disposal activities at the site. Surface cultural features within the survey area that could adversely affect the geophysical data included concrete walls with steel plates, manholes, fire hydrants, monitoring wells, runway lights, tie downs and miscellaneous other surface infrastructure.

Geophysical techniques used during this investigation included the magnetic and electromagnetic (EM) induction methods. These techniques complement one another as each responds to different physical properties of subsurface materials and has different strengths and limitations. The magnetic method was applied to this investigation because it has the greatest depth of investigation of the geophysical techniques typically applied to mapping buried metallic debris. However, this greater depth of investigation comes at the expense of lateral resolution. The EM induction technique was applied to this investigation because it can map both shallow buried metallic debris and variations in soil conductivity. Changes in soil conductivity may be used to infer the presence of fill soils, providing the fill has a different composition than native soils.

Geophysical techniques used during the investigation are discussed in Section 2. Field procedures are described in Section 3. Data processing and interpretation are discussed in Section 4. Conclusions are presented in Section 5, and our professional certification is presented in Section 6.

2 GEOPHYSICAL TECHNIQUES

This section presents background information on the magnetic and EM methods used during this investigation. A description of the geophysical methods used during this investigation, common applications of the methods, photographs of the instruments, and example applications are included in Appendix A.

2.1 Magnetic Method

The magnetometers used during this investigation consisted of a Geometrics G858 optically pumped cesium-vapor magnetometer (G858) and a GEM GSM-19 base station magnetometer. These instruments measure the intensity of the earth's magnetic field in nanoteslas (nT).

The earth's magnetic field is believed to originate in convection currents in the earth's liquid outer core. The magnetic field varies in intensity from about 25,000 nT at the equator, where it is parallel to the earth's surface to about 70,000 nT at the poles where it perpendicular to the earth's surface. The intensity of the earth's magnetic field in North America varies from about 45,000 to 60,000 nT, and has an associated inclination that varies from about 60 to 75 degrees. The earth's magnetic field undergoes low-frequency diurnal variations (drift) caused by the earth's rotation. The magnetic field can also undergo short-period, high-amplitude variations during periods of sunspot activity called magnetic storms. Often magnetic field intensity can be so variable during a magnetic storm that meaningful magnetic data cannot be acquired. When it is necessary to correct for magnetic drift a base station magnetometer is set up in a quiet portion of the site and programmed to record total magnetic field intensity at fixed increments (i.e. 5-second intervals) throughout the day. This base station data is then used to remove the effects of drift from the field data. In small survey areas where the data is acquired over a small amount of time and the anomalies have large amplitudes correction for diurnal variation is not necessary.

Buried ferromagnetic objects give rise to local perturbations (anomalies) in the earth's magnetic field. In North America, these anomalies are often dipolar with a positive response south and a negative response north of the object. The dimensions and amplitude of a magnetic anomaly are a function of the size, mass, depth and magnetic properties of the source. Magnetometers can typically locate a metallic object the size of a 55-gallon drum to a depth of about 10 feet providing background noise levels are not too high and the object is not significantly corroded. Larger metallic objects can be located to greater depths. The magnetic anomaly due to an object the size of a 55-gallon drum is expected to have dimensions of greater than 10- by 10-feet. Magnetometers are not able to detect nonferrous metals such as aluminum or brass.

Typical applications of the magnetic method include:

- Locating pits and trenches containing ferrous metallic debris
- Locating buried drums, tanks and pipes
- Delineating boundaries of landfills containing ferrous debris
- Locating abandoned well casing
- Detecting unexploded ordnance
- Mapping basement faults and geology

- Mapping archeological sites.

Some advantages of magnetic surveys are:

- Rapid – modern instruments can acquire up to 10 readings per second as the operator walks down survey lines
- Depth of investigation – magnetometers can often locate buried ferrous metallic objects to greater depths than other methods
- Anomalies are much larger than the source allowing for larger line spacing in some situations

Some limitations of the magnetic surveys are:

- Unable to detect nonferrous metals such as aluminum or brass
- Magnetic anomalies are unsymmetrical and much larger than the source and it can, therefore, be difficult to determine the precise locations and size of the source
- Ineffective in areas having extensive metallic debris at the surface as no distinction can be made between anomalies caused by surface and buried debris
- Metallic structures such as buildings, fences, reinforced concrete, and light posts interfere with the measurements
- High voltage powerlines can often strongly interfere with the measurements
- Data can be very noisy in areas containing volcanic rock, specifically basalt

2.2 Electromagnetic Induction Method

EM induction equipment used during this investigation consisted of a Geonics EM-31 terrain conductivity meter (EM-31) coupled to a digital data logger. The EM-31 consists of a transmitter and receiver coil, one at each end of 12-foot long boom. An alternating current is applied to the transmitter coil, causing the coil to radiate a primary EM field. This primary EM field generates eddy currents in subsurface materials, which give rise to a secondary EM field. The EM-31 measures the components of the secondary EM field both in-phase and 90-degrees out-of-phase with the primary EM field. The out-of-phase component is converted to apparent conductivity in millisiemens per meter (mS/m) and the in-phase component is measured as parts per thousand of the primary EM field. A negative EM-31 response with positive shoulders is generally observed over shallow, buried metallic objects. The EM-31 can locate both ferrous and nonferrous metallic objects and can locate a metallic object the size of a 55-gallon drum to a maximum depth of about 5 feet. The EM-31 must pass directly over or immediately adjacent to a buried metallic object to detect it. Because of the 12-foot separation between the transmitter and receiver coils, the EM-31 cannot detect very small, buried metallic objects. The EM-31 can also map changes in the electrical conductivity of subsurface soils caused by certain types of conductive contaminants (i.e. brines, drilling mud, chloride, metals, etc.) or simply a change in soil type (i.e. low conductivity sand to high conductivity clay).

Applications of EM Induction methods include:

- Locating buried tanks

- Locating pipes and utilities
- Locating pits and trenches containing metallic and/or nonmetallic debris
- Delineating landfill boundaries
- Delineating oil production sumps and mud pits
- Mapping conductive soil and groundwater contamination
- Mapping soil salinity in agricultural areas
- Characterizing shallow subsurface geology
- Mapping buried channel deposits
- Locating sand and gravel deposits
- Mapping conductive fault and fracture zones
- Mapping lateral variation in subsurface soil type

Strengths of EM Induction Methods include:

- Rapid – data can be acquired at a slow walking pace
- Locate both metallic and some nonmetallic targets
- Better resolution than magnetometer
- Not as sensitive to very small surface debris as other methods
- Can locate electrical and telephone cables which often cannot be located by other methods
- Anomalies of buried objects have simple shape facilitating identification and positioning of the source

Limitations of EM Induction Methods include:

- Metallic structures such as buildings, fences, reinforced concrete, and light posts interfere with the measurements
- High voltage powerlines can often strongly interfere with the measurements
- Depth of investigation not as great as that of a magnetometer for detection of buried ferrous metallic objects
- Highly variable soil conductivity can complicate quadrature component interpretation

3 FIELD PROCEDURES

This section describes the field procedures used during the investigation, including site preparation, magnetic and EM-31 survey procedures, and field verification procedures.

3.1 Site Preparation

Before conducting the geophysical investigation, 4-foot long survey lathe was placed at 20-foot intervals along the south (S) and north (N) edges of the approximate 1150- by 760- foot survey area to provide spatial control for the geophysical survey. The staking of survey control was conducted on February 26 and 27, 2001.

A Sokkia GIR1000 single-frequency global positioning system (GPS) was coupled to the geophysical instruments to provide horizontal control for the geophysical data. Differential corrections were applied to the GPS data using GPS base station data recorded at the Sokkia office in Orange, California. GPS data were collected in geodetic coordinates based on the WGS84 system and transformed to approximate California State Plane Coordinates, Zone 6, North American Datum of 1983 (NAD83) after applying differential corrections. Ellipsoid heights measured using the GPS system were converted to NAVD 88 elevations using the Geoid Model of 1996. Maximum horizontal errors in the corrected GPS data are estimated to be about 3 feet, with average errors being about 1 to 2 feet.

The GPS system was also used to map pertinent surficial features at the site, including roads, monitoring wells, surface infrastructure. Site mapping activities were conducted on February 28 and March 2, 2001.

A site map showing the location of the geophysical survey area, State Plane Coordinate System, and surficial features is presented as Figure 2.

3.2 Magnetic Survey

Magnetic data were acquired on March 1 and 2, 2001. Prior to data acquisition, the base station magnetometer was set up north of the survey area in a location free of surface debris. The internal clock of the base station and G858 were synchronized to GPS time and the base station was programmed to record the magnetic field intensity of the earth at 5-second intervals throughout the day. The G858 and GPS unit were then programmed with the appropriate settings. The magnetometer was operated with the sensor about 3 feet above ground surface. Measurements of the earth's total magnetic field intensity were made at 0.2-second intervals as the operator walked along S-N survey lines nominally spaced 10 feet apart. The 0.2-second sampling interval resulted in an average station spacing of about 1 foot. The stakes placed at the ends of the survey area allowed the instrument operator to walk in a relatively straight line, thereby ensuring uniform site coverage. It was not possible to walk straight lines in all areas due to concrete walls that limited line of site. The magnetic data were stored in the internal memory of the magnetometer, along with line number, and time of measurement. If an error was made on a survey line the line was deleted from the magnetometer's internal memory and reacquired.

GPS, base station and magnetic field data were downloaded to a laptop computer at the end of each field day.

3.3 Geonics EM-31 Survey

EM-31 data were acquired concurrently with magnetic data on February 28 and March 1 to 2, 2001. Prior to data acquisition, the EM-31 was assembled and battery levels were checked and found to be within acceptable levels. The in-phase component was then set to zero in a portion of the site with no buried metallic objects. The EM-31 digital data logger was synchronized to GPS time and programmed with the appropriate file name, line number, measurement increment, and direction. Changes in these parameters were made as necessary throughout the survey. The EM-31 was operated in vertical dipole mode with an approximate 3-foot instrument height and the instrument boom parallel to the survey lines. EM-31 measurements of conductivity and in-phase component were made at 0.5-second intervals as the operator walked along SW-NE survey lines nominally spaced 10 feet apart. The 0.5-second sampling interval resulted in an average station spacing of about 2 feet. The EM-31 data were stored in a digital data logger along with line and station number. If an error was made acquiring a line, a note was made in the field log and the line repeated. EM-31 and GPS data were downloaded to a laptop computer at the end of each field day.

4 DATA PROCESSING AND INTERPRETATION

This section presents the data processing procedures and interpretation of the geophysical data.

4.1 Data Processing

Color-enhanced contour maps of magnetic and EM-31 data were generated using the GEOSOFT® geophysical mapping system. Prior to contour map generation, a number of preprocessing steps were completed. These preprocessing steps consisted of the following:

- Backup of all original field data files to floppy disk.
- Downloading GPS base station data from Sokkia bulletin board.
- Applying differential corrections to GPS data and outputting an ASCII file containing approximate State Plane Coordinates, elevation, and time.
- Correcting of all data acquisition errors (typically only deleting the first portion of a reacquired line, renaming lines incorrectly labeled, deleting additional readings outside the grid, etc.)
- Reformatting field data files to free format XYZ files containing at a minimum GPS time and field measurements.
- Merging GPS position data and geophysical data using in-house software.
- Removing diurnal variation from total magnetic field measurements using the base station data file and in-house software, if necessary.
- Merging of multiple data files into a single file and sorting, if necessary.

These data adjustments were made using a combination of commercial and in-house software. All adjustments made to data files and resulting file names were documented and are retained in project files.

The outputs of the data preprocessing were data files containing California State Plane, Zone 6, NAD83 Easting and Northing, and the various data measurements. The magnetic data file contained total magnetic field intensity. The EM-31 data file contained conductivity and in-phase response.

These data files were imported into the GEOSOFT® mapping system and the following data processing steps applied:

- Reformatting of data files to GEOSOFT® format.
- Generating final map scale.
- Gridding data using minimum curvature and a 5-foot cell size.
- Masking grid in areas where data not acquired (i.e. around obstructions).
- Applying a single pass Hanning filter to smooth the data.
- Generating color zone file describing color for different data ranges.
- Contouring the data.
- Generating map surrounds (title block, legend, scale, color bar, north arrow, etc.)
- Annotating anomalies.
- Merging various plot files and plotting final map.

The names of the files generated and the processing parameters used were recorded on data processing forms. All completed data processing forms are retained in project files. All files generated during the processing sequence were archived on CD-ROM.

4.2 Interpretation

Color-enhanced contour maps of total magnetic field intensity, EM-31 conductivity and EM-31 in-phase response are presented as Figures 3 to 5, respectively. The coordinates shown in these figures reference the California State Plane Coordinate System, Zone 6, NAD83. The color bar indicates the amplitude of the measured quantity with the magenta and cyan colors indicating high- and low-amplitudes, respectively. The light orange, yellow and light green colors in the contour maps of total magnetic field intensity and EM-31 in-phase response indicate average "background" values of the measured quantity.

Significant anomalies in the magnetic and EM-31 data were field checked to determine if a metallic object at the surface caused the anomaly. A number of surface metallic features, such as concrete walls, surface structures, manholes, utility vaults, tie downs, runway lights, monitoring wells, and other surface metallic objects caused anomalies in the geophysical data. These anomalies are labeled as "SM" on the contour maps.

There are several anomalies on the contour maps of magnetic and EM-31 data (Figures 3 to 5) interpreted as being caused by buried pipes. These anomalies are labeled as "P" on the contour maps and the locations of the pipes are shown on Figure 2. The locations of theses pipes were interpreted directly from geophysical data and, therefore, locations should be considered approximate. No effort was made to locate or interpret all pipes in the survey area as this was outside the scope of work.

There are several small magnetic and/or EM-31 anomalies interpreted as being caused by small, buried metallic objects. These anomalies are labeled as "B" on the respective contour maps and are depicted on Figure 2. The anomalies are probably caused by small pieces of metallic debris at shallow depth.

There are two large magnetic and EM-31 anomalies in the northwestern portion of the survey area warranting further discussion. These anomalies are labeled as A-1 and A-2 on the contour map of magnetic and EM-31 data (Figures 3 to 5) and are discussed below.

The source of anomaly A-1 is centered at 6116885E, 2189790N and gives rise to a large dipolar magnetic anomaly (positive response south and negative response north of source) and positive EM-31 anomaly with negative shoulders. This anomaly may be caused by either subsurface infrastructure (e.g. a large concrete vault) or a large buried metallic object or debris. EM-31 data indicates that the source of this anomaly may be as large as 30 feet long and 20 feet wide.

Anomaly A-2 is located east of anomaly A-1 at 6116950E, 2189800N. The source of this anomaly gives rise to a large reversed dipolar magnetic anomaly and weak positive EM-31 in-

phase anomaly with negative shoulders. This anomaly may have a similar source as anomaly A-1, however the source of the reversed magnetic dipole is unknown.

Anomaly A-3 is a high amplitude magnetic and EM-31 anomaly located in the southeastern corner of the survey area. This anomaly is caused by the Site 5 Landfill and is not depicted on Figure 2 because the survey area appears to end at the edge of the landfill.

The EM-31 conductivity data (Figure 4) provided no conclusive evidence for the placement of large amounts of fill soil. Near-surface soil conductivities are quite variable at the site, ranging from about 20 to 50 mS/m. The near-surface soils in the lower conductivity zones probably consist of coarser grained soils with only minor amounts of clay (i.e. clean sand), whereas the higher conductivity zones probably have silty sands, clayey sands or silt in the near surface. A narrow east to west trending low-conductivity zone in the northeastern portion of the survey area may be associated with a former channel.

5 SUMMARY

A magnetic and Geonics EM-31 (EM-31) survey was conducted in an approximate 20-acre area encompassing Aerial Photographic Anomaly Area 5 at MCAS EL Toro, California to screen the site for buried metallic and/or construction debris and fill soils. Interpretation of the geophysical data is presented in Figure 2. Contour maps of total magnetic field intensity and EM-31 conductivity and in-phase response are presented as Figures 3 to 5, respectively.

The geophysical survey revealed the presence of two large buried metallic objects/debris in the northwest portion of the survey area as shown on Figure 2. These large geophysical anomalies, discussed as anomalies A-1 and A-2 in the previous section, may either be caused by unknown subsurface infrastructure or buried metallic objects/debris. The source of the anomalies can only be accurately determined by excavation.

The geophysical data also revealed the presence of several pipes within the survey area and several small, buried metallic objects/debris as shown on Figure 2. No attempt was made to locate all pipes within the survey area as this was outside the scope of work.

Near-surface soil conductivity is quite variable at the site ranging from about 20 to 50 mS/m. Much of the conductivity variation is probably related to natural soil variation although the placement of fill soils cannot be discounted.

The geophysical survey was designed to map small accumulations of metallic debris in the subsurface and strong variations in near-surface soil type that could be indicative of fill soils. It was assumed that any debris buried at the site would contain enough metallic components (i.e. rebar, pipe segments, steel plates, etc.) to be detectable by the magnetic and EM methods.

6 CERTIFICATION

All geophysical data, analysis, interpretations, conclusions, and recommendations in this document have been prepared under the supervision of and reviewed by a **GEO*Vision*** California Registered Geophysicist.

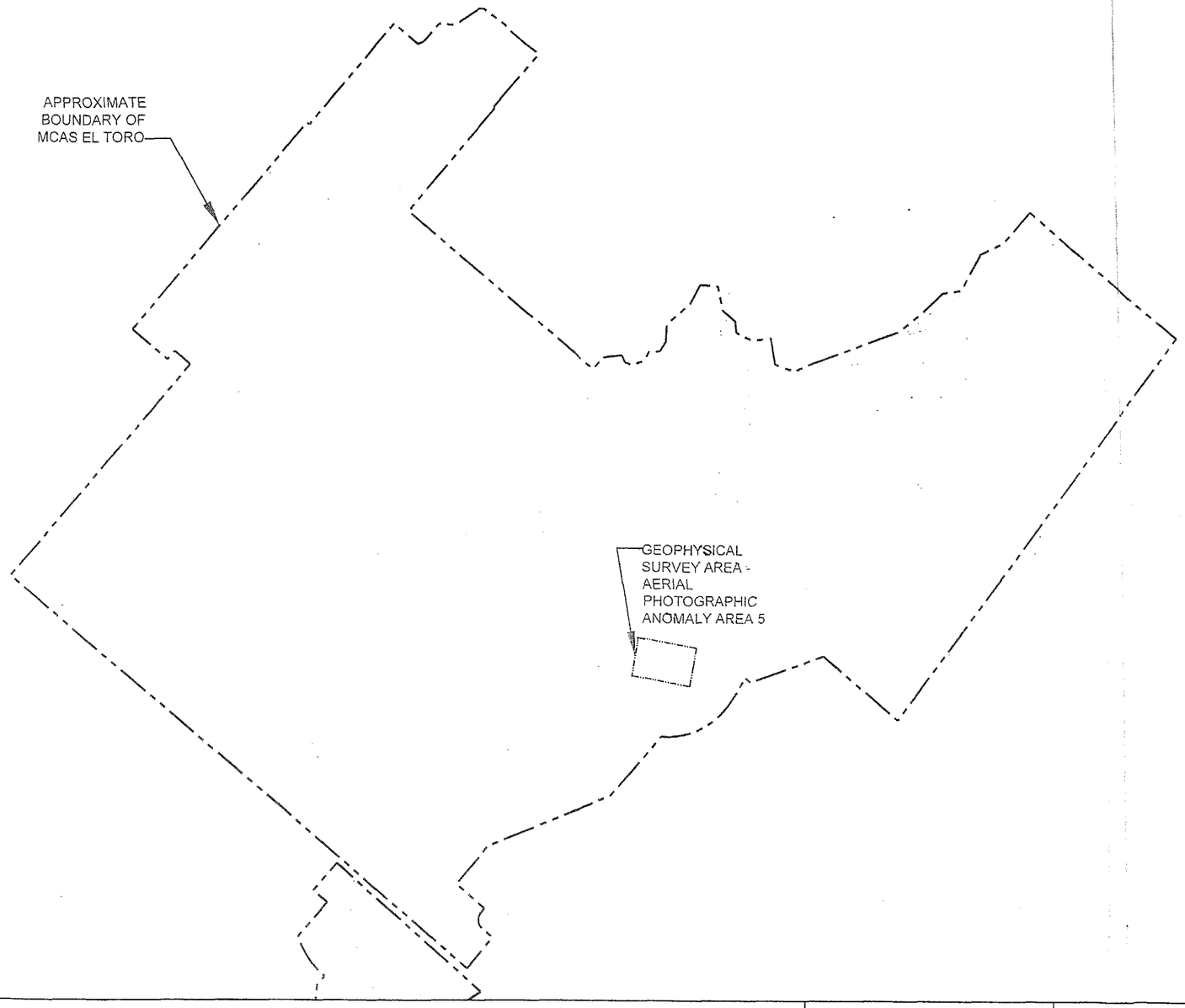
Antony J. Martin
California Registered Geophysicist GP989
GEO*Vision* Geophysical Services

3/7/01
Date

* This geophysical investigation was conducted under the supervision of a California Registered Geophysicist using industry standard methods and equipment. A high degree of professionalism was maintained during all aspects of the project from the field investigation and data acquisition, through data processing interpretation and reporting. All original field data files, field notes and observations, and other pertinent information are maintained in the project files and are available for the client to review for a period of at least one year.

  A registered geophysicist's certification of interpreted geophysical conditions comprises a declaration of his/her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations or ordinances.

FIGURES



NOTES:
1. BASE MAP PROVIDED BY THE IT GROUP
2. COORDINATES ARE IN THE CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 6, NAD83
3. ESTIMATED MAP ACCURACY = 10-30 FEET

0 1250 2500 5000
(feet)

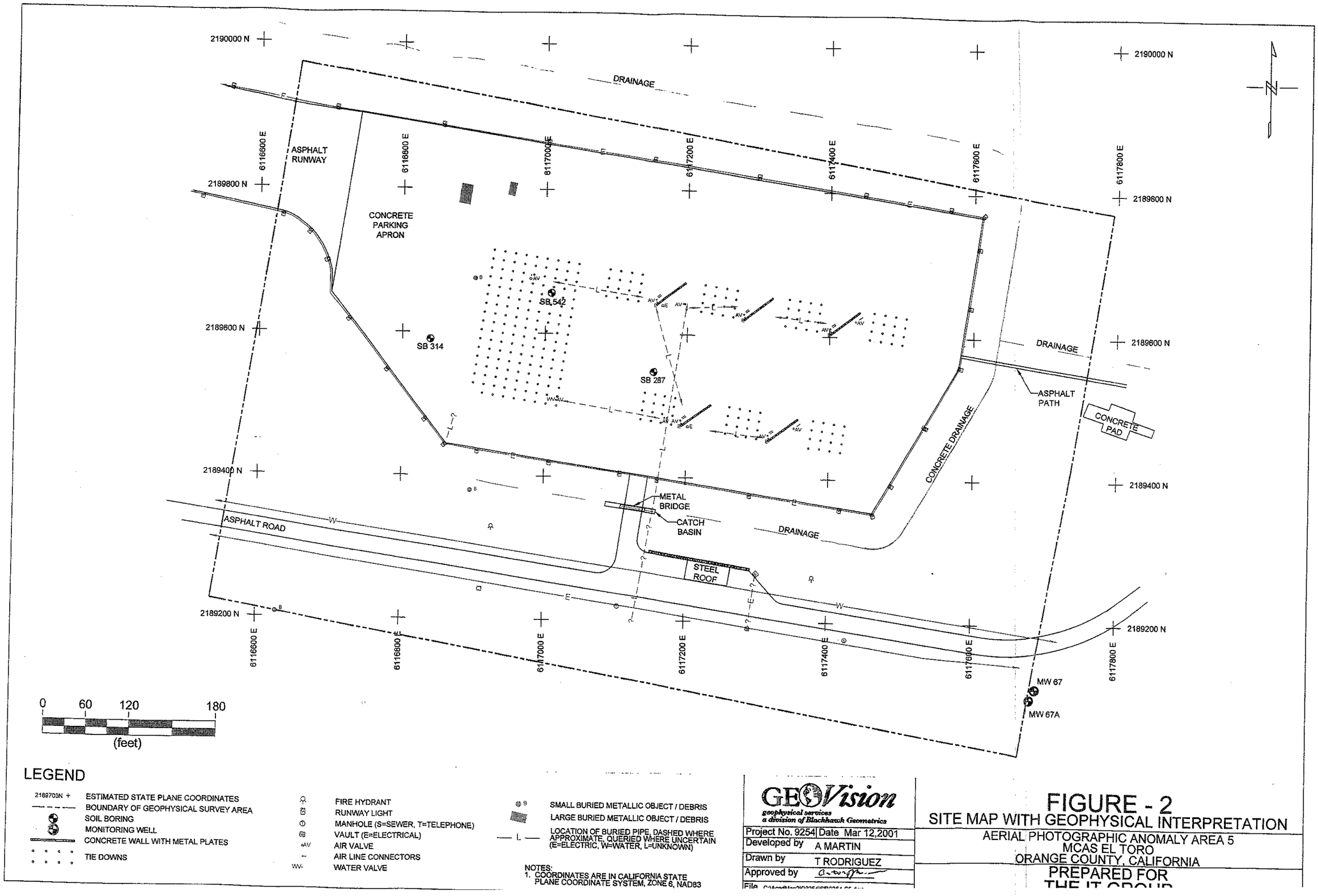
GEOVision
geophysical services
a division of Blackhawk Geometrics

Project No. 9254	Date Mar 09,2001
Developed by	A MARTIN
Drawn by	T RODRIGUEZ
Approved by	
File	C:\AcadMap2K\9254\S5\9254-S5-1.dwg

FIGURE - 1
SITE LOCATION MAP

MARINE CORPS AIR STATION EL TORO
ORANGE COUNTY, CALIFORNIA

PREPARED FOR
THE IT GROUP



LEGEND

- 2189700N + ESTIMATED STATE PLANE COORDINATES
- BOUNDARY OF GEOPHYSICAL SURVEY AREA
- SOIL BORING
- MONITORING WELL
- CONCRETE WALL WITH METAL PLATES
- TIE DOWNS
- FIRE HYDRANT
- RUNWAY LIGHT
- MANHOLE (S=SEWER, T=TELEPHONE)
- VAULT (E=ELECTRICAL)
- AV AIR VALVE
- AIR LINE CONNECTORS
- WV WATER VALVE
- B SMALL BURIED METALLIC OBJECT / DEBRIS
- LARGE BURIED METALLIC OBJECT / DEBRIS
- L LOCATION OF BURIED PIPE, DASHED WHERE APPROXIMATE, QUERIED WHERE UNCERTAIN (E=ELECTRIC, W=WATER, L=UNKNOWN)

NOTES:
1. COORDINATES ARE IN CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 6, NAD83

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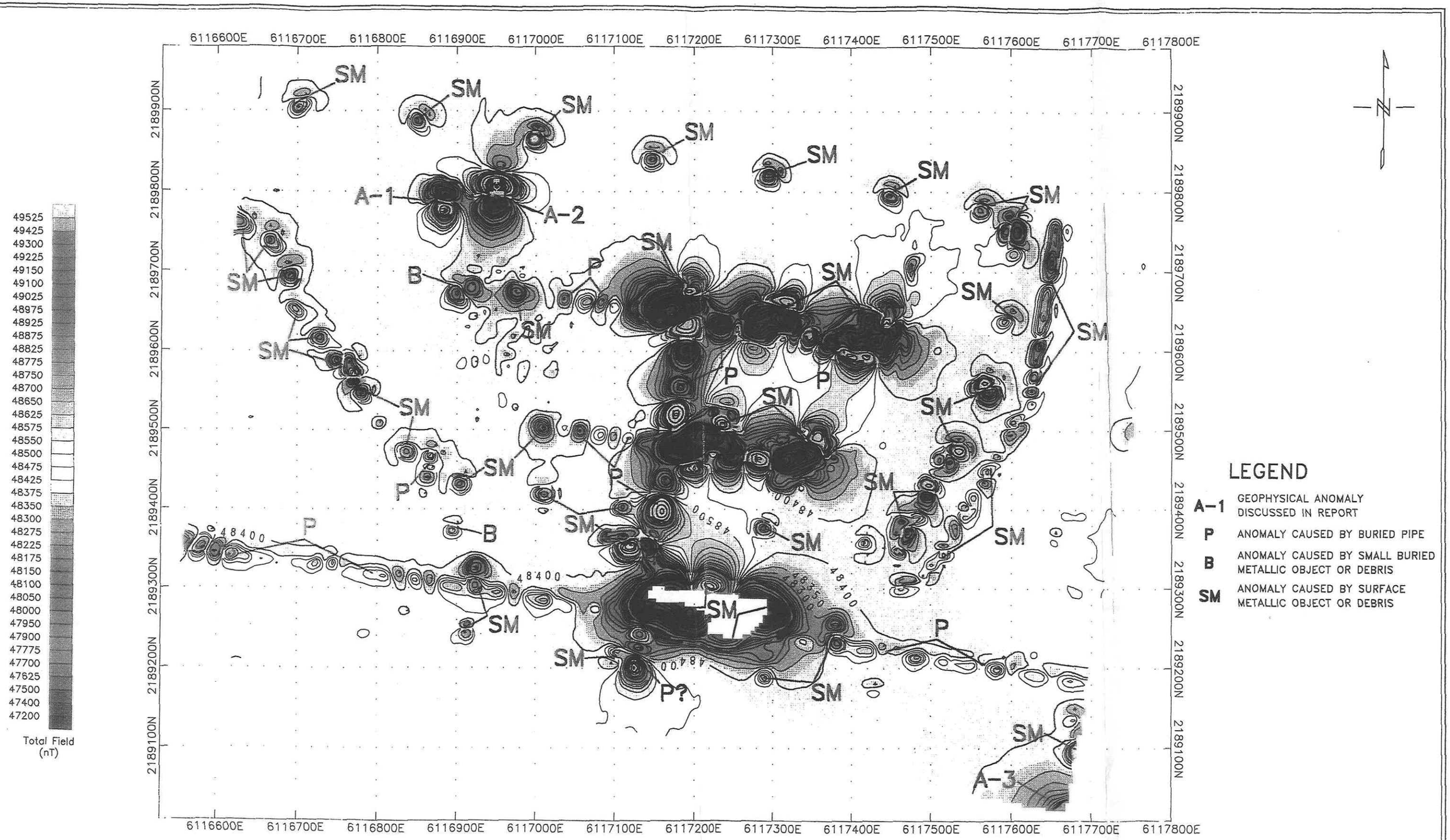
Project No. 9254	Date Mar 12,2001
Developed by	A MARTIN
Drawn by	T RODRIGUEZ
Approved by	
File	

FIGURE - 2
SITE MAP WITH GEOPHYSICAL INTERPRETATION

AERIAL PHOTOGRAPHIC ANOMALY AREA 5
MCAS EL TORO
ORANGE COUNTY, CALIFORNIA

PREPARED FOR
THE IT GROUP



Note: Coordinates are in the California State Plane Coordinate System, Zone 6, NAD83

FIGURE 3
CONTOUR MAP OF TOTAL MAGNETIC FIELD INTENSITY

AERIAL PHOTOGRAPHIC ANOMALY AREA 5
MCAS EL TORO, CALIFORNIA

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CONTOUR INTERVAL = 2 MILLISIEMENS PER METER

60 0 60 120 180
(feet)

Note: Coordinates are in the California State Plane Coordinate System, Zone 6, NAD83

FIGURE 4
CONTOUR MAP OF GEONICS EM31 CONDUCTIVITY RESPONSE

AERIAL PHOTOGRAPHIC ANOMALY AREA 5
MCAS EL TORO, CALIFORNIA

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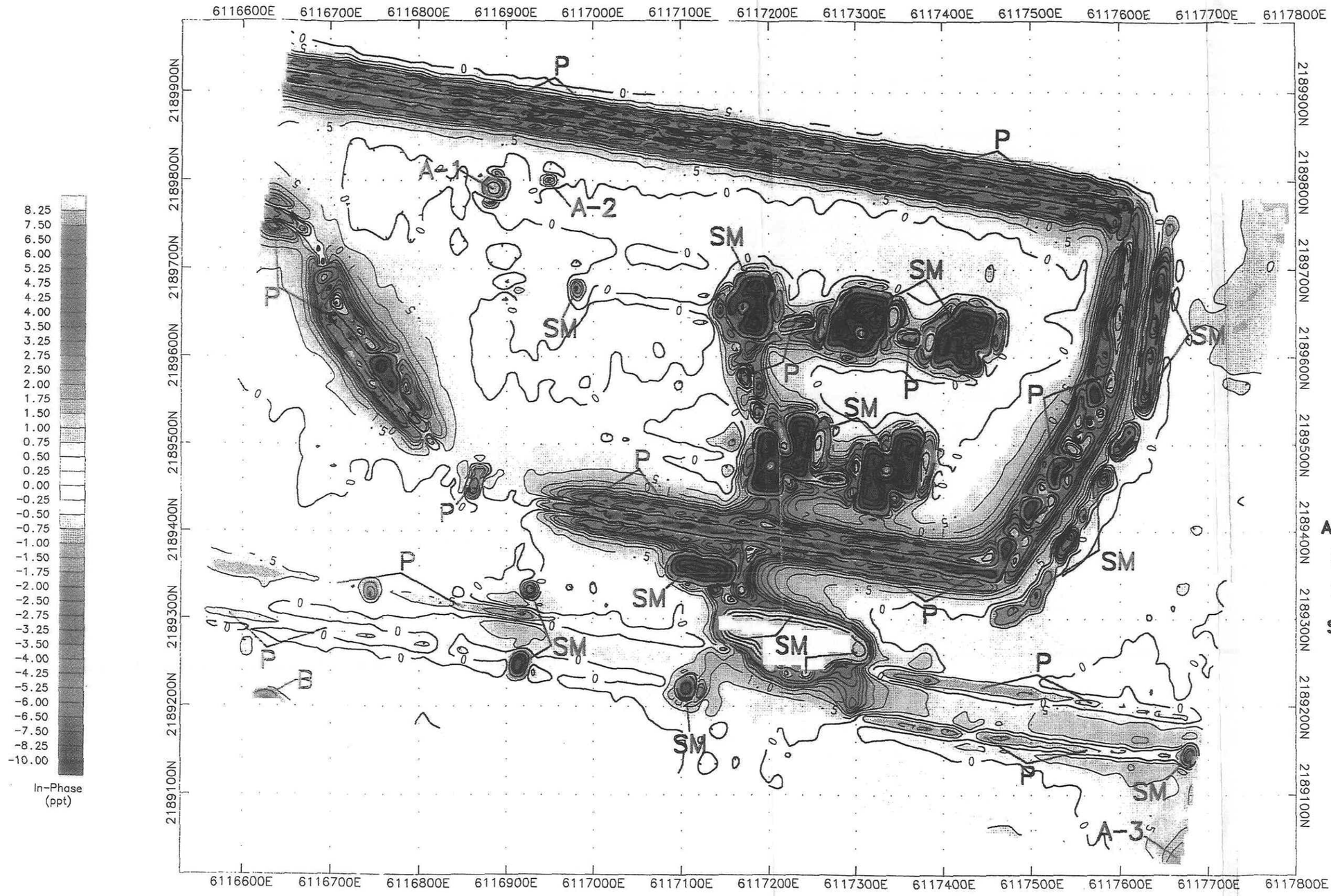

Note: Coordinates are in the California State Plane Coordinate System, Zone 6, NAD83

FIGURE 5
CONTOUR MAP OF GEONICS EM31 IN-PHASE RESPONSE

AERIAL PHOTOGRAPHIC ANOMALY AREA 5
MCAS EL TORO, CALIFORNIA

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GEOVISION GEOPHYSICAL SERVICES

APPENDIX A

GEOPHYSICAL TECHNIQUES FOR SHALLOW ENVIRONMENTAL INVESTIGATIONS

GEOPHYSICAL TECHNIQUES FOR SHALLOW ENVIRONMENTAL INVESTIGATIONS

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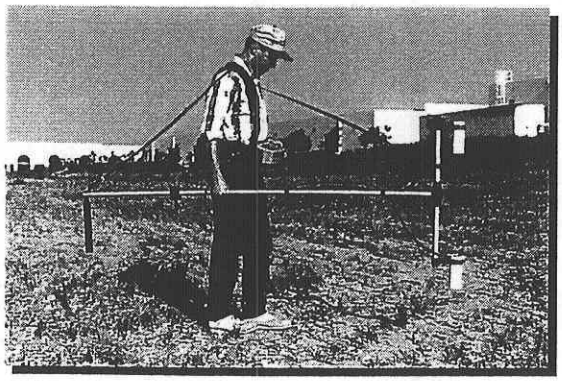
MAGNETIC METHOD

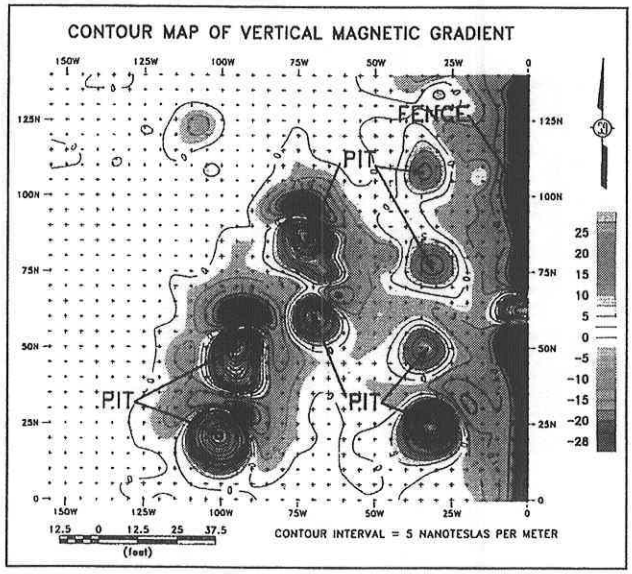
The magnetic method generally involves the measurement of the earth's magnetic field intensity or vertical gradient of the earth's magnetic field. Anomalies in the earth's magnetic field are caused by induced or remanent magnetism. Induced magnetic anomalies are the result of secondary magnetization induced in a ferrous body by the earth's magnetic field. The shape and amplitude of an induced magnetic anomaly is a function of the orientation, geometry, size, depth, and magnetic susceptibility of the body as well as the intensity and inclination of the earth's magnetic field in the survey area. The magnetic method is an effective way to search for small metallic objects, such as buried ordnance and drums, because magnetic anomalies have spatial dimensions much larger than those of the objects themselves. Typically, a single buried drum can be detected to a depth of about 10 feet.



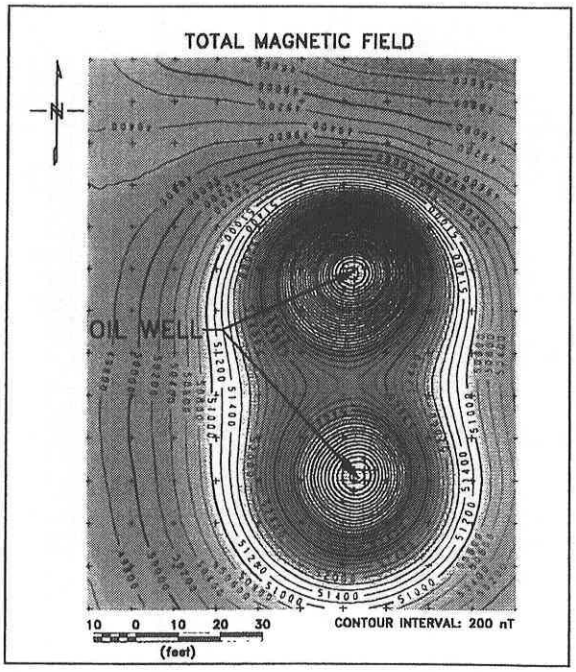
Geometrics G858 Cesium Magnetic Gradiometer

Larger metallic objects can often be located to greater depths. Induced magnetic anomalies over buried objects such as drums, pipes, tanks, and buried metallic debris generally exhibit an asymmetrical, south up/north down signature (positive response south of the object and negative response to the north).

Magnetic data is typically acquired along a grid with results being presented as color-enhanced contour maps generated by the Geosoft™ Mapping System or OASIS montaj. The approximate location and depth of magnetic objects can be calculated using the Geosoft™ UXO System.



Magnetic Survey to Locate Pits Containing Buried Metallic Containers



Magnetic Survey to Locate Abandoned Oil Wells

Magnetic surveys are typically conducted to:

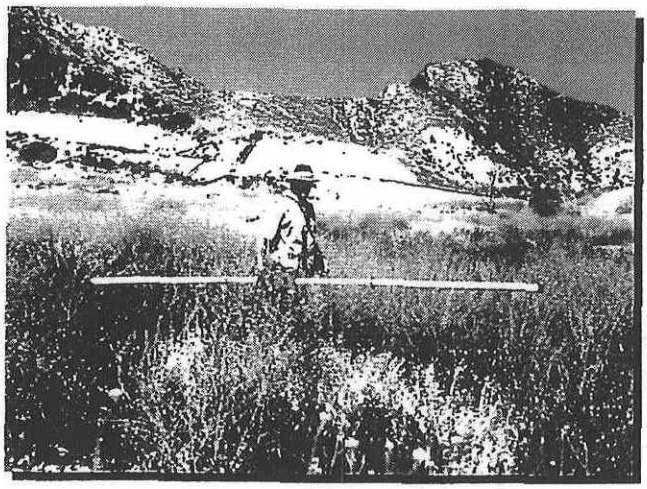
- Locate abandoned steel well casings
- Locate buried tanks and pipes
- Locate pits and trenches containing buried metallic debris
- Detect buried unexploded ordnance (UXO)
- Map old waste sites and landfill boundaries
- Clear drilling locations
- Map basement faults and geology
- Investigate archaeological sites

ELECTROMAGNETIC METHODS

Electromagnetic (EM) methods typically applied to shallow environmental investigations include frequency domain EM methods, such as EM induction and EM utility location methods, time domain electromagnetic (TDEM) metal detection methods, and ground penetrating radar (GPR) methods.

EM Induction Method

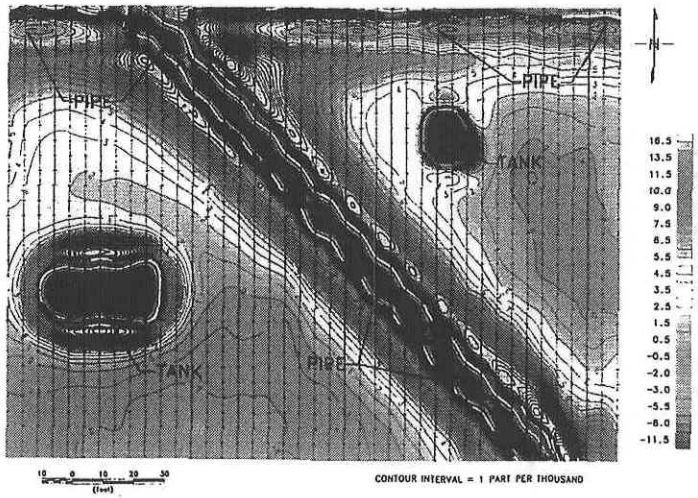
EM induction surveys are often conducted using the Geonics EM-31 terrain conductivity meter (EM-31). The EM-31 consists of a transmitter coil mounted at one end and a receiver coil mounted at the other end of a 3.7-meter long plastic boom. Electrical conductivity and in-phase component field strength are measured and stored along with line and station numbers in a digital data logger. In-phase component measurements generally only respond to buried metallic objects; whereas conductivity measurements also respond to conductivity variations caused by changes in soil type, moisture or salinity and the presence of nonmetallic bulk wastes. The EM-31 must pass over or immediately adjacent to a buried metallic object to detect it. Typical EM-31 anomalies over small, buried metallic objects consist of a negative response centered over the object and a lower amplitude positive response to the sides of the object. When the instrument boom is oriented parallel to long, linear conductors such as pipelines a strong positive response is observed. The EM-31 can explore to depths of about 6 meters, but is most sensitive to materials about 1 meter below ground surface. Single buried drums can typically be detected to depths of about 5 feet.



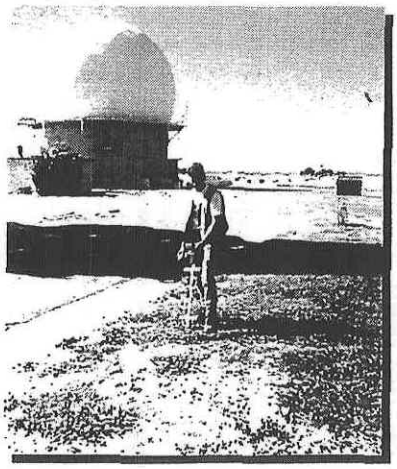
Geonics EM-31 Terrain Conductivity Meter

EM-31 surveys are typically conducted to:

- Locate buried tanks and pipes
- Locate pits and trenches containing metallic and/or nonmetallic debris
- Delineate landfill boundaries
- Delineate oil production sumps and mud pits
- Map conductive soil and groundwater contamination
- Map soil salinity in agricultural areas
- Characterize shallow subsurface hydrogeology
  - Map buried channel deposits
  - Locate sand and gravel deposits
  - Locate conductive fault and fracture zones



Geonics EM-31 Survey to Locate Underground Storage Tanks



EM Utility Location Methods

EM utility locators; such as the Metrotech *810*, Metrotech *9890* and Radiodetection RD400, are designed to accurately trace metallic pipes and utility cables and clear drilling/excavation locations. These utility locators consist of a separate transmitter and a receiver. The transmitter emits a radio frequency EM field that induces secondary fields in nearby metallic pipes and cables. The receiver detects these fields and is used to accurately locate and trace the pipes, often to distances over 200 feet from the transmitter. Many of the utility locators have a passive 60Hz mode to locate live electrical lines. Modern utility locators are also capable of providing rough depth estimates of the pipes.

Metrotech EM Utility Locator

TDEM Metal Detection Methods

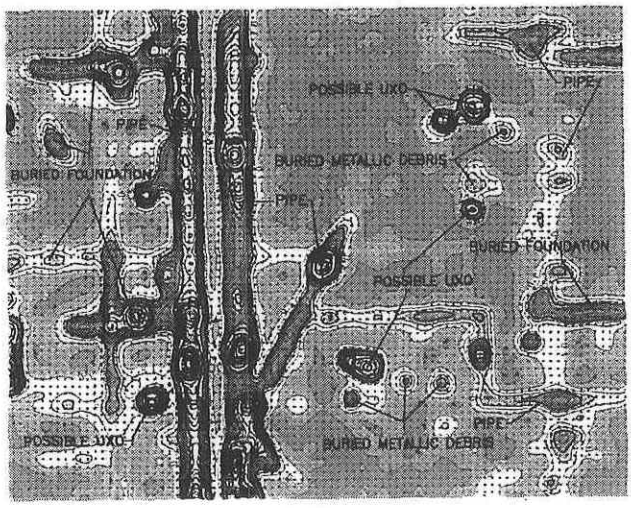
A Geonics EM-61 (EM-61) is a high sensitivity, time-domain, digital metal detector which is often used to detect both ferrous and non-ferrous metallic objects. It is designed specifically to locate buried metallic objects such as drums, tanks, pipes, UXO, and metallic debris and to be relatively insensitive to above ground structures such as fences, buildings, and vehicles.

The EM-61 consists of two square, 1-meter coils, one mounted over the other and arranged on a hand-towed cart. The bottom coil acts as both a transmitter and receiver while the top coil is a receiver only. While transmitting the bottom coil generates a pulsed primary magnetic field, which induces eddy currents into nearby metallic objects. When the transmitter is in its off cycle both coils measure the decay of these eddy currents in millivolts (mV) with the results being stored in a digital data logger along with position information. The decay of the eddy currents is proportional to the size and depth of the metallic target. A symmetrical positive anomaly is recorded over metallic objects with the peak centered over the object. The signal from the top coil is amplified in such a way that both coils record effectively the same response for a metallic object on the surface and the top coil records a larger response for buried metallic objects. The response of near surface objects can, therefore, be suppressed by subtracting the lower coil response from the upper coil response (differential response).

In practice, the usable depth of investigation of the EM-61 depends on the size and shape of the object and the amount of above ground interference encountered at the site. A single buried drum can often be detected at a depth of about 10 feet.

Geonics EM-61 Digital Metal Detector

Geonics EM-61 Survey to Map Subsurface Infrastructure and Potential UXO →



GSSI SIR-10A GPR Unit

GPR Methods

Ground-penetrating radar (GPR) is a high-frequency electro-magnetic method commonly applied to a number of engineering and environmental problems.

A GPR system radiates short pulses of high-frequency EM energy into the ground from a transmitting antenna. This EM wave propagates into the ground at a velocity that is primarily a function of the relative dielectric permittivity of subsurface materials. When this wave encounters the interface of two materials having different dielectric properties, a portion of the energy is reflected back to the surface, where it is detected by a receiver antenna and transmitted to a control unit for processing and display.

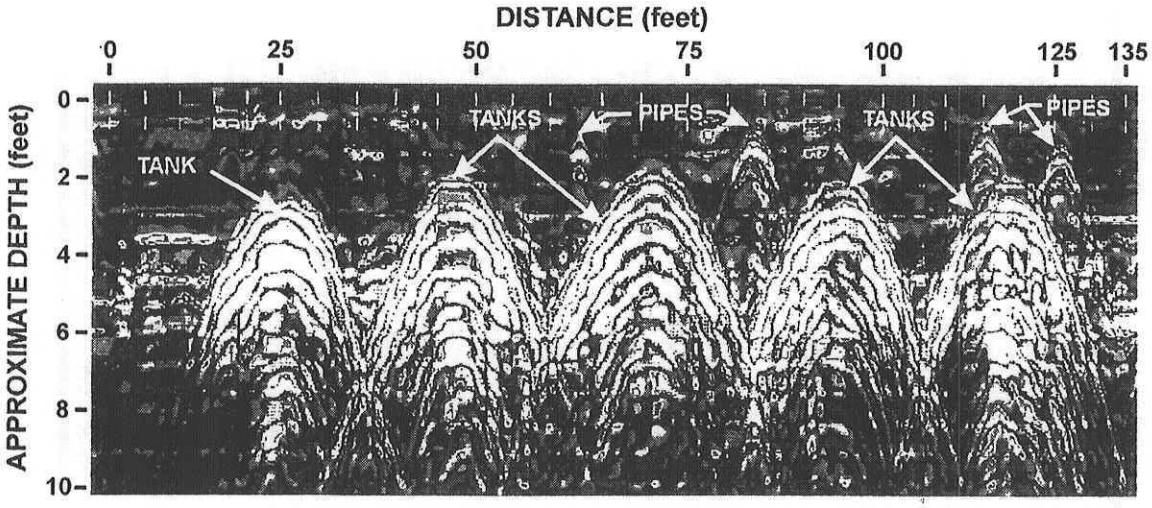
Depth penetration is a function of antenna frequency and the electrical conductivity of the soils in the survey area. Lower frequency antennas achieve greater depth penetration than higher frequency antennas, but have poorer spatial resolution. Conductive soils, such as clays, attenuate the radar waves much more rapidly than resistive dry sand and rock. In many environments in California, depth penetration of 500 and 300 MHz

antennas is limited to 3 to 5 feet. Depth penetration may be greater if shallow soils consist of clean sands and less if shallow soils consist of clay.

GPR surveys are typically conducted to:

- Locate and delineate underground storage tanks (metallic and non-metallic)
- Locate metallic and nonmetallic pipes and utility cables
- Map rebar in concrete structures
- Map landfill boundaries
- Delineate pits and trenches containing metallic and nonmetallic debris
- Delineate leach fields and industrial cribs
- Delineate previously excavated and backfilled areas
- Map shallow groundwater tables
- Map shallow soil stratigraphy
- Map shallow bedrock topography
- Map shallow subsurface voids and cavities
- Characterize archaeological sites

Geophysical Survey Systems Inc. (GSSI) SIR-2 or SIR-10 GPR systems with antennas in the frequency range of 50 to 1,000 MHz are often used during GPR investigations. Mala Geoscience and Sensors and Software, Ltd also manufacture GPR systems. GPR data is processed using a variety of software including the RADAN™ or GRADIX software packages by GSSI and Interpex Ltd., respectively.



GPR Survey to Locate Underground Storage Tanks

Appendix D
Laboratory Analytical Reports

Table D-1
Summary Analytical Results for Soil Samples — Anomaly Area 5

Sample Identification					18609-4163	18609-4164	18609-4165	18609-4213A	18609-4214A
Location Code					APH05-43	APH05-43	APH05-43	APH05-67	APH05-67
Date Sampled					02/08/01	02/08/01	02/08/01	02/15/01	02/15/01
Depth (feet below ground surface)					2.0	5.0	10.0	0.0	5.0
	Unit	**Background**	**Residential PRG**	**Industrial PRG**					
CA LUFT 8015M									
TPH as Diesel	mg/kg	NE	NE	NE	11 U	11 U	10 U	11 U	13 U
TPH as Gasoline	mg/kg	NE	NE	NE	1.09 U	1.13 U	1.01 U	1.1 U	1.28 U
TPH as JP-5	mg/kg	NE	NE	NE	11 U	11 U	10 U	11 U	13 U
EPA 8260									
1,1,1-Trichloroethane	µg/kg	NE	770000	1400000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
1,1,2,2-Tetrachloroethane	µg/kg	NE	380	900	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
1,1,2-Trichloroethane	µg/kg	NE	840	1900	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
1,1-Dichloroethane	µg/kg	NE	3300	7100	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
1,1-Dichloroethene	µg/kg	NE	54	120	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
1,2-Dichloroethane	µg/kg	NE	350	760	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
1,2-Dichloropropane	µg/kg	NE	350	770	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
2-Butanone (MEK)	µg/kg	NE	7300000	28000000	54 U	57 U	51 U	55 U	64 U
2-Chloroethyl vinyl ether	µg/kg	NE	NE	NE	54 U	57 U	51 U	55 U	64 U
2-Hexanone	µg/kg	NE	NE	NE	54 U	57 U	51 U	55 U	64 U
4-Methyl-2-pentanone (MIBK)	µg/kg	NE	790000	2900000	54 U	57 U	51 U	55 U	64 U
Acetone	µg/kg	NE	1600000	6200000	54 U	57 U	51 U	55 U	64 U
Benzene	µg/kg	NE	650	1500	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Bromodichloromethane	µg/kg	NE	1000	2400	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Bromoform	µg/kg	NE	62000	310000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Bromomethane	µg/kg	NE	3900	13000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Carbon disulfide	µg/kg	NE	360000	720000	11 U	11 U	10 U	11 U	13 U
Carbon tetrachloride	µg/kg	NE	240	530	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Chlorobenzene	µg/kg	NE	150000	540000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Chloroethane	µg/kg	NE	3000	6500	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Chloroform	µg/kg	NE	240	520	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Chloromethane	µg/kg	NE	1200	2700	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
cis-1,2-Dichloroethene	µg/kg	NE	43000	150000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
cis-1,3-Dichloropropene	µg/kg	NE	82	180	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Dibromochloromethane	µg/kg	NE	1100	2700	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Ethylbenzene	µg/kg	NE	230000	230000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Methyl tert-butyl ether (MTBE)	µg/kg	NE	17	37	11 U	11 U	10 U	11 U	13 U
Methylene chloride	µg/kg	NE	8900	21000	11 U	11 U	10 U	11 U	13 U

Table D-1
Summary Analytical Results for Soil Samples — Anomaly Area 5

Sample Identification					18609-4163	18609-4164	18609-4165	18609-4213A	18609-4214A
Location Code					APH05-43	APH05-43	APH05-43	APH05-67	APH05-67
Date Sampled					02/08/01	02/08/01	02/08/01	02/15/01	02/15/01
Depth (feet below ground surface)					2.0	5.0	10.0	0.0	5.0
	Unit	Background	Residential PRG	Industrial PRG					
Styrene	µg/kg	NE	1700000	1700000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Tetrachloroethene (PCE)	µg/kg	NE	5700	19000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Toluene	µg/kg	NE	520000	520000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
trans-1.2-Dichloroethene	µg/kg	NE	63000	210000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
trans-1.3-Dichloropropene	µg/kg	NE	82	180	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Trichloroethene (TCE)	µg/kg	NE	2800	6100	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Vinyl acetate	µg/kg	NE	430000	1400000	54 U	57 U	51 U	55 U	64 U
Vinyl chloride	µg/kg	NE	150	830	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
Xylenes (total)	µg/kg	NE	210000	210000	5.4 U	5.7 U	5.1 U	5.5 U	6.4 U
EPA 6010									
Antimony	mg/kg	3.06	31	820	10.9 U B	11.3 U B	10.1 U B	11 U B	12.8 U B
Arsenic	mg/kg	6.86	0.39	2.7	2.04 Y	2.87 Y X	1.02 Y	1.74 Y	4.81 Y X
Barium	mg/kg	173	5400	100000	76	124	28	67.1	217 B
Beryllium	mg/kg	0.669	150	2200	.313	.395	.0866 J	.327	.901 B
Cadmium	mg/kg	2.35	9.0	810	.593 J	.61 J	1.01 U	.544 J	.348 J
Chromium	mg/kg	26.9	210	450	8.46	8.29	2.34	6.7	14.7
Cobalt	mg/kg	6.98	4700	100000	3.6	4.19	1.39 U	3.97	7.45 B
Copper	mg/kg	10.5	2900	76000	4.69	4.79	1.64	4.74	8.31
Lead	mg/kg	15.1	400	750	2.12	2.26	.86 U	9.58	10.1
Manganese	mg/kg	291	1800	32000	168	200	79.9	251	255
Molybdenum	mg/kg	NE	390	10000	1.33 U	2.27 U	1.08 U	.953 J	2.56 U
Nickel	mg/kg	15.3	150	41000	7	5.96	1.8 J	5.79	8.97
Selenium	mg/kg	0.32	390	10000	1.09 U B	1.13 U B	1.01 U B	1.1 U B	1.28 U B
Silver	mg/kg	0.539	390	10000	2.17 U B	.716 U B	.641 U B	2.2 U B	2.56 U B
Thallium	mg/kg	0.42	5.2	130	1.09 U B	.732 J B	1.01 U B	1.1 U B	.94 J B
Vanadium	mg/kg	71.8	550	14000	20.4	23.7	7.49	17.4	37.9
Zinc	mg/kg	77.9	23000	100000	26.4	34.8	7.86	26.5	56.3
EPA 7471A									
Mercury	mg/kg	0.22	23	610	.109 U	.113 U	.101 U	.11 U	.128 U

Table D-1
Summary Analytical Results for Soil Samples — Anomaly Area 5

Sample Identification					18609-4215A	18609-4160	18609-4161
Location Code					APH05-67	APH05-68	APH05-68
Date Sampled					02/15/01	02/07/01	02/08/01
Depth (feet below ground surface)					9.0	5.0	10.0
	Unit	Background	Residential PRG	Industrial PRG			
CA LUFT 8015M							
TPH as Diesel	mg/kg	NE	NE	NE	11 U	11 U	10 U
TPH as Gasoline	mg/kg	NE	NE	NE	1.08 U	1.1 U	1.03 U
TPH as JP-5	mg/kg	NE	NE	NE	11 U	11 U	10 U
EPA 8260							
1,1,1-Trichloroethane	µg/kg	NE	770000	1400000	5.4 U	5.5 U	5.1 U
1,1,2,2-Tetrachloroethane	µg/kg	NE	380	900	5.4 U	5.5 U	5.1 U
1,1,2-Trichloroethane	µg/kg	NE	840	1900	5.4 U	5.5 U	5.1 U
1,1-Dichloroethane	µg/kg	NE	3300	7100	5.4 U	5.5 U	5.1 U
1,1-Dichloroethene	µg/kg	NE	54	120	5.4 U	5.5 U	5.1 U
1,2-Dichloroethane	µg/kg	NE	350	760	5.4 U	5.5 U	5.1 U
1,2-Dichloropropane	µg/kg	NE	350	770	5.4 U	5.5 U	5.1 U
2-Butanone (MEK)	µg/kg	NE	7300000	28000000	54 U	55 U	51 U
2-Chloroethyl vinyl ether	µg/kg	NE	NE	NE	54 U	55 U	51 U
2-Hexanone	µg/kg	NE	NE	NE	54 U	55 U	51 U
4-Methyl-2-pentanone (MIBK)	µg/kg	NE	790000	2900000	54 U	55 U	51 U
Acetone	µg/kg	NE	1600000	6200000	54 U	55 U	51 U
Benzene	µg/kg	NE	650	1500	5.4 U	5.5 U	5.1 U
Bromodichloromethane	µg/kg	NE	1000	2400	5.4 U	5.5 U	5.1 U
Bromoform	µg/kg	NE	62000	310000	5.4 U	5.5 U	5.1 U
Bromomethane	µg/kg	NE	3900	13000	5.4 U	5.5 U	5.1 U
Carbon disulfide	µg/kg	NE	360000	720000	11 U	11 U	10 U
Carbon tetrachloride	µg/kg	NE	240	530	5.4 U	5.5 U	5.1 U
Chlorobenzene	µg/kg	NE	150000	540000	5.4 U	5.5 U	5.1 U
Chloroethane	µg/kg	NE	3000	6500	5.4 U	5.5 U	5.1 U
Chloroform	µg/kg	NE	240	520	5.4 U	5.5 U	5.1 U
Chloromethane	µg/kg	NE	1200	2700	5.4 U	5.5 U	5.1 U
cis-1,2-Dichloroethene	µg/kg	NE	43000	150000	5.4 U	5.5 U	5.1 U
cis-1,3-Dichloropropene	µg/kg	NE	82	180	5.4 U	5.5 U	5.1 U
Dibromochloromethane	µg/kg	NE	1100	2700	5.4 U	5.5 U	5.1 U
Ethylbenzene	µg/kg	NE	230000	230000	5.4 U	5.5 U	5.1 U
Methyl tert-butyl ether (MTBE)	µg/kg	NE	17	37	11 U	11 U	10 U
Methylene chloride	µg/kg	NE	8900	21000	11 U	11 U	10 U

Table D-1
Summary Analytical Results for Soil Samples — Anomaly Area 5

Sample Identification					18609-4215A	18609-4160	18609-4161
Location Code					APH05-67	APH05-68	APH05-68
Date Sampled					02/15/01	02/07/01	02/08/01
Depth (feet below ground surface)					9.0	5.0	10.0
	Unit	Background	Residential PRG	Industrial PRG			
Styrene	µg/kg	NE	1700000	1700000	5.4 U	5.5 U	5.1 U
Tetrachloroethene (PCE)	µg/kg	NE	5700	19000	5.4 U	5.5 U	5.1 U
Toluene	µg/kg	NE	520000	520000	5.4 U	5.5 U	5.1 U
trans-1,2-Dichloroethene	µg/kg	NE	63000	210000	5.4 U	5.5 U	5.1 U
trans-1,3-Dichloropropene	µg/kg	NE	82	180	5.4 U	5.5 U	5.1 U
Trichloroethene (TCE)	µg/kg	NE	2800	6100	5.4 U	5.5 U	5.1 U
Vinyl acetate	µg/kg	NE	430000	1400000	54 U	55 U	51 U
Vinyl chloride	µg/kg	NE	150	830	5.4 U	5.5 U	5.1 U
Xylenes (total)	µg/kg	NE	210000	210000	5.4 U	5.5 U	5.1 U
EPA 6010							
Antimony	mg/kg	3.06	31	820	10.8 U B	11 U B	10.3 U B
Arsenic	mg/kg	6.86	0.39	2.7	1.38 Y	1.68 Y	.779 J Y
Barium	mg/kg	173	5400	100000	48.1	42	26.4
Beryllium	mg/kg	0.669	150	2200	.188 J	.203 J	.12 J
Cadmium	mg/kg	2.35	9.0	810	1.08 U	1.1 U	.406 J
Chromium	mg/kg	26.9	210	450	4.06	4.26	4.01
Cobalt	mg/kg	6.98	4700	100000	2.16	1.81 U	1.23 U
Copper	mg/kg	10.5	2900	76000	1.97	2.7	1.84
Lead	mg/kg	15.1	400	750	4.21	1.5	.871 U
Manganese	mg/kg	291	1800	32000	101	99.1	63.5
Molybdenum	mg/kg	NE	390	10000	2.15 U	2.21 U	1.11 U
Nickel	mg/kg	15.3	150	41000	3.86	3.58	2.88
Selenium	mg/kg	0.32	390	10000	1.08 U B	1.1 U B	1.03 U B
Silver	mg/kg	0.539	390	10000	2.15 U B	2.21 U B	.552 U B
Thallium	mg/kg	0.42	5.2	130	1.08 U B	1.1 U B	1.03 U B
Vanadium	mg/kg	71.8	550	14000	11.9	11.8	7.97
Zinc	mg/kg	77.9	23000	100000	14.6	15.8	8.94
EPA 7471A							
Mercury	mg/kg	0.22	23	610	.108 U	.11 U	.103 U

Table D-1
Summary Analytical Results for Soil Samples — Anomaly Area 5

Explanation:
B - result exceeds established background limits
CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
J - estimated
M - Modified
MDL - method detection limit
mg/kg - milligrams per kilogram
NA - not analyzed
NE - not established
OHM - OHM Remediation Services Corp.
PRG - Preliminary Remediation Goal, EPA Region IX, October 1999
RL - reporting limit
SB - soil boring
TPH - total petroleum hydrocarbons
U - not detected above or equal to the stated reporting limit.
If the analyte had been detected bewteen the MDL and RL the actual value would have been reported and flagged with a "J" qualifier. For the samples in question, the laboratory did not detect analyte concentrations between the MDL and the RL. As a result, the samples are qualified as non-detect ("U").
X - result exceeds industrial PRGs
Y - result exceeds residential PRGs
µg/kg - micrograms per kilogram

Table D-2
Summary Analytical Results for QC Sample — Anomaly Area 5

Sample Identification		18609-4212A
Location Code		Trip Blank
Date Sampled		02/15/01
	Unit	
CA LUFT 8015M		
TPH as Gasoline	mg/L	.1 U
EPA 8260		
1,1,1-Trichloroethane	µg/L	5 U
1,1,2,2-Tetrachloroethane	µg/L	5 U
1,1,2-Trichloroethane	µg/L	5 U
1,1-Dichloroethane	µg/L	5 U
1,1-Dichloroethene	µg/L	5 U
1,2-Dichloroethane	µg/L	5 U
1,2-Dichloropropane	µg/L	5 U
2-Butanone (MEK)	µg/L	50 U
2-Chloroethyl vinyl ether	µg/L	50 U
2-Hexanone	µg/L	50 U
4-Methyl-2-pentanone (MIBK)	µg/L	50 U
Acetone	µg/L	50 U
Benzene	µg/L	5 U
Bromodichloromethane	µg/L	5 U
Bromoform	µg/L	5 U
Bromomethane	µg/L	5 U
Carbon disulfide	µg/L	5 U
Carbon tetrachloride	µg/L	5 U
Chlorobenzene	µg/L	5 U
Chloroethane	µg/L	5 U
Chloroform	µg/L	5 U
Chloromethane	µg/L	5 U
cis-1,2-Dichloroethene	µg/L	5 U
cis-1,3-Dichloropropene	µg/L	5 U
Dibromochloromethane	µg/L	5 U
Ethylbenzene	µg/L	5 U
Methyl tert-butyl ether (MTBE)	µg/L	10 U
Methylene chloride	µg/L	5 U
Styrene	µg/L	5 U
Tetrachloroethene (PCE)	µg/L	5 U
Toluene	µg/L	5 U

Table D-2
Summary Analytical Results for QC Sample — Anomaly Area 5

Sample Identification		18609-4212A
Location Code		Trip Blank
Date Sampled		02/15/01
	Unit	
trans-1,2-Dichloroethene	µg/L	5 U
trans-1,3-Dichloropropene	µg/L	5 U
Trichloroethene (TCE)	µg/L	5 U
Vinyl acetate	µg/L	50 U
Vinyl chloride	µg/L	5 U
Xylenes (total)	µg/L	5 U

Table D-2
Summary Analytical Results for QC Sample — Anomaly Area 5

Explanation:
CA LUFT - California Leaking Underground Fuel Tank
EPA - United States Environmental Protection Agency
J - estimated
M - Modified
mg/L - milligrams per liter
OHM - OHM Remediation Services Corp.
TPH - total petroleum hydrocarbons
U - not detected above or equal to the stated reporting limit
µg/L - micrograms per liter

the group

IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

CHAIN-OF-CUSTODY RECORD

APHO 5

PROJECT DATA MANAGER'S COPY

A 12637

FORM 0019 REV. 9-99

IT'S LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
M. Gonzalez	949-660-7550	949-475-5433	01801	EMAX	IT CORP
PROJECT NAME	**PROJECT LOCATION**	**PROJECT NUMBER**	**LABORATORY PHONE**	**LABORATORY FAX**	**RECIPIENT NAME**
APHO 5	MCAS El Toro	18609	310-618-8889	310-618-0118	Dwayne Ishida
PROJECT CONTACT	**PROJECT PHONE NUMBER**	**PROJECT FAX**	**LABORATORY ADDRESS**		**ADDRESS**
M. Gonzalez	949-451-1666	949-451-1672	630 Maple Avenue		3347 Michelson Ste 202
PROJECT ADDRESS	**CITY, STATE AND ZIP CODE**	**CLIENT**	**CITY, STATE AND ZIP CODE**		**CITY, STATE AND ZIP CODE**
MCAS Bldg 311 El Toro	Santa Ana CA 92708	SW DIV	Torrance CA		Irvine CA 92612
PROJECT MANAGER	**PROJECT MANAGER'S PHONE**	**PROJECT MANAGER'S FAX**			
D. Raval	949-660-7576	949-474-8309			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: TPH-gas	TPH-diesel	TPH-JP5	8260 + Naphs	Title 22 metals	Comments
1	18609-4160	soil	2/7/01	1330	4°C	1	C	5day	X	X	X	X	X	
2	18609-4161	soil	2/8/01	1000	4°C	2	C	5day	X	X	X	X	X	
3	18609-4162	soil	2/8/01	1110	4°C	1	C	5day	X	X	X	X	X	HOLD
4	18609-4163	soil	2/8/01	1225	4°C	1	C	5day	X	X	X	X	X	
5	18609-4164	soil	2/8/01	1250	4°C	1	C	5day	X	X	X	X	X	
6	18609-4165	soil	2/8/01	1315	4°C	1	C	5day	X	X	X	X	X	
7	18609-4166	soil	2/8/01	1405	4°C	1	C	5day	X	X	X	X	X	HOLD
8														
9														
10														

SAMPLES COLLECTED BY: M. Gonzalez

RELINQUISHED BY:

COURIER AND AIR BILL NUMBER

RECEIVED BY:

DATE:

TIME: 1335

SAMPLE'S CONDITION UPON RECEIPT

COOLER TEMPERATURE UPON RECEIPT

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

APHO 5

Sample Point Location	Sample Type: G	C	F	QC
(1) APHO-60 @ 5'-5.5'	✓			
(2) APHO5-68 10'-10.5'	✓			
(3) APHO5-68 15'-15.5'	✓			
(4) APHO5-43 2'-2.5'	✓			
(5) APHO5-43 5'-5.5'	✓			
(6) APHO5-43 10'-10.5'	✓			
(7) APHO5-43 15'-15.5'	✓			

Comments: due 2/10/01 recd 2/23/01

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

[redacted]

EMAX
LABORATORIES, INC.
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 02-26-2001
EMAX Batch No.: 01B100

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 02/09/01. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
18609-4160	B100-01	02/07/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				MERCURY
				METALS CAM
				TPH JP-5
18609-4161	B100-02	02/08/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				TPH JP-5
				MERCURY
				METALS CAM
18609-4162	B100-03	02/08/01	SOIL	HOLD
18609-4163	B100-04	02/08/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				MERCURY
				METALS CAM
				TPH JP-5

1000

A

Sample ID	Control #	Col Date	Matrix	Analysis
18609-4164	B100-05	02/08/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				TPH JP-5
				MERCURY
				METALS CAM
18609-4165	B100-06	02/08/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				METALS CAM
				MERCURY
				TPH JP-5
18609-4166	B100-07	02/08/01	SOIL	HOLD

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Y. Pang, Ph.D.
Laboratory Director

1001

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 02/08/01
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 02/09/01
Batch No. : 01B100	Date Extracted: 02/12/01 18:00
Sample ID: 18609-4161	Date Analyzed: 02/16/01 04:16
Lab Samp ID: B100-02	Dilution Factor: 1
Lab File ID: TB03072A	Matrix : SOIL
Ext Btch ID: DSB019S	% Moisture : 2.6
Calib. Ref.: TB03066A	Instrument ID : GCT008

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	10	3.6
JP5	ND	10	3.8

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	105	60-140
HEXACOSANE	99	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

COR

5006

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 02/07/01
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 02/09/01
Batch No. : 01B100	Date Extracted: 02/12/01 18:00
Sample ID: 18609-4160	Date Analyzed: 02/16/01 03:28
Lab Samp ID: B100-01	Dilution Factor: 1
Lab File ID: TB03071A	Matrix : SOIL
Ext Btch ID: DSB019S	% Moisture : 9.5
Calib. Ref.: TB03066A	Instrument ID : GCT008

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	11	3.8
JP5	ND	11	4.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	102	60-140
HEXACOSANE	95	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SR1 : Bromobenzene
SR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	02/08/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
Batch No.	: 01B100	Date Extracted:	02/12/01 18:00
Sample ID	: 18609-4163	Date Analyzed:	02/16/01 07:29
Lab Samp ID	: B100-04	Dilution Factor:	1
Lab File ID	: TB03076A	Matrix :	SOIL
Ext Btch ID	: DSB019S	% Moisture :	8.0
Calib. Ref.	: TB03066A	Instrument ID :	GCT008

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	11	3.8
JP5	ND	11	4

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	105	60-140
HEXACOSANE	97	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

ient	: IT CORPORATION	Date Collected:	02/08/01
t	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
Ba o.	: 01B100	Date Extracted:	02/12/01 18:00
mple ID:	18609-4164	Date Analyzed:	02/16/01 08:17
b Samp ID:	B100-05	Dilution Factor:	1
b File ID:	TB03077A	Matrix :	SOIL
Ext Btch ID:	DSB019S	% Moisture :	11.8
lib. Ref.:	TB03066A	Instrument ID :	GCT008

RAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	11	3.9
JP5	ND	11	4.2

RROGATE PARAMETERS	% RECOVERY	QC LIMIT
ROMOBENZENE	103	60-140
XACOSANE	95	55-150

QC LIMIT : (SOIL) 60-140 55-150
LIMIT : (WATER) 65-135 60-145
RR1 : Bromobenzene
RR2 : Hexacosane
RL : Reporting Limit

5010

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

lient : IT CORPORATION	Date Collected: 02/08/01
roject : MCAS EL TORO/18609/D.O. 70	Date Received: 02/09/01
atch No. : 01B100	Date Extracted: 02/12/01 18:00
ample ID: 18609-4165	Date Analyzed: 02/16/01 14:02
ab Samp ID: B100-06	Dilution Factor: 1
ab File ID: TB04004A	Matrix : SOIL
xt Btch ID: DSB019S	% Moisture : 1.3
alib. Ref.: TB04002A	Instrument ID : GCT008

ARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
IESEL	ND	10	3.5
P5	ND	10	3.8

URROGATE PARAMETERS	% RECOVERY	QC LIMIT
ROMOBENZENE	105	60-140
EXACOSANE	99	55-150

C LIMIT : (SOIL) 60-140 55-150
C LIMIT : (WATER) 65-135 60-145
URR1 : Bromobenzene
URR2 : Hexacosane
L : Reporting Limit

5012

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
EMAX NO.: 01B100
METHOD: METHOD M8015

MATRIX: SOIL % MOISTURE: NA

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
SAMP ID:	DSB019SB	DSB019SL	DSB019SC		
FILE ID:	TB03068A	TB03069A	TB03070A		
DATE EXTRACTED:	02/12/0118:00	02/12/0118:00	02/12/0118:00	DATE COLLECTED:	NA
DATE ANALYZED:	02/16/0101:03	02/16/0101:51	02/16/0102:39	DATE RECEIVED:	02/12/01
PREP. BATCH:	DSB019S	DSB019S	DSB019S		
CALIB. REF:	TB03066A	TB03066A	TB03066A		

SESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	500	491	98	500	479	96	2	51-153	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromobenzene	100	106	106	100	103	103	60-140
Hexacosane	25	25	100	25	25.2	101	55-150

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 01B100
METHOD: METHOD M8015

MATRIX: SOIL % MOISTURE: 2.6

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	18609-4161				
LAB SAMP ID:	B100-02	B100-02M	B100-02S		
LAB FILE ID:	TB03072A	TB03073A	TB03074A		
DATE EXTRACTED:	02/12/0118:00	02/12/0118:00	02/12/0118:00	DATE COLLECTED:	02/08/01
DATE ANALYZED:	02/16/0104:16	02/16/0105:04	02/16/0105:53	DATE RECEIVED:	02/09/01
PREP. BATCH:	DSB019S	DSB019S	DSB019S		
CALIB. REF:	TB03066A	TB03066A	TB03066A		

ACCESSION:

PARAMETER	SMPL RSLT (mg/kg)	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	513	517	101	513	539	105	4	51-153	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	MS RSLT (mg/kg)	MS % REC	SPIKE AMT (mg/kg)	MSD RSLT (mg/kg)	MSD % REC	QC LIMIT (%)
Bromobenzene	103	108	105	103	109	106	60-140
Hexacosane	25.7	25.7	100	25.7	25.6	100	55-150

METHOD 8B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 01B100

Matrix : SOIL
Instrument ID :

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	SURR (%)	DLF	MOIST	PRL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	VAB0255B	ND	81	1	NA	1	.02	02/20/0119:54	02/20/0119:54	UB07005A	UB07004A	VAB0255	NA	02/20/01
LCS1S	VAB0255L	3.14	112	1	NA	1	.02	02/20/0120:29	02/20/0120:29	UB07006A	UB07004A	VAB0255	NA	02/20/01
LCD1S	VAB0255C	2.86	115	1	NA	1	.02	02/20/0121:04	02/20/0121:04	UB07007A	UB07004A	VAB0255	NA	02/20/01
18609-4160	B100-01	ND	98	1	9.5	1.1	.0221	02/20/0122:47	02/20/0122:47	UB07010A	UB07004A	VAB0255	02/07/01	02/09/01
18609-4161	B100-02	ND	97	1	2.6	1.03	.0205	02/20/0123:22	02/20/0123:22	UB07011A	UB07004A	VAB0255	02/08/01	02/09/01
18609-4163	B100-04	ND	84	1	8.0	1.09	.0217	02/20/0123:56	02/20/0123:56	UB07012A	UB07004A	VAB0255	02/08/01	02/09/01
18609-4164	B100-05	ND	96	1	11.8	1.13	.0227	02/21/0100:31	02/21/0100:31	UB07013A	UB07004A	VAB0255	02/08/01	02/09/01
18609-4165	B100-06	ND	80	1	1.3	1.01	.0203	02/21/0101:05	02/21/0101:05	UB07014A	UB07004A	VAB0255	02/08/01	02/09/01

SURR : Bromofluorobenzene (W)65-135 (S)60-140
PRL : Reporting Limit
E : Value exceed the upper level of the initial calibration
D : Value from dilution

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 01B100
METHOD: METHOD 5030B/M8015H

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: VAB0255B VAB0255L VAB0255C
LAB FILE ID: UB07005A UB07006A UB07007A
DATE EXTRACTED: 02/20/0119:54 02/20/0120:29 02/20/0121:04 DATE COLLECTED: NA
DATE ANALYZED: 02/20/0119:54 02/20/0120:29 02/20/0121:04 DATE RECEIVED: 02/20/01
PREP. BATCH: VAB0255 VAB0255 VAB0255
CALIB. REF: UB07004A UB07004A UB07004A

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	2.75	3.14	114	2.75	2.86	104	9	57-146	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.1	.112	112	.1	.115	115	60-140

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	02/07/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
Batch No.	: 01B100	Date Extracted:	02/13/01 00:06
Sample ID	: 18609-4160	Date Analyzed:	02/13/01 00:06
Lab Samp ID	: B100-01	Dilution Factor:	1
Lab File ID	: RBW329	Matrix	: SOIL
Batch ID	: VOB3106	% Moisture	: 9.5
Calib. Ref.:	RBW316	Instrument ID	: T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.5	.38
1,1,2,2-TETRACHLOROETHANE	ND	5.5	.82
1,1,2-TRICHLOROETHANE	ND	5.5	.72
1,1-DICHLOROETHANE	ND	5.5	.58
1,1-DICHLOROETHENE	ND	5.5	.53
1,2-DICHLOROETHANE	ND	5.5	1.1
1,2-DICHLOROPROPANE	ND	5.5	.61
2-BUTANONE	ND	55	1.7
2-CHLOROETHYLVINYLETHER	ND	55	.82
2-HEXANONE	ND	55	1.6
4-METHYL-2-PENTANONE	ND	55	3.1
ACETONE	ND	55	3.2
BENZENE	ND	5.5	.58
BROMODICHLOROMETHANE	ND	5.5	.47
BROMOFORM	ND	5.5	.65
BROMOMETHANE	ND	5.5	4
CARBON DISULFIDE	ND	11	.37
CARBON TETRACHLORIDE	ND	5.5	.59
CHLOROBENZENE	ND	5.5	.51
CHLOROETHANE	ND	5.5	1
CHLOROFORM	ND	5.5	.58
CHLOROMETHANE	ND	5.5	.58
CIS-1,2-DICHLOROETHENE	ND	5.5	.51
CIS-1,3-DICHLOROPROPENE	ND	5.5	.44
DIBROMOCHLOROMETHANE	ND	5.5	.41
ETHYLBENZENE	ND	5.5	.51
METHANE	ND	11	.84
METHYLENE CHLORIDE	ND	11	3.3
STYRENE	ND	5.5	.38
TETRACHLOROETHENE	ND	5.5	.37
TOLUENE	ND	5.5	.64
TRANS-1,2-DICHLOROETHENE	ND	5.5	.52
TRANS-1,3-DICHLOROPROPENE	ND	5.5	.5
TRICHLOROETHENE	ND	5.5	.68
VINYL ACETATE	ND	55	.92
VINYL CHLORIDE	ND	5.5	.65
XYLENES	ND	5.5	1.3

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	108	52-149
BROMOFLUOROBENZENE	106	65-135
TOLUENE-D8	101	65-135

PRL.: Project Reporting Limit
*: Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2004

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 02/08/01
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 02/09/01
Batch No. : 018100	Date Extracted: 02/13/01 00:41
Sample ID: 18609-4161	Date Analyzed: 02/13/01 00:41
Lab Samp ID: B100-02	Dilution Factor: 1
Lab File ID: RBW330	Matrix : SOIL
Ext Btch ID: VOB3106	% Moisture : 2.6
Calib. Ref.: RBW316	Instrument ID : T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.1	.35
1,1,2,2-TETRACHLOROETHANE	ND	5.1	.76
1,1,2-TRICHLOROETHANE	ND	5.1	.67
1,1-DICHLOROETHANE	ND	5.1	.54
1,1-DICHLOROETHENE	ND	5.1	.49
1,2-DICHLOROETHANE	ND	5.1	1
1,2-DICHLOROPROPANE	ND	5.1	.56
2-BUTANONE	ND	51	1.6
2-CHLOROETHYLVINYLETHER	ND	51	.76
2-HEXANONE	ND	51	1.5
4-METHYL-2-PENTANONE	ND	51	2.9
ACETONE	ND	51	3
BENZENE	ND	5.1	.54
BROMODICHLOROMETHANE	ND	5.1	.43
BROMOFORM	ND	5.1	.61
BROMOMETHANE	ND	5.1	3.7
CARBON DISULFIDE	ND	10	.34
CARBON TETRACHLORIDE	ND	5.1	.55
CHLOROBENZENE	ND	5.1	.48
CHLOROETHANE	ND	5.1	.95
CHLOROFORM	ND	5.1	.54
CHLOROMETHANE	ND	5.1	.54
CIS-1,2-DICHLOROETHENE	ND	5.1	.47
CIS-1,3-DICHLOROPROPENE	ND	5.1	.41
DIBROMOCHLOROMETHANE	ND	5.1	.38
ETHYLBENZENE	ND	5.1	.47
MTBE	ND	10	.78
METHYLENE CHLORIDE	ND	10	3.1
STYRENE	ND	5.1	.35
TETRACHLOROETHENE	ND	5.1	.35
TOLUENE	ND	5.1	.59
TRANS-1,2-DICHLOROETHENE	ND	5.1	.49
TRANS-1,3-DICHLOROPROPENE	ND	5.1	.46
TRICHLOROETHENE	ND	5.1	.63
VINYL ACETATE	ND	51	.85
VINYL CHLORIDE	ND	5.1	.6
XYLENES	ND	5.1	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	104	52-149
BROMOFLUOROBENZENE	107	65-135
TOLUENE-D8	101	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2005

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	02/08/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
Lab No.	: 01B100	Date Extracted:	02/13/01 09:00
Sample ID	: 18609-4163	Date Analyzed:	02/13/01 09:00
Lab Sample ID	: B100-04	Dilution Factor:	1
Data File ID	: RBW344	Matrix	: SOIL
Batch ID	: VOB3306	% Moisture	: 8.0
Calib. Ref.	: RBW339	Instrument ID	: T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.4	.37
1,1,2,2-TETRACHLOROETHANE	ND	5.4	.8
1,1,2-TRICHLOROETHANE	ND	5.4	.71
1,1-DICHLOROETHANE	ND	5.4	.57
1,1-DICHLOROETHENE	ND	5.4	.52
1,2-DICHLOROETHANE	ND	5.4	1.1
1,2-DICHLOROPROPANE	ND	5.4	.6
2-BUTANONE	ND	54	1.7
2-CHLOROETHYLVINYLETHER	ND	54	.8
2-HEXANONE	ND	54	1.6
4-METHYL-2-PENTANONE	ND	54	3.1
ACETONE	ND	54	3.1
BENZENE	ND	5.4	.57
BROMODICHLOROMETHANE	ND	5.4	.46
BROMOFORM	ND	5.4	.64
BROMOMETHANE	ND	5.4	3.9
CARBON DISULFIDE	ND	11	.36
CARBON TETRACHLORIDE	ND	5.4	.58
CHLOROBENZENE	ND	5.4	.5
CHLOROETHANE	ND	5.4	1
CHLOROFORM	ND	5.4	.57
CHLOROMETHANE	ND	5.4	.57
CIS-1,2-DICHLOROETHENE	ND	5.4	.5
CIS-1,3-DICHLOROPROPENE	ND	5.4	.44
DIBROMOCHLOROMETHANE	ND	5.4	.4
ETHYLBENZENE	ND	5.4	.5
MTBE	ND	11	.82
METHYLENE CHLORIDE	ND	11	3.3
STYRENE	ND	5.4	.37
TETRACHLOROETHENE	ND	5.4	.37
TOLUENE	ND	5.4	.63
TRANS-1,2-DICHLOROETHENE	ND	5.4	.52
TRANS-1,3-DICHLOROPROPENE	ND	5.4	.49
TRICHLOROETHENE	ND	5.4	.67
VINYL ACETATE	ND	54	.9
VINYL CHLORIDE	ND	5.4	.64
XYLENES	ND	5.4	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	111	52-149
BROMOFLUOROBENZENE	109	65-135
TOLUENE-D8	96	65-135

PRL: Project Reporting Limit
*: Out side of QC Limit
J: An estimated value between PRL and MDL
E: Value exceed the upper level of the initial calibration
B: Found in the associated blank
D: Value from dilution analysis

2007

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

lient	: IT CORPORATION	Date Collected:	02/08/01
roject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
atch No.	: 01B100	Date Extracted:	02/13/01 09:35
ample ID	: 18609-4164	Date Analyzed:	02/13/01 09:35
ab Samp ID	: B100-05	Dilution Factor:	1
ab File ID	: RBW345	Matrix :	SOIL
xt Btch ID	: VOB3306	% Moisture :	11.8
alib. Ref.	: RBW339	Instrument ID :	T-006

ARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
,1,1-TRICHLOROETHANE	ND	5.7	.39
,1,2,2-TETRACHLOROETHANE	ND	5.7	.84
,1,2-TRICHLOROETHANE	ND	5.7	.74
,1-DICHLOROETHANE	ND	5.7	.59
,1-DICHLOROETHENE	ND	5.7	.54
,2-DICHLOROETHANE	ND	5.7	1.1
,2-DICHLOROPROPANE	ND	5.7	.62
-BUTANONE	ND	57	1.7
-CHLOROETHYLVINYLETHER	ND	57	.84
-HEXANONE	ND	57	1.7
-METHYL-2-PENTANONE	ND	57	3.2
CETONE	ND	57	3.3
ENZENE	ND	5.7	.6
ROMODICHLOROMETHANE	ND	5.7	.48
ROMOFORM	ND	5.7	.67
ROMOMETHANE	ND	5.7	4.1
ARBON DISULFIDE	ND	11	.38
ARBON TETRACHLORIDE	ND	5.7	.61
HLOROBENZENE	ND	5.7	.53
HLOROETHANE	ND	5.7	1
HLOROFORM	ND	5.7	.59
HLOROMETHANE	ND	5.7	.6
IS-1,2-DICHLOROETHENE	ND	5.7	.52
IS-1,3-DICHLOROPROPENE	ND	5.7	.46
IBROMOCHLOROMETHANE	ND	5.7	.42
THYLBENZENE	ND	5.7	.52
TBE	ND	11	.86
ETHYLENE CHLORIDE	ND	11	3.4
TYRENE	ND	5.7	.39
ETRACHLOROETHENE	ND	5.7	.38
OLUENE	ND	5.7	.65
RANS-1,2-DICHLOROETHENE	ND	5.7	.54
RANS-1,3-DICHLOROPROPENE	ND	5.7	.51
RICHLOROETHENE	ND	5.7	.69
INYL ACETATE	ND	57	.94
INYL CHLORIDE	ND	5.7	.66
YLENES	ND	5.7	1.3

URROGATE PARAMETERS	% RECOVERY	QC LIMIT
,2-DICHLOROETHANE-D4	109	52-149
ROMOFLUOROBENZENE	104	65-135
OLUENE-D8	95	65-135

RL: Project Reporting Limit
: Out side of QC Limit
: An estimated value between PRL and MDL
: Value exceed the upper level of the initial calibration
: Found in the associated blank
: Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	02/08/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
Batch No.	: 01B100	Date Extracted:	02/13/01 10:11
Sample ID	: 18609-4165	Date Analyzed:	02/13/01 10:11
Lab Samp ID	: B100-06	Dilution Factor:	1
Lab File ID	: RBW346	Matrix	: SOIL
Batch ID	: VOB3306	% Moisture	: 1.3
Calib. Ref.	: RBW339	Instrument ID	: T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.1	.34
1,1,2,2-TETRACHLOROETHANE	ND	5.1	.75
1,1,2-TRICHLOROETHANE	ND	5.1	.66
1,1-DICHLOROETHANE	ND	5.1	.53
1,1-DICHLOROETHENE	ND	5.1	.49
1,2-DICHLOROETHANE	ND	5.1	1.0
1,2-DICHLOROPROPANE	ND	5.1	.56
2-BUTANONE	ND	51	1.5
2-CHLOROETHYLVINYLETHER	ND	51	.75
2-HEXANONE	ND	51	1.5
4-METHYL-2-PENTANONE	ND	51	2.8
ACETONE	ND	51	2.9
BENZENE	ND	5.1	.53
BROMODICHLOROMETHANE	ND	5.1	.43
BROMOFORM	ND	5.1	.6
BROMOMETHANE	ND	5.1	3.6
CARBON DISULFIDE	ND	10	.34
CARBON TETRACHLORIDE	ND	5.1	.54
CHLOROBENZENE	ND	5.1	.47
CHLOROETHANE	ND	5.1	.93
CHLOROFORM	ND	5.1	.53
CHLOROMETHANE	ND	5.1	.53
CIS-1,2-DICHLOROETHENE	ND	5.1	.47
CIS-1,3-DICHLOROPROPENE	ND	5.1	.41
DIBROMOCHLOROMETHANE	ND	5.1	.37
ETHYLBENZENE	ND	5.1	.47
STYRENE	ND	10	.77
METHYLENE CHLORIDE	ND	10	3.1
STYRENE	ND	5.1	.35
TETRACHLOROETHENE	ND	5.1	.34
TOLUENE	ND	5.1	.58
TRANS-1,2-DICHLOROETHENE	ND	5.1	.48
TRANS-1,3-DICHLOROPROPENE	ND	5.1	.46
TRICHLOROETHENE	ND	5.1	.62
VINYL ACETATE	ND	51	.84
VINYL CHLORIDE	ND	5.1	.59
XYLENES	ND	5.1	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	109	52-149
BROMOFLUOROBENZENE	106	65-135
TOLUENE-D8	97	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2009

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

lient	: IT CORPORATION	Date Collected:	NA
roject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/12/01
atch No.	: 01B100	Date Extracted:	02/12/01 18:44
ample ID	: MBLK1S	Date Analyzed:	02/12/01 18:44
ab Samp ID	: V0B3106Q	Dilution Factor:	1
ab File ID	: RBW320	Matrix :	SOIL
xt Btch ID	: V0B3106	% Moisture :	NA
alib. Ref.	: RBW316	Instrument ID :	T-006

ARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
,1,1-TRICHLOROETHANE	ND	5	.34
,1,2,2-TETRACHLOROETHANE	ND	5	.74
,1,2-TRICHLOROETHANE	ND	5	.66
,1-DICHLOROETHANE	ND	5	.52
,1-DICHLOROETHENE	ND	5	.48
,2-DICHLOROETHANE	ND	5	.99
,2-DICHLOROPROPANE	ND	5	.55
-BUTANONE	ND	50	1.5
-CHLOROETHYLVINYLETHER	ND	50	.74
-HEXANONE	ND	50	1.5
-METHYL-2-PENTANONE	ND	50	2.8
CETONE	ND	50	2.9
ENZENE	ND	5	.53
ROMODICHLOROMETHANE	ND	5	.42
ROMOFORM	ND	5	.59
ROMOMETHANE	ND	5	3.6
ARBON DISULFIDE	ND	10	.33
ARBON TETRACHLORIDE	ND	5	.54
HLOROBENZENE	ND	5	.46
HLOROETHANE	ND	5	.92
HLOROFORM	ND	5	.52
HLOROMETHANE	ND	5	.53
IS-1,2-DICHLOROETHENE	ND	5	.46
IS-1,3-DICHLOROPROPENE	ND	5	.4
IBROMOCHLOROMETHANE	ND	5	.37
THYLBENZENE	ND	5	.46
ITBE	ND	10	.76
IETHYLENE CHLORIDE	ND	10	3
ITYRENE	ND	5	.34
ETRACHLOROETHENE	ND	5	.34
OLUENE	ND	5	.58
RANS-1,2-DICHLOROETHENE	ND	5	.47
RANS-1,3-DICHLOROPROPENE	ND	5	.45
RICHLOROETHENE	ND	5	.61
INYL ACETATE	ND	50	.83
INYL CHLORIDE	ND	5	.58
YLENES	ND	5	1.1

URROGATE PARAMETERS	% RECOVERY	QC LIMIT
,2-DICHLOROETHANE-D4	104	52-149
ROMOFLUOROBENZENE	108	65-135
OLUENE-D8	98	65-135

RL: Project Reporting Limit
: Out side of QC Limit
: An estimated value between PRL and MDL
: Value exceed the upper level of the initial calibration
: Found in the associated blank
: Value from dilution analysis

2012

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 018100
METHOD: METHOD 5030A/8260A

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: V0B3106Q V0B3106L V0B3106C
LAB FILE ID: RBW320 RBW317 RBW318
DATE EXTRACTED: 02/12/0118:44 02/12/0116:57 02/12/0117:33 DATE COLLECTED: NA
DATE ANALYZED: 02/12/0118:44 02/12/0116:57 02/12/0117:33 DATE RECEIVED: 02/12/01
PREP. BATCH: V0B3106 V0B3106 V0B3106
CALIB. REF: RBW316 RBW316 RBW316

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	21.8	109	20	21.1	106	3	65-135	30
Benzene	ND	20	20.8	104	20	20	100	4	65-135	30
Chlorobenzene	ND	20	21.5	107	20	21.2	106	1	65-135	30
Toluene	ND	20	21.9	110	20	21.1	106	4	64-135	30
Trichloroethene	ND	20	18.8	94	20	18.7	93	1	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	50.7	101	50	50.6	101	52-149
Bromofluorobenzene	50	57.5	115	50	54.2	108	65-135
Toluene-d8	50	50.5	101	50	49.8	100	65-135

2013

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

lient	: IT CORPORATION	Date Collected:	NA
roject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/13/01
atch No.	: 01B100	Date Extracted:	02/13/01 08:24
ample ID:	MBLK2S	Date Analyzed:	02/13/01 08:24
ab Samp ID:	V0B3306Q	Dilution Factor:	1
ab File ID:	RBW343	Matrix :	SOIL
xt Btch ID:	V0B3306	% Moisture :	NA
alib. Ref.:	RBW339	Instrument ID :	T-006

ARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
,1,1-TRICHLOROETHANE	ND	5	.34
,1,2,2-TETRACHLOROETHANE	ND	5	.74
,1,2-TRICHLOROETHANE	ND	5	.66
,1-DICHLOROETHANE	ND	5	.52
,1-DICHLOROETHENE	ND	5	.48
,2-DICHLOROETHANE	ND	5	.99
,2-DICHLOROPROPANE	ND	5	.55
-BUTANONE	ND	50	1.5
-CHLOROETHYLVINYLETHER	ND	50	.74
-HEXANONE	ND	50	1.5
-METHYL-2-PENTANONE	ND	50	2.8
CETONE	ND	50	2.9
ENZENE	ND	5	.53
ROMODICHLOROMETHANE	ND	5	.42
ROMOFORM	ND	5	.59
ROMOMETHANE	ND	5	3.6
ARBON DISULFIDE	ND	10	.33
ARBON TETRACHLORIDE	ND	5	.54
HLOROBENZENE	ND	5	.46
HLOROETHANE	ND	5	.92
HLOROFORM	ND	5	.52
HLOROMETHANE	ND	5	.53
IS-1,2-DICHLOROETHENE	ND	5	.46
IS-1,3-DICHLOROPROPENE	ND	5	.4
IBROMOCHLOROMETHANE	ND	5	.37
THYLBENZENE	ND	5	.46
TBE	ND	10	.76
ETHYLENE CHLORIDE	ND	10	3
TYRENE	ND	5	.34
ETRACHLOROETHENE	ND	5	.34
OLUENE	ND	5	.58
RANS-1,2-DICHLOROETHENE	ND	5	.47
RANS-1,3-DICHLOROPROPENE	ND	5	.45
RICHLOROETHENE	ND	5	.61
INYL ACETATE	ND	50	.83
INYL CHLORIDE	ND	5	.58
YLENES	ND	5	1.1

URROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	110	52-149
BROMOFLUOROBENZENE	103	65-135
TOLUENE-D8	98	65-135

RL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

2014

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 01B100
METHOD: METHOD 5030A/8260A

MATRIX:	SOIL			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK2S				
LAB SAMP ID:	V0B3306Q	V0B3306L	V0B3306C		
GC/MS FILE ID:	RBW343	RBW340	RBW341		
DATE EXTRACTED:	02/13/0108:24	02/13/0106:37	02/13/0107:13	DATE COLLECTED:	NA
DATE ANALYZED:	02/13/0108:24	02/13/0106:37	02/13/0107:13	DATE RECEIVED:	02/13/01
PREP. BATCH:	V0B3306	V0B3306	V0B3306		
CALIB. REF:	RBW339	RBW339	RBW339		

SESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	20.3	101	20	18.5	93	9	65-135	30
Benzene	ND	20	19.8	99	20	18	90	10	65-135	30
Chlorobenzene	ND	20	19.7	98	20	18.4	92	7	65-135	30
Toluene	ND	20	19.9	99	20	18.6	93	7	64-135	30
Trichloroethene	ND	20	18.8	94	20	16.6	83	13	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	49.2	98	50	50.8	102	52-149
Bromofluorobenzene	50	56.8	114	50	55.1	110	65-135
Toluene-d8	50	52.9	106	50	52.1	104	65-135

2015

METHOD 3050B/6010B
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	02/07/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
SDG NO.	: 01B100	Date Extracted:	02/16/01 15:30
Sample ID	: 18609-4160	Date Analyzed:	02/16/01 18:52
Lab Samp ID	: B100-01	Dilution Factor:	1
Lab File ID	: I07B027023	Matrix :	SOIL
Ext Btch ID	: IPB036S	% Moisture :	9.5
Calib. Ref.	: I07B027019	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	11	3.8
Barium	42	1.1	.0442
Beryllium	.203J	.221	.011
Cadmium	ND	1.1	.221
Chromium	4.26	1.1	.431
Cobalt	1.81	1.1	.354
Copper	2.7	1.1	.74
Manganese	99.1	2.21	.663
Molybdenum	ND	2.21	.928
Nickel	3.58	2.21	.895
Silver	ND	2.21	.464
Vanadium	11.8	1.1	.398
Zinc	15.8	1.1	.398

RL: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

ent	: IT CORPORATION	Date Collected:	02/07/01
j	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
DG	: 01B100	Date Extracted:	02/16/01 15:30
emote ID:	18609-4160	Date Analyzed:	02/17/01 16:57
Samp ID:	B100-01	Dilution Factor:	1
File ID:	I31B047024	Matrix :	SOIL
xt Btch ID:	IPB036S	% Moisture :	9.5
alib. Ref.:	I31B047020	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
enic	1.68	1.1	.233
ead	1.5	1.1	.189
elenium	ND	1.1	.429
llium	ND	1.1	.603

L: Reporting Limit

METHOD 3050B/6010B
CAM METALS BY ICP

lient	: IT CORPORATION	Date Collected:	02/08/01
roject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
)G NO.	: 01B100	Date Extracted:	02/16/01 15:30
ample ID:	18609-4161	Date Analyzed:	02/16/01 18:57
ab Samp ID:	B100-02	Dilution Factor:	1
ab File ID:	I07B027024	Matrix :	SOIL
xt Btch ID:	IPB036S	% Moisture :	2.6
alib. Ref.:	I07B027019	Instrument ID :	EMAXT107

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
ntimony	ND	10.3	3.53
arium	26.4	1.03	.0411
eryllium	.12J	.205	.0103
admium	.406J	1.03	.205
romium	4.01	1.03	.4
obalt	1.23	1.03	.329
opper	1.84	1.03	.688
anganese	63.5	2.05	.616
olybdenum	1.11J	2.05	.862
ickel	2.88	2.05	.832
ilver	.552J	2.05	.431
anadium	7.97	1.03	.37
inc	8.94	1.03	.37

L: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

ent	: IT CORPORATION	Date Collected:	02/08/01
ct	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
SD	: 01B100	Date Extracted:	02/16/01 15:30
Sample	ID: 18609-4161	Date Analyzed:	02/17/01 17:02
Samp	ID: B100-02	Dilution Factor:	1
File	ID: I31B047025	Matrix	: SOIL
Btch	ID: IPB036S	% Moisture	: 2.6
Calib. Ref.:	I31B047020	Instrument ID	: EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
enic	.779J	1.03	.217
ead	.871J	1.03	.176
Selenium	ND	1.03	.398
llium	ND	1.03	.561

RL: Reporting Limit

METHOD 3050B/6010B
CAM METALS BY ICP

lient	: IT CORPORATION	Date Collected:	02/08/01
roject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
DG NO.	: 01B100	Date Extracted:	02/16/01 15:30
ample ID:	18609-4163	Date Analyzed:	02/16/01 19:06
ab Samp ID:	B100-04	Dilution Factor:	1
ab File ID:	I07B027026	Matrix :	SOIL
xt Btch ID:	IPB036S	% Moisture :	8.0
alib. Ref.:	I07B027019	Instrument ID :	EMAXTI07

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
ntimony	ND	10.9	3.74
arium	76	1.09	.0435
eryllium	.313	.217	.0109
admium	.593J	1.09	.217
hromium	8.46	1.09	.424
obalt	3.6	1.09	.348
opper	4.69	1.09	.728
anganese	168	2.17	.652
olybdenum	1.33J	2.17	.913
ickel	7	2.17	.88
ilver	ND	2.17	.457
anadium	20.4	1.09	.391
inc	26.4	1.09	.391

L: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

ent	: IT CORPORATION	Date Collected:	02/08/01
ject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
	: 01B100	Date Extracted:	02/16/01 15:30
Sam ID	: 18609-4163	Date Analyzed:	02/17/01 17:10
Samp ID	: B1D0-04	Dilution Factor:	1
File ID	: I31B047027	Matrix :	SOIL
t Btch ID	: IPB036S	% Moisture :	8.0
Calib. Ref.	: I31B047020	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
enic	2.04	1.09	.229
d	2.12	1.09	.186
Selenium	ND	1.09	.422
llium	ND	1.09	.593

Reporting Limit

METHOD 3050B/6010B
CAM METALS BY ICP

ient	: IT CORPORATION	Date Collected:	02/08/01
oject	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
G NO.	: 01B100	Date Extracted:	02/16/01 15:30
mple ID:	18609-4164	Date Analyzed:	02/16/01 19:11
b Samp ID:	B100-05	Dilution Factor:	1
b File ID:	I07B027027	Matrix :	SOIL
t Btch ID:	IPB036S	% Moisture :	11.8
lib. Ref.:	I07B027019	Instrument ID :	EMAXTI07

RAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
timony	ND	11.3	3.9
rium	124	1.13	.0454
ryllium	.395	.227	.0113
dmium	.61J	1.13	.227
romium	8.29	1.13	.442
balt	4.19	1.13	.363
pper	4.79	1.13	.76
nganese	200	2.27	.68
lybdenum	ND	2.27	.952
ckel	5.96	2.27	.918
lver	.716J	2.27	.476
nadium	23.7	1.13	.408
nc	34.8	1.13	.408

.: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

ent	: IT CORPORATION	: Date Collected:	02/08/01
ect	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
DG	: 01B100	Date Extracted:	02/16/01 15:30
amp ID	: 18609-4164	Date Analyzed:	02/17/01 17:14
Samp ID	: B100-05	Dilution Factor:	1
File ID	: I31B047028	Matrix :	SOIL
Btch ID	: IPB036S	% Moisture :	11.8
alib. Ref.:	I31B047020	Instrument ID :	EMAXTI31

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
enic	2.87	1.13	.239
d	2.26	1.13	.194
elenium	ND	1.13	.44
lium	.732J	1.13	.619

Reporting Limit

7009

METHOD 3050B/6010B
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	02/08/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
SDG NO.	: 01B100	Date Extracted:	02/16/01 15:30
Sample ID	: 18609-4165	Date Analyzed:	02/16/01 19:15
Lab Samp ID	: B100-06	Dilution Factor:	1
Lab File ID	: I07B027028	Matrix	: SOIL
Ext Btch ID	: IPB036S	% Moisture	: 1.3
Calib. Ref.	: I07B027019	Instrument ID	: EMAXT107

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10.1	3.49
Barium	28	1.01	.0405
Beryllium	.0866J	.203	.0101
Cadmium	ND	1.01	.203
Chromium	2.34	1.01	.395
Cobalt	1.39	1.01	.324
Copper	1.64	1.01	.679
Manganese	79.9	2.03	.608
Molybdenum	1.08J	2.03	.851
Nickel	1.8J	2.03	.821
Silver	.641J	2.03	.426
Vanadium	7.49	1.01	.365
Zinc	7.86	1.01	.365

RL: Reporting Limit

7010

METHOD 3050B/6010B
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	02/08/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/09/01
SDG	: 01B100	Date Extracted:	02/16/01 15:30
Sample ID	: 18609-4165	Date Analyzed:	02/17/01 17:19
Client Samp ID	: B100-06	Dilution Factor:	1
Lab File ID	: I31B047029	Matrix	: SOIL
Ext Btch ID	: IPB036S	% Moisture	: 1.3
Calib. Ref.	: I31B047020	Instrument ID	: EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	1.02	1.01	.214
Lead	.86J	1.01	.173
Selenium	ND	1.01	.393
Thallium	ND	1.01	.553

RL - Reporting Limit

METHOD 3050B/6010B
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/16/01
SDG NO.	: 01B100	Date Extracted:	02/16/01 15:30
Sample ID:	MBLK1S	Date Analyzed:	02/16/01 17:49
Lab Samp ID:	IPB036SB	Dilution Factor:	1
Lab File ID:	I07B027009	Matrix :	SOIL
Ext Btch ID:	IPB036S	% Moisture :	NA
Calib. Ref.:	I07B027007	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10	3.44
Barium	.0422J	1	.04
Beryllium	.0115J	.2	.01
Cadmium	ND	1	.2
Chromium	ND	1	.39
Cobalt	.424J	1	.32
Copper	ND	1	.67
Manganese	ND	2	.6
Molybdenum	1.09J	2	.84
Nickel	ND	2	.81
Silver	ND	2	.42
Vanadium	ND	1	.36
Zinc	ND	1	.36

RL: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/16/01
	: 018100	Date Extracted:	02/16/01 15:30
Sample ID	: MBLK1S	Date Analyzed:	02/17/01 15:56
Lab Samp ID	: IPB036SB	Dilution Factor:	1
Lab File ID	: I318047010	Matrix	: SOIL
Lab Btch ID	: IPB036S	% Moisture	: NA
Calib. Ref.:	I318047008	Instrument ID	: EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	1	.211
Cadmium	.184J	1	.171
Selenium	ND	1	.388
Thallium	ND	1	.546

RL : Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 01B100
METHOD: METHOD 3050B/6010B

MATRIX: SOIL % MOISTURE: NA
DILTN FACTR: 1 1 1
SAMPLE ID: MBLK1S
CONTROL NO.: IPB036SB IPB036SL IPB036SC
LAB FILE ID: I07B027009 I07B027010 I07B027011
DATIME EXTRCTD: 02/16/0115:30 02/16/0115:30 02/16/0115:30 DATE COLLECTED: NA
DATIME ANALYZD: 02/16/0117:49 02/16/0117:53 02/16/0117:58 DATE RECEIVED: 02/16/01
PREP. BATCH: IPB036S IPB036S IPB036S
CALIB. REF: I07B027007 I07B027007 I07B027007

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	500	506	101	500	487	97	4	80-120	20
Barium	.0422J	100	111	111	100	105	105	6	80-120	20
Beryllium	.0115J	100	104	104	100	98.9	99	5	80-120	20
Cadmium	ND	100	101	101	100	96.3	96	5	80-120	20
Chromium	ND	100	107	107	100	102	102	5	80-120	20
Cobalt	.424J	100	104	104	100	98.7	98	5	80-120	20
Copper	ND	100	105	105	100	99.5	100	5	80-120	20
Manganese	ND	100	102	102	100	96.7	97	5	80-120	20
Molybdenum	1.09J	100	111	110	100	105	104	5	80-120	20
Nickel	ND	100	103	103	100	98.1	98	5	80-120	20
Silver	ND	100	104	104	100	99.4	99	5	80-120	20
Vanadium	ND	100	105	105	100	99.1	99	5	80-120	20
Zinc	ND	100	104	104	100	98.7	99	5	80-120	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
LAB NO.: 01B100
METHOD: METHOD 3050B/6010B

MATRIX: SOIL % MOISTURE: NA
DILUTN FACTR: 1 1 1
SAMPLE ID: MBLK1S
CONTROL NO.: IPB036SB IPB036SL IPB036SC
LAB FILE ID: I31B047010 I31B047011 I31B047012
PREP TIME EXTRCTD: 02/16/0115:30 02/16/0115:30 02/16/0115:30 DATE COLLECTED: NA
ANALYSIS DATIME ANALYZD: 02/17/0115:56 02/17/0116:00 02/17/0116:04 DATE RECEIVED: 02/16/01
PREP. BATCH: IPB036S IPB036S IPB036S
CALIB. REF: I31B047008 I31B047008 I31B047008

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	100	106	106	100	101	101	4	80-120	20
Cadmium	.184J	100	106	106	100	101	101	4	80-120	20
Selenium	ND	100	105	105	100	100	100	5	80-120	20
Thallium	ND	100	111	111	100	106	106	4	80-120	20

METHOD 7471A
MERCURY BY COLD VAPOR

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 01B100

Matrix : SOIL
Instrument ID : TI023

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	HGB018SB	ND	1	NA	.1	.02	02/14/0111:14	02/13/0118:00	M01B015008	M01B015006	HGB018S	NA	02/13/01
LCS1S	HGB018SL	.867	1	NA	.1	.02	02/14/0111:16	02/13/0118:00	M01B015009	M01B015006	HGB018S	NA	02/13/01
LCD1S	HGB018SC	.874	1	NA	.1	.02	02/14/0111:19	02/13/0118:00	M01B015010	M01B015006	HGB018S	NA	02/13/01
18609-4160	B100-01	ND	1	9.5	.11	.0221	02/14/0111:54	02/13/0118:00	M01B015024	M01B015018	HGB018S	02/07/01	02/09/01
18609-4161	B100-02	ND	1	2.6	.103	.0205	02/14/0111:56	02/13/0118:00	M01B015025	M01B015018	HGB018S	02/08/01	02/09/01
18609-4163	B100-04	ND	1	8.0	.109	.0217	02/14/0111:58	02/13/0118:00	M01B015026	M01B015018	HGB018S	02/08/01	02/09/01
18609-4164	B100-05	ND	1	11.8	.113	.0227	02/14/0112:01	02/13/0118:00	M01B015027	M01B015018	HGB018S	02/08/01	02/09/01
18609-4165	B100-06	ND	1	1.3	.101	.0203	02/14/0112:03	02/13/0118:00	M01B015028	M01B015018	HGB018S	02/08/01	02/09/01

RL: Reporting Limit

mg/kg

7032

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 018100
METHOD: METHOD 7471A

MATRIX:	SOIL			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
CONTROL NO.:	HGB018SB	HGB018SL	HGB018SC		
LAB FILE ID:	M01B015008	M01B015009	M01B015010		
DATIME EXTRCTD:	02/13/0118:00	02/13/0118:00	02/13/0118:00	DATE COLLECTED:	NA
DATIME ANALYZD:	02/14/0111:14	02/14/0111:16	02/14/0111:19	DATE RECEIVED:	02/13/01
PREP. BATCH:	HGB018S	HGB018S	HGB018S		
CALIB. REF:	M01B015006	M01B015006	M01B015006		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Mercury	ND	.820	.867	106	.820	.874	107	1	77-120	25

7033

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 7 through February 8. 2001

LDC Report Date: March 8. 2001

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B100

Sample Identification

18609-4160
18609-4161
18609-4163
18609-4164
18609-4165
18609-4161MS
18609-4161MSD

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 7 through February 8, 2001

LDC Report Date: March 8, 2001

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B100

Sample Identification

18609-4160
18609-4161
18609-4163
18609-4164
18609-4165

Introduction

This data review covers 5 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro. DO #70

Collection Date: February 8, 2001

LDC Report Date: March 8, 2001

Matrix: Soil

Parameters: Volatiles

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B100

Sample Identification

18609-4160
18609-4161
18609-4162
18609-4163
18609-4164
18609-4165
18609-4166

Introduction

This data review covers 7 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were greater than or equal to 0.05 .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro, DO #70
Volatiles - Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Volatiles - Laboratory Blank Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 7 through February 8. 2001

LDC Report Date: March 8. 2001

Matrix: Soil

Parameters: Metals

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B100

Sample Identification

18609-4160
18609-4161
18609-4163
18609-4164
18609-4165

Introduction

This data review covers 5 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7000 for Metals. The metals analyzed were Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Barium Beryllium Cobalt Lead Molybdenum	0.0422 mg/Kg 0.0115 mg/Kg 0.424 mg/Kg 0.184 mg/Kg 1.09 mg/Kg	All samples in SDG 01B100
ICB/CCB	Barium Beryllium Cobalt Silver Molybdenum	1.26 ug/L 0.160 ug/L 3.41 ug/L 9.38 ug/L 10.9 ug/L	All samples in SDG 01B100

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
18609-4160	Cobalt	1.81 mg/Kg	1.81U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
18609-4161	Cobalt Lead Silver Molybdenum	1.23 mg/Kg 0.871 mg/Kg 0.552 mg/Kg 1.11 mg/Kg	1.23U mg/Kg 0.871U mg/Kg 0.552U mg/Kg 1.11U mg/Kg
18609-4163	Molybdenum	1.33 mg/Kg	1.33U mg/Kg
18609-4164	Silver	0.716 mg/Kg	0.716U mg/Kg
18609-4165	Cobalt Lead Silver Molybdenum	1.39 mg/Kg 0.86 mg/Kg 0.641 mg/Kg 1.08 mg/Kg	1.39U mg/Kg 0.86U mg/Kg 0.641U mg/Kg 1.08U mg/Kg

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VI. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro, DO #70
Metals - Data Qualification Summary - SDG 01B100

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Metals - Laboratory Blank Data Qualification Summary - SDG 01B100

SDG	Sample	Analyte	Modified Final Concentration	A or P
01B100	18609-4160	Cobalt	1.81U mg/Kg	A
01B100	18609-4161	Cobalt Lead Silver Molybdenum	1.23U mg/Kg 0.871U mg/Kg 0.552U mg/Kg 1.11U mg/Kg	A
01B100	18609-4163	Molybdenum	1.33U mg/Kg	A
01B100	18609-4164	Silver	0.716U mg/Kg	A
01B100	18609-4165	Cobalt Lead Silver Molybdenum	1.39U mg/Kg 0.86U mg/Kg 0.641U mg/Kg 1.08U mg/Kg	A

COMPLETED 2/24/01 2/27/01

the igroup

IT Corporation
2790 Mosside Blvd.
Monroeville, PA 15146-2792
(412)372-7701

CHAIN-OF-CUSTODY RECORD

APHO 5

PROJECT DATA MANAGER'S COPY

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FORM 0019 REV. 9-99

LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
V Gonzalez	949 660-7550	949-475-5433	01BISS	EMAX	Dwayne Ishida
PROJECT NAME: APHO-5	PROJECT LOCATION: MCAS El TORO	PROJECT NUMBER: 18609	LABORATORY PHONE: 310-618-8889	LABORATORY FAX: 310-618-0818	RECIPIENT NAME: IT CORP
PROJECT CONTACT: M. Gonzalez	PROJECT PHONE NUMBER: 949-451-1666	PROJECT FAX: 949-451-1672	LABORATORY ADDRESS: 630 Maple Ave		ADDRESS: 3347 Michelson Dr Ste 200
PROJECT ADDRESS: bldg 311 MCASEL TCO	CITY, STATE AND ZIP CODE: Santa Ana CA 92708	CLIENT: SWDIV	CITY, STATE AND ZIP CODE: Torrance, CA		CITY, STATE AND ZIP CODE: Irvine CA 92612
PROJECT MANAGER: D Rawal	PROJECT MANAGER'S PHONE: 949-660-7576	PROJECT MANAGER'S FAX: 949-474-8039			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: TPH-gas	TPH-diesel	TPH-JPC	8260 Full Suite	Title 22 metals	Comments
	18609-4212 A	Matr	2/14/01	0800	HCl	1	C	5day	X	X	X	X	X	
	18609-4213 A	Soil	2/14/01	0807	ICE	1	C	5day	X	X	X	X	X	
	18609-4214 A	Soil	2/14/01	0850	ICE	1	C	5day	X	X	X	X	X	
	18609-4215A	Soil	2/14/01	0930	ICE	1	C	5day	X	X	X	X	X	
	~~18609-4216~~	Soil	2/14/01	12	MS	1	C		X	X	X	X	X	

SAMPLES COLLECTED BY: MB

RELINQUISHED BY:

COURIER AND AIR BILL NUMBER:

RECEIVED BY:

DATE:

TIME:

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE'S CONDITION UPON RECEIPT:

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Manilla - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

APHO 5-067

Sample Point Location	Sample Type G	C	F	QC
(1) TRIP BLANK				
(2) APHO 5-067 surface				
(3) APHO 5-067 @ 5'				
(4) APHO 5-067 @ 10' 9'				
(5) ~~APHO 5-067 @ 15'~~ MS				

Comments: Due 2/23/01 recd 2/27/01

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

EMAX
LABORATORIES, INC.
630 Maple Ave.
Torrance, CA 90503
Telephone: (310) 618-8889
Fax: (310) 618-0818

Date: 03-05-2001
EMAX Batch No.: 01B155

Attn: Dwayne Ishida

IT Corporation
3347 Michelson Dr. # 200
Irvine CA 92612

Subject: Laboratory Report
Project: MCAS El Toro/18609/D.O. 70

Enclosed is the Laboratory report for samples received on 02/15/01. The data reported include :

Sample ID	Control #	Col Date	Matrix	Analysis
18609-4212	B155-01	02/15/01	WATER	TPH GASOLINE
				TPH DIESEL (Cancelled)
				TPH JP-5 (Cancelled)
				VOLATILE ORGANICS BY GC/MS
				MERCURY (Cancelled)
				METALS CAM (Cancelled)
18609-4213	B155-02	02/15/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				TPH JP-5
				MERCURY
				METALS CAM
18609-4214	B155-03	02/15/01	SOIL	TPH DIESEL
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				MERCURY
				METALS CAM
				TPH JP-5
18609-4215	B155-04	02/15/01	SOIL	TPH DIESEL

Sample ID	Control #	Col Date	Matrix	Analysis
				TPH GASOLINE
				VOLATILE ORGANICS BY GC/MS
				TPH JP-5
				MERCURY
				METALS CAM

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Kam Pang

Kam Y. Pang, Ph.D.
Laboratory Director

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 02/15/01
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 02/15/01
Batch No. : 01B155	Date Extracted: 02/19/01 13:30
Sample ID: 18609-4213A	Date Analyzed: 02/22/01 20:57
Lab Samp ID: B155-02	Dilution Factor: 1
Lab File ID: TB05070A	Matrix : SOIL
Ext Btch ID: DSB028S	% Moisture : 9.2
Calib. Ref.: TB05062A	Instrument ID : GCTO08

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	11	3.8
JP5	ND	11	4.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	113	60-140
HEXACOSANE	103	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
Batch No.	: 01B155	Date Extracted:	02/19/01 13:30
Sample ID:	18609-4214A	Date Analyzed:	02/22/01 21:45
Lab Samp ID:	B155-03	Dilution Factor:	1
Lab File ID:	TB05071A	Matrix :	SOIL
Ext Btch ID:	DSB028S	% Moisture :	21.8
Calib. Ref.:	TB05062A	Instrument ID :	GCT008

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	13	4.4
JP5	ND	13	4.8

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	111	60-140
HEXACOSANE	102	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : IT CORPORATION	Date Collected: 02/15/01
Project : MCAS EL TORO/18609/D.O. 70	Date Received: 02/15/01
Batch No. : 01B155	Date Extracted: 02/19/01 13:30
Sample ID: 18609-4215A	Date Analyzed: 02/22/01 22:34
Lab Samp ID: B155-04	Dilution Factor: 1
Lab File ID: TB05072A	Matrix : SOIL
Ext Btch ID: DSB028S	% Moisture : 7.0
Calib. Ref.: TB05062A	Instrument ID : GCT008

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	11	3.7
JP5	ND	11	4

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	110	60-140
HEXACOSANE	104	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

METHOD M8015
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/19/01
Batch No.	: 018155	Date Extracted:	02/19/01 13:30
Sample ID:	MBLK1S	Date Analyzed:	02/22/01 18:32
Lab Samp ID:	DSB028SB	Dilution Factor:	1
Lab File ID:	TB05067A	Matrix :	SOIL
Ext Btch ID:	DSB028S	% Moisture :	NA
Calib. Ref.:	TB05062A	Instrument ID :	GCT008

PARAMETERS	RESULTS (mg/kg)	PRL (mg/kg)	MDL (mg/kg)
DIESEL	ND	10	3.5
JP5	ND	10	3.7

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
BROMOBENZENE	109	60-140
HEXACOSANE	102	55-150

QC LIMIT : (SOIL) 60-140 55-150
QC LIMIT : (WATER) 65-135 60-145
SURR1 : Bromobenzene
SURR2 : Hexacosane
RL : Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/78609/D.O. 70
BATCH NO.: 01B155
METHOD: METHOD M8015

MATRIX: SOIL % MOISTURE: NA

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1S				
LAB SAMP ID:	DSB028SB	DSB028SL	DSB028SC		
LAB FILE ID:	TB05067A	TB05068A	TB05069A		
DATE EXTRACTED:	02/19/0113:30	02/19/0113:30	02/19/0113:30	DATE COLLECTED:	NA
DATE ANALYZED:	02/22/0118:32	02/22/0119:20	02/22/0120:09	DATE RECEIVED:	02/19/01
PREP. BATCH:	DSB028S	DSB028S	DSB028S		
CALIB. REF:	TB05062A	TB05062A	TB05062A		

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Diesel	ND	500	499	100	500	471	94	6	51-153	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromobenzene	100	111	111	100	122	122	60-140
Hexacosane	25	25.8	103	25	25.3	101	55-150

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

nt : IT CORPORATION
ect : MCAS EL TORO/18609/D.O. 70
n No. : 01B155

Matrix : WATER
Instrument ID : GCT039

LE ID	EMAX SAMPLE ID	RESULTS (mg/L)	SURR (%)	DLF	MOIST	PRL (mg/L)	MDL (mg/L)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
1W	VAB3639B	ND	90	1	NA	.1	.012	02/21/0106:22	02/21/0106:22	EB14032A	EB14025A	VAB3639	NA	02/21/01
W	VAB3639L	.511	110	1	NA	.1	.012	02/21/0105:15	02/21/0105:15	EB14030A	EB14025A	VAB3639	NA	02/21/01
W	VAB3639C	.556	111	1	NA	.1	.012	02/21/0105:48	02/21/0105:48	EB14031A	EB14025A	VAB3639	NA	02/21/01
9-4212 A	B155-01	ND	92	1	NA	.1	.012	02/21/0115:49	02/21/0115:49	EB14049A	EB14048A	VAB3639	02/15/01	02/15/01

: Bromofluorobenzene (W)65-135 (S)60-140
: Reporting Limit
: Value exceed the upper level of the initial calibration
: Value from dilution

4004

METHOD 5030B/M8015
TOTAL PETROLEUM HYDROCARBONS BY PURGE & TRAP

ient : IT CORPORATION
oject : MCAS EL TORO/18609/D.O. 70
tch No. : 01B155

Matrix : SOIL
Instrument ID : GCT039

MPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	SURR (%)	DLF	MOIST	PRL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
LK1S	VAB0255B	ND	81	1	NA	1	.02	02/20/0119:54	02/20/0119:54	UB07005A	UB07004A	VAB0255	NA	02/20/01
S1S	VAB0255L	3.14	112	1	NA	1	.02	02/20/0120:29	02/20/0120:29	UB07006A	UB07004A	VAB0255	NA	02/20/01
D1S	VAB0255C	2.86	115	1	NA	1	.02	02/20/0121:04	02/20/0121:04	UB07007A	UB07004A	VAB0255	NA	02/20/01
609-4213 A	B155-02	ND	66	1	9.2	1.1	.022	02/21/0102:49	02/21/0102:49	UB07017A	UB07016A	VAB0255	02/15/01	02/15/01
609-4214 A	B155-03	ND	77	1	21.8	1.28	.0256	02/21/0103:24	02/21/0103:24	UB07018A	UB07016A	VAB0255	02/15/01	02/15/01
609-4215 A	B155-04	ND	90	1	7.0	1.08	.0215	02/21/0103:58	02/21/0103:58	UB07019A	UB07016A	VAB0255	02/15/01	02/15/01

IRR : Bromofluorobenzene (W)65-135 (S)60-140
:L : Reporting Limit
: Value exceed the upper level of the initial calibration
: Value from dilution

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

( ): IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 018155
METHOD: METHOD 5030B/M8015

MATRIX: WATER % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1W
LAB SAMP ID: VAB3639B VAB3639L VAB3639C
LAB FILE ID: EB14032A EB14030A EB14031A
DATE EXTRACTED: 02/21/0106:22 02/21/0105:15 02/21/0105:48 DATE COLLECTED: NA
DATE ANALYZED: 02/21/0106:22 02/21/0105:15 02/21/0105:48 DATE RECEIVED: 02/21/01
PREP. BATCH: VAB3639 VAB3639 VAB3639
CALIB. REF: EB14025A EB14025A EB14025A

ACCESSION:

PARAMETER	BLNK RSLT (mg/L)	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	.55	.511	93	.55	.556	101	9	67-136	30

SURROGATE PARAMETER	SPIKE AMT (mg/L)	BS RSLT (mg/L)	BS % REC	SPIKE AMT (mg/L)	BSD RSLT (mg/L)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.02	.022	110	.02	.0223	111	65-135

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 018155
METHOD: METHOD 5030B/M8015

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: VAB0255B VAB0255L VAB0255C
LAB FILE ID: UB07005A UB07006A UB07007A
DATE EXTRACTED: 02/20/0119:54 02/20/0120:29 02/20/0121:04 DATE COLLECTED: NA
DATE ANALYZED: 02/20/0119:54 02/20/0120:29 02/20/0121:04 DATE RECEIVED: 02/20/01
PREP. BATCH: VAB0255 VAB0255 VAB0255
CALIB. REF: UB07004A UB07004A UB07004A

ACCESSION:

PARAMETER	BLNK RSLT (mg/kg)	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Gasoline	ND	2.75	3.14	114	2.75	2.86	104	9	57-146	50

SURROGATE PARAMETER	SPIKE AMT (mg/kg)	BS RSLT (mg/kg)	BS % REC	SPIKE AMT (mg/kg)	BSD RSLT (mg/kg)	BSD % REC	QC LIMIT (%)
Bromofluorobenzene	.1	.112	112	.1	.115	115	60-140

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

nt : IT CORPORATION	Date Collected: 02/15/01
ect : MCAS EL TORO/18609/D.O. 70	Date Received: 02/15/01
Batch No. : 018155	Date Extracted: 02/22/01 04:41
Sample ID: 18609-4212 A	Date Analyzed: 02/22/01 04:41
Lab Samp ID: B155-01	Dilution Factor: 1
Lab File ID: RBW619	Matrix : WATER
Ext Btch ID: VOB5806	% Moisture : NA
Calib. Ref.: RBW614	Instrument ID : T-006

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	106	62-139
BROMOFLUOROBENZENE	112	75-125
TOLUENE-D8	101	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
Batch No.	: 018155	Date Extracted:	02/22/01 19:33
Sample ID:	18609-4213A	Date Analyzed:	02/22/01 19:33
Lab Samp ID:	B155-02	Dilution Factor:	1
Lab File ID:	RBW643	Matrix :	SOIL
Ext Btch ID:	VOB6006	% Moisture :	9.2
Calib. Ref.:	RBW636	Instrument ID :	T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.5	.37
1,1,2,2-TETRACHLOROETHANE	ND	5.5	.81
1,1,2-TRICHLOROETHANE	ND	5.5	.72
1,1-DICHLOROETHANE	ND	5.5	.58
1,1-DICHLOROETHENE	ND	5.5	.53
1,2-DICHLOROETHANE	ND	5.5	1.1
1,2-DICHLOROPROPANE	ND	5.5	.6
2-BUTANONE	ND	55	1.7
2-CHLOROETHYLVINYLETHER	ND	55	.81
2-HEXANONE	ND	55	1.6
4-METHYL-2-PENTANONE	ND	55	3.1
ACETONE	ND	55	3.2
BENZENE	ND	5.5	.58
BROMODICHLOROMETHANE	ND	5.5	.47
BROMOFORM	ND	5.5	.65
BROMOMETHANE	ND	5.5	3.9
CARBON DISULFIDE	ND	11	.37
CARBON TETRACHLORIDE	ND	5.5	.59
CHLOROBENZENE	ND	5.5	.51
CHLOROETHANE	ND	5.5	1
CHLOROFORM	ND	5.5	.58
CHLOROMETHANE	ND	5.5	.58
CIS-1,2-DICHLOROETHENE	ND	5.5	.51
CIS-1,3-DICHLOROPROPENE	ND	5.5	.44
DIBROMOCHLOROMETHANE	ND	5.5	.4
ETHYLBENZENE	ND	5.5	.51
MTBE	ND	11	.83
METHYLENE CHLORIDE	ND	11	3.3
STYRENE	ND	5.5	.38
TETRACHLOROETHENE	ND	5.5	.37
TOLUENE	ND	5.5	.63
TRANS-1,2-DICHLOROETHENE	ND	5.5	.52
TRANS-1,3-DICHLOROPROPENE	ND	5.5	.5
TRICHLOROETHENE	ND	5.5	.67
VINYL ACETATE	ND	55	.91
VINYL CHLORIDE	ND	5.5	.64
XYLENES	ND	5.5	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	91	52-149
BROMOFLUOROBENZENE	126	65-135
TOLUENE-D8	116	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
Batch No.	: 01B155	Date Extracted:	02/22/01 20:08
Sample ID:	18609-4214A	Date Analyzed:	02/22/01 20:08
Lab Samp ID:	B155-03	Dilution Factor:	1
Lab File ID:	RBW644	Matrix :	SOIL
Ext Btch ID:	V086006	% Moisture :	21.8
Calib. Ref.:	RBW636	Instrument ID :	T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	6.4	.43
1,1,2,2-TETRACHLOROETHANE	ND	6.4	.94
1,1,2-TRICHLOROETHANE	ND	6.4	.84
1,1-DICHLOROETHANE	ND	6.4	.67
1,1-DICHLOROETHENE	ND	6.4	.61
1,2-DICHLOROETHANE	ND	6.4	1.3
1,2-DICHLOROPROPANE	ND	6.4	.7
2-BUTANONE	ND	64	1.9
2-CHLOROETHYLVINYLETHER	ND	64	.95
2-HEXANONE	ND	64	1.9
4-METHYL-2-PENTANONE	ND	64	3.6
ACETONE	ND	64	3.7
BENZENE	ND	6.4	.67
BROMODICHLOROMETHANE	ND	6.4	.54
BROMOFORM	ND	6.4	.76
BROMOMETHANE	ND	6.4	4.6
CARBON DISULFIDE	ND	13	.43
CARBON TETRACHLORIDE	ND	6.4	.69
CHLOROBENZENE	ND	6.4	.59
CHLOROETHANE	ND	6.4	1.2
CHLOROFORM	ND	6.4	.67
CHLOROMETHANE	ND	6.4	.67
CIS-1,2-DICHLOROETHENE	ND	6.4	.59
CIS-1,3-DICHLOROPROPENE	ND	6.4	.51
DIBROMOCHLOROMETHANE	ND	6.4	.47
ETHYLBENZENE	ND	6.4	.59
MTBE	ND	13	.97
METHYLENE CHLORIDE	ND	13	3.9
STYRENE	ND	6.4	.44
TETRACHLOROETHENE	ND	6.4	.43
TOLUENE	ND	6.4	.74
TRANS-1,2-DICHLOROETHENE	ND	6.4	.61
TRANS-1,3-DICHLOROPROPENE	ND	6.4	.58
TRICHLOROETHENE	ND	6.4	.78
VINYL ACETATE	ND	64	1.1
VINYL CHLORIDE	ND	6.4	.75
XYLENES	ND	6.4	1.5

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	113	52-149
BROMOFLUOROBENZENE	118	65-135
TOLUENE-D8	105	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client : IT CORPORATION	Date Collected: 02/15/01
Project : MCAS EL TORO/18609/P.O. 70	Date Received: 02/15/01
Batch No. : 01B155	Date Extracted: 02/22/01 20:43
Sample ID: 18609-4215A	Date Analyzed: 02/22/01 20:43
Lab Samp ID: B155-04	Dilution Factor: 1
Lab File ID: RBW645	Matrix : SOIL
Ext Btch ID: VOB6006	% Moisture : 7.0
Calib. Ref.: RBW636	Instrument ID : T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5.4	.37
1,1,2,2-TETRACHLOROETHANE	ND	5.4	.79
1,1,2-TRICHLOROETHANE	ND	5.4	.71
1,1-DICHLOROETHANE	ND	5.4	.56
1,1-DICHLOROETHENE	ND	5.4	.52
1,2-DICHLOROETHANE	ND	5.4	1.1
1,2-DICHLOROPROPANE	ND	5.4	.59
2-BUTANONE	ND	54	1.6
2-CHLOROETHYLVINYLETHER	ND	54	.8
2-HEXANONE	ND	54	1.6
4-METHYL-2-PENTANONE	ND	54	3
ACETONE	ND	54	3.1
BENZENE	ND	5.4	.57
BROMODICHLOROMETHANE	ND	5.4	.45
BROMOFORM	ND	5.4	.64
BROMOMETHANE	ND	5.4	3.9
CARBON DISULFIDE	ND	11	.36
CARBON TETRACHLORIDE	ND	5.4	.58
CHLOROBENZENE	ND	5.4	.5
CHLOROETHANE	ND	5.4	.99
CHLOROFORM	ND	5.4	.56
CHLOROMETHANE	ND	5.4	.57
CIS-1,2-DICHLOROETHENE	ND	5.4	.49
CIS-1,3-DICHLOROPROPENE	ND	5.4	.43
DIBROMOCHLOROMETHANE	ND	5.4	.39
ETHYLBENZENE	ND	5.4	.49
MTBE	ND	11	.81
METHYLENE CHLORIDE	ND	11	3.2
STYRENE	ND	5.4	.37
TETRACHLOROETHENE	ND	5.4	.36
TOLUENE	ND	5.4	.62
TRANS-1,2-DICHLOROETHENE	ND	5.4	.51
TRANS-1,3-DICHLOROPROPENE	ND	5.4	.48
TRICHLOROETHENE	ND	5.4	.66
VINYL ACETATE	ND	54	.89
VINYL CHLORIDE	ND	5.4	.63
XYLENES	ND	5.4	1.2

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	114	52-149
BROMOFLUOROBENZENE	119	65-135
TOLUENE-D8	110	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/22/01
Batch No.	: 018155	Date Extracted:	02/22/01 03:32
Sample ID:	MBLK1W	Date Analyzed:	02/22/01 03:32
Lab Samp ID:	V085806B	Dilution Factor:	1
Lab File ID:	RBW617	Matrix :	WATER
Ext Btch ID:	V085806	% Moisture :	NA
Calib. Ref.:	RBW614	Instrument ID :	T-006

PARAMETERS	RESULTS (ug/L)	PRL (ug/L)	MDL (ug/L)
1,1,1-TRICHLOROETHANE	ND	5	.91
1,1,2,2-TETRACHLOROETHANE	ND	5	1.1
1,1,2-TRICHLOROETHANE	ND	5	.83
1,1-DICHLOROETHANE	ND	5	.65
1,1-DICHLOROETHENE	ND	5	.86
1,2-DICHLOROETHANE	ND	5	.95
1,2-DICHLOROPROPANE	ND	5	.73
2-BUTANONE	ND	50	6.7
2-CHLOROETHYLVINYLETHER	ND	50	1.3
2-HEXANONE	ND	50	5.6
4-METHYL-2-PENTANONE	ND	50	3.6
ACETONE	ND	50	9.6
BENZENE	ND	5	.77
BROMODICHLOROMETHANE	ND	5	.82
BROMOFORM	ND	5	.74
BROMOMETHANE	ND	5	1.9
CARBON DISULFIDE	ND	5	.61
CARBON TETRACHLORIDE	ND	5	.83
CHLOROBENZENE	ND	5	1.1
CHLOROETHANE	ND	5	1.7
CHLOROFORM	ND	5	.67
CHLOROMETHANE	ND	5	.67
CIS-1,2-DICHLOROETHENE	ND	5	.79
CIS-1,3-DICHLOROPROPENE	ND	5	.79
DIBROMOCHLOROMETHANE	ND	5	.71
ETHYLBENZENE	ND	5	1
MTBE	ND	10	.77
METHYLENE CHLORIDE	ND	5	1.4
STYRENE	ND	5	.87
TETRACHLOROETHENE	ND	5	1.1
TOLUENE	ND	5	.99
TRANS-1,2-DICHLOROETHENE	ND	5	.73
TRANS-1,3-DICHLOROPROPENE	ND	5	.82
TRICHLOROETHENE	ND	5	.89
VINYL ACETATE	ND	50	1.4
VINYL CHLORIDE	ND	5	2.5
XYLENES	ND	5	3.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	126	62-139
BROMOFLUOROBENZENE	107	75-125
TOLUENE-D8	98	75-125

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/0970
BATCH NO.: 01B155
METHOD: METHOD 5030A/8260A

MATRIX: WATER % MOISTURE: NA

DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	VOB5806B	VOB5806L	VOB5806C		
LAB FILE ID:	RBW617	RBW615	RBW616		
DATE EXTRACTED:	02/22/0103:32	02/22/0102:22	02/22/0102:57	DATE COLLECTED:	NA
DATE ANALYZED:	02/22/0103:32	02/22/0102:22	02/22/0102:57	DATE RECEIVED:	02/22/01
PREP. BATCH:	VOB5806	VOB5806	VOB5806		
CALIB. REF:	RBW614	RBW614	RBW614		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	21.6	108	20	18.7	94	14	75-125	20
Benzene	ND	20	20.9	105	20	19.9	99	5	75-125	20
Chlorobenzene	ND	20	20.3	102	20	20.4	102	0	75-125	20
Toluene	ND	20	21.6	108	20	20.4	102	6	74-125	20
Trichloroethene	ND	20	19.1	96	20	18.3	91	4	71-125	20

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	47.9	96	50	52.2	104	62-139
Bromofluorobenzene	50	58.3	117	50	55.1	110	75-125
Toluene-d8	50	53.6	107	50	51.3	103	75-125

METHOD 5030A/8260A
VOLATILE ORGANICS BY GC/MS

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/22/01
Batch No.	: 01B155	Date Extracted:	02/22/01 17:14
Sample ID	: MBLK1S	Date Analyzed:	02/22/01 17:14
Lab Samp ID	: V0B6006B	Dilution Factor:	1
Lab File ID	: RBW639	Matrix :	SOIL
Ext Btch ID	: V0B6006	% Moisture :	NA
Calib. Ref.:	RBW636	Instrument ID :	T-006

PARAMETERS	RESULTS (ug/kg)	PRL (ug/kg)	MDL (ug/kg)
1,1,1-TRICHLOROETHANE	ND	5	.34
1,1,2,2-TETRACHLOROETHANE	ND	5	.74
1,1,2-TRICHLOROETHANE	ND	5	.66
1,1-DICHLOROETHANE	ND	5	.52
1,1-DICHLOROETHENE	ND	5	.48
1,2-DICHLOROETHANE	ND	5	.99
1,2-DICHLOROPROPANE	ND	5	.55
2-BUTANONE	ND	50	1.5
2-CHLOROETHYLVINYLETHER	ND	50	.74
2-HEXANONE	ND	50	1.5
4-METHYL-2-PENTANONE	ND	50	2.8
ACETONE	ND	50	2.9
BENZENE	ND	5	.53
BROMODICHLOROMETHANE	ND	5	.42
BROMOFORM	ND	5	.59
BROMOMETHANE	ND	5	3.6
CARBON DISULFIDE	ND	10	.33
CARBON TETRACHLORIDE	ND	5	.54
CHLOROBENZENE	ND	5	.46
CHLOROETHANE	ND	5	.92
CHLOROFORM	ND	5	.52
CHLOROMETHANE	ND	5	.53
CIS-1,2-DICHLOROETHENE	ND	5	.46
CIS-1,3-DICHLOROPROPENE	ND	5	.4
DIBROMOCHLOROMETHANE	ND	5	.37
ETHYLBENZENE	ND	5	.46
MTBE	ND	10	.76
METHYLENE CHLORIDE	ND	10	3
STYRENE	ND	5	.34
TETRACHLOROETHENE	ND	5	.34
TOLUENE	ND	5	.58
TRANS-1,2-DICHLOROETHENE	ND	5	.47
TRANS-1,3-DICHLOROPROPENE	ND	5	.45
TRICHLOROETHENE	ND	5	.61
VINYL ACETATE	ND	50	.83
VINYL CHLORIDE	ND	5	.58
XYLENES	ND	5	1.1

SURROGATE PARAMETERS	% RECOVERY	QC LIMIT
1,2-DICHLOROETHANE-D4	109	52-149
BROMOFLUOROBENZENE	113	65-135
TOLUENE-D8	100	65-135

PRL: Project Reporting Limit
* : Out side of QC Limit
J : An estimated value between PRL and MDL
E : Value exceed the upper level of the initial calibration
B : Found in the associated blank
D : Value from dilution analysis

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
BATCH NO.: 018155
METHOD: METHOD 5030A/8260A

MATRIX: SOIL % MOISTURE: NA
DILUTION FACTOR: 1 1 1
SAMPLE ID: MBLK1S
LAB SAMP ID: V0B6006B V0B6006L V0B6006C
LAB FILE ID: RBW639 RBW637 RBW638
DATE EXTRACTED: 02/22/0117:14 02/22/0116:04 02/22/0116:39 DATE COLLECTED: NA
DATE ANALYZED: 02/22/0117:14 02/22/0116:04 02/22/0116:39 DATE RECEIVED: 02/22/01
PREP. BATCH: V0B6006 V0B6006 V0B6006
CALIB. REF: RBW636 RBW636 RBW636

ACCESSION:

PARAMETER	BLNK RSLT (ug/kg)	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
1,1-Dichloroethene	ND	20	20.2	101	20	19.5	97	3	65-135	30
Benzene	ND	20	21	105	20	20.3	101	3	65-135	30
Chlorobenzene	ND	20	21.5	107	20	21.5	108	0	65-135	30
Toluene	ND	20	22	110	20	21.4	107	3	64-135	30
Trichloroethene	ND	20	19.3	96	20	18.3	92	5	61-135	30

SURROGATE PARAMETER	SPIKE AMT (ug/kg)	BS RSLT (ug/kg)	BS % REC	SPIKE AMT (ug/kg)	BSD RSLT (ug/kg)	BSD % REC	QC LIMIT (%)
1,2-Dichlorethane-d4	50	49	98	50	51.3	103	52-149
Bromofluorobenzene	50	56.4	113	50	55.4	111	65-135
Toluene-d8	50	51.8	104	50	50.7	101	65-135

2012

METHOD 3050B/6010B
CAM METALS BY ICP

t	: IT CORPORATION	Date Collected:	02/15/01
ct	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
DG NO.	: 01B155	Date Extracted:	02/17/01 13:00
ample ID:	18609-4213A	Date Analyzed:	02/19/01 14:21
Lab Samp ID:	B155-02	Dilution Factor:	1
Lab File ID:	I07B028025	Matrix :	SOIL
xt Btch ID:	IP8037S	% Moisture :	9.2
alib. Ref.:	I07B028019	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	11	3.79
arium	67.1	1.1	.0441
eryllium	.327	.22	.011
admium	.544J	1.1	.22
Chromium	6.7	1.1	.43
obalt	3.97	1.1	.352
opper	4.74	1.1	.738
anganese	251	2.2	.661
Molybdenum	.953J	2.2	.925
ickel	5.79	2.2	.892
ilver	ND	2.2	.463
anadium	17.4	1.1	.396
Zinc	26.5	1.1	.396

RL: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/18609/P.O. 70	Date Received:	02/15/01
SDG NO.	: 01B155	Date Extracted:	02/17/01 13:00
Sample ID:	18609-4213A	Date Analyzed:	02/19/01 20:13
Lab Samp ID:	B155-02	Dilution Factor:	1
Lab File ID:	I31B050023	Matrix :	SOIL
Ext Btch ID:	IP8037S	% Moisture :	9.2
Calib. Ref.:	I31B050018	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	1.74	1.1	.232
Lead	9.58	1.1	.188
Selenium	ND	1.1	.427
Thallium	ND	1.1	.601

RL: Reporting Limit

7003

METHOD 3050B/6010B
CAM METALS BY ICP

t	: IT CORPORATION	Date Collected:	02/15/01
t	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
DG NO.	: 01B155	Date Extracted:	02/17/01 13:00
ample ID:	18609-4214A	Date Analyzed:	02/19/01 14:25
ab Samp ID:	B155-03	Dilution Factor:	1
Lab File ID:	I07B028026	Matrix :	SOIL
xt Btch ID:	IPB037S	% Moisture :	21.8
alib. Ref.:	I07B028019	Instrument ID :	EMAXTI07

ARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	12.8	4.4
Barium	217	1.28	.0512
eryllium	.901	.256	.0128
admium	.348J	1.28	.256
Chromium	14.7	1.28	.499
Cobalt	7.45	1.28	.409
opper	8.31	1.28	.857
anganese	255	2.56	.767
Molybdenum	ND	2.56	1.07
Nickel	8.97	2.56	1.04
ilver	ND	2.56	.537
anadium	37.9	1.28	.46
inc	56.3	1.28	.46

L: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/186097	Date Received:	02/15/01
SDG NO.	: 01B155	Date Extracted:	02/17/01 13:00
Sample ID:	18609-4214A	Date Analyzed:	02/19/01 20:17
Lab Samp ID:	B155-03	Dilution Factor:	1
Lab File ID:	I31B050024	Matrix :	SOIL
Ext Btch ID:	IPB037S	% Moisture :	21.8
Calib. Ref.:	I31B050018	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	4.81	1.28	.27
Lead	10.1	1.28	.219
Selenium	ND	1.28	.496
Thallium	.94J	1.28	.698

RL: Reporting Limit

METHOD 3050B/6010B
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
SDG NO.	: 018155	Date Extracted:	02/17/01 13:00
Sample ID:	18609-4215A	Date Analyzed:	02/19/01 14:36
Lab Samp ID:	B155-04	Dilution Factor:	1
Lab File ID:	I078028028	Matrix :	SOIL
Ext Btch ID:	IPB037S	% Moisture :	7.0
Calib. Ref.:	I078028019	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10.8	3.7
Barium	48.1	1.08	.043
Beryllium	.188J	.215	.0108
Cadmium	ND	1.08	.215
Chromium	4.06	1.08	.419
Cobalt	2.16	1.08	.344
Copper	1.97	1.08	.72
Manganese	101	2.15	.645
Molybdenum	ND	2.15	.903
Nickel	3.86	2.15	.871
Silver	ND	2.15	.452
Vanadium	11.9	1.08	.387
Zinc	14.6	1.08	.387

RL: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	02/15/01
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/15/01
SDG NO.	: 01B155	Date Extracted:	02/17/01 13:00
Sample ID:	18609-4215A	Date Analyzed:	02/19/01 20:25
Lab Samp ID:	B155-04	Dilution Factor:	1
Lab File ID:	I31B050026	Matrix :	SOIL
Ext Btch ID:	IPB037S	% Moisture :	7.0
Calib. Ref.:	I31B050018	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	1.38	1.08	.227
Lead	4.21	1.08	.184
Selenium	ND	1.08	.417
Thallium	ND	1.08	.587

RL: Reporting Limit

METHOD 3050B/6010B
CAM METALS BY ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/17/01
SDG NO.	: 01B155	Date Extracted:	02/17/01 13:00
Sample ID	: MBLK1S	Date Analyzed:	02/19/01 14:08
Lab Samp ID	: IPB037SB	Dilution Factor:	1
Lab File ID	: I07B028022	Matrix :	SOIL
Ext Btch ID	: IPB037S	% Moisture :	NA
Calib. Ref.	: I07B028019	Instrument ID :	EMAXTI07

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Antimony	ND	10	3.44
Barium	ND	1	.04
Beryllium	ND	.2	.01
Cadmium	ND	1	.2
Chromium	ND	1	.39
Cobalt	ND	1	.32
Copper	ND	1	.67
Manganese	ND	2	.6
Molybdenum	ND	2	.84
Nickel	ND	2	.81
Silver	ND	2	.42
Vanadium	ND	1	.36
Zinc	ND	1	.36

RL: Reporting Limit

METHOD 3050B/6010B
METALS BY TRACE-ICP

Client	: IT CORPORATION	Date Collected:	NA
Project	: MCAS EL TORO/18609/D.O. 70	Date Received:	02/17/01
SDG NO.	: 01B155	Date Extracted:	02/17/01 13:00
Sample ID:	MBLK1S	Date Analyzed:	02/19/01 20:01
Lab Samp ID:	IPB037SB	Dilution Factor:	1
Lab File ID:	I31B050020	Matrix :	SOIL
Ext Btch ID:	IPB037S	% Moisture :	NA
Calib. Ref.:	I31B050018	Instrument ID :	EMAXTI31

PARAMETERS	RESULTS (mg/kg)	RL (mg/kg)	MDL (mg/kg)
Arsenic	ND	1	.211
Lead	.228J	1	.171
Selenium	ND	1	.388
Thallium	ND	1	.546

RL: Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
D.O.: 018155
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
CONTROL NO.:	IPB037SB	IPB037SL	IPB037SC		
LAB FILE ID:	I078028022	I078028023	I078028024		
DATIME EXTRCTD:	02/17/0113:00	02/17/0113:00	02/17/0113:00	DATE COLLECTED:	NA
DATIME ANALYZD:	02/19/0114:08	02/19/0114:13	02/19/0114:17	DATE RECEIVED:	02/17/01
PREP. BATCH:	IPB037S	IPB037S	IPB037S		
CALIB. REF:	I078028019	I078028019	I078028019		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Antimony	ND	500	487	97	500	452	90	7	80-120	20
Barium	ND	100	107	107	100	98.9	99	8	80-120	20
Beryllium	ND	100	99.6	100	100	92.5	92	7	80-120	20
Cadmium	ND	100	96.9	97	100	90.4	90	7	80-120	20
Chromium	ND	100	104	104	100	97.1	97	7	80-120	20
Cobalt	ND	100	100	100	100	94.1	94	6	80-120	20
Copper	ND	100	100	100	100	93	93	7	80-120	20
Manganese	ND	100	98	98	100	91.2	91	7	80-120	20
Molybdenum	ND	100	105	105	100	98.8	99	6	80-120	20
Nickel	ND	100	98.8	99	100	91.7	92	7	80-120	20
Silver	ND	100	100	100	100	93.9	94	6	80-120	20
Vanadium	ND	100	99.9	100	100	93.2	93	7	80-120	20
	ND	100	100	100	100	94	94	7	80-120	20

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: IT CORPORATION
PROJECT: MCAS EL TORO/18609/D.O. 70
SDG NO.: 01B155
METHOD: METHOD 3050B/6010B

MATRIX:	SOIL			% MOISTURE:	NA
DILTN FACTR:	1	1	1		
SAMPLE ID:	MBLK1S				
CONTROL NO.:	IPB037SB	IPB037SL	IPB037SC		
LAB FILE ID:	I31B050020	I31B050021	I31B050022		
DATIME EXTRCTD:	02/17/0113:00	02/17/0113:00	02/17/0113:00	DATE COLLECTED:	NA
DATIME ANALYZD:	02/19/0120:01	02/19/0120:05	02/19/0120:09	DATE RECEIVED:	02/17/01
PREP. BATCH:	IPB037S	IPB037S	IPB037S		
CALIB. REF:	I31B050018	I31B050018	I31B050018		

ACCESSION:

PARAMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
Arsenic	ND	100	101	101	100	93.5	93	8	80-120	20
Lead	.228J	100	99.9	100	100	92.8	93	7	80-120	20
Selenium	ND	100	96.6	97	100	90.3	90	7	80-120	20
Thallium	ND	100	105	105	100	97.9	98	7	80-120	20

METHOD ... A
MERCURY BY COLD VAPOR

Client : IT CORPORATION
Project : MCAS EL TORO/18609/D.O. 70
Batch No. : 01B155

Matrix : SOIL
Instrument ID : TI023

SAMPLE ID	EMAX SAMPLE ID	RESULTS (mg/kg)	DLF	MOIST	RL (mg/kg)	MDL (mg/kg)	Analysis DATETIME	Extraction DATETIME	LFID	CAL REF	PREP BATCH	Collection DATETIME	Received DATETIME
MBLK1S	HGB027SB	ND	1	NA	.1	.02	02/21/0110:42	02/20/0114:00	M01B022008	M01B022006	HGB027S	NA	02/20/01
LCS1S	HGB027SL	.880	1	NA	.1	.02	02/21/0110:45	02/20/0114:00	M01B022009	M01B022006	HGB027S	NA	02/20/01
LCD1S	HGB027SC	.867	1	NA	.1	.02	02/21/0110:47	02/20/0114:00	M01B022010	M01B022006	HGB027S	NA	02/20/01
18609-4213 A	B155-02	ND	1	9.2	.11	.022	02/21/0110:50	02/20/0114:00	M01B022011	M01B022006	HGB027S	02/15/01	02/15/01
18609-4214 A	B155-03	ND	1	21.8	.128	.0256	02/21/0110:52	02/20/0114:00	M01B022012	M01B022006	HGB027S	02/15/01	02/15/01
18609-4214MS	B155-03M	1.08	1	21.8	.128	.0256	02/21/0110:54	02/20/0114:00	M01B022013	M01B022006	HGB027S	02/15/01	02/15/01
18609-4214MSD	B155-03S	1.06	1	21.8	.128	.0256	02/21/0110:57	02/20/0114:00	M01B022014	M01B022006	HGB027S	02/15/01	02/15/01
18609-4214DL	B155-03T	ND	5	21.8	.639	.128	02/21/0111:00	02/20/0114:00	M01B022015	M01B022006	HGB027S	02/15/01	02/15/01
18609-4215 A	B155-04	ND	1	7.0	.108	.0215	02/21/0111:02	02/20/0114:00	M01B022016	M01B022006	HGB027S	02/15/01	02/15/01

RL: Reporting Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

:NT: IT CORPORATION
IECT: MCAS EL TORO/18609/D.O. 70
NO.: 01B155
IOD: METHOD 7471A

RIX:	SOIL			% MOISTURE:	NA
IN FACTR:	1	1	1		
PLE ID:	MBLK1S				
TROL NO.:	HGB027SB	HGB027SL	HGB027SC		
FILE ID:	M01B022008	M01B022009	M01B022010		
IME EXTRCTD:	02/20/0114:00	02/20/0114:00	02/20/0114:00	DATE COLLECTED:	NA
IME ANALYZD:	02/21/0110:42	02/21/0110:45	02/21/0110:47	DATE RECEIVED:	02/20/01
P. BATCH:	HGB027S	HGB027S	HGB027S		
IB. REF:	M01B022006	M01B022006	M01B022006		

ESSION:

AMETER	BLNK RSLT mg/kg	SPIKE AMT mg/kg	BS RSLT mg/kg	BS % REC	SPIKE AMT mg/kg	BSD RSLT mg/kg	BSD % REC	RPD %	QC LIMIT %	MAX RPD %
cury	ND	.833	.880	106	.820	.867	106	0	77-120	25

7030

EMAX QUALITY CONTROL DATA
MS/MSD ANALYSIS

NT: IT CORPORATION
ECT: MCAS EL TORO/18609/D.O. 70
NO.: 01B155
OD: METHOD 7471A

IX:	SOIL			% MOISTURE:	21.8
N FACTR:	1	1	1		
LE ID:	18609-4214				
ROL NO.:	B155-03	B155-03M	B155-03S		
FILE ID:	M01B022012	M01B022013	M01B022014		
ME EXTRCTD:	02/20/0114:00	02/20/0114:00	02/20/0114:00	DATE COLLECTED:	02/15/01
ME ANALYZD:	02/21/0110:52	02/21/0110:54	02/21/0110:57	DATE RECEIVED:	02/15/01
. BATCH:	HGB027S	HGB027S	HGB027S		
B. REF:	M01B022006	M01B022006	M01B022006		

SSION:

METER	SMPL RSLT mg/kg	SPIKE AMT mg/kg	MS RSLT mg/kg	MS % REC	SPIKE AMT mg/kg	MSD RSLT mg/kg	MSD % REC	RPD %	QC LIMIT %	MAX RPD %
ury	ND	1.04	1.08	104	1.04	1.06	102	2	77-120	25

4031

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 15, 2001

LDC Report Date: March 8, 2001

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Extractables

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B155

Sample Identification

18609-4213A
18609-4214A
18609-4215A

Introduction

This data review covers 3 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Extractables.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as extractable contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Extractables - Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Extractables - Laboratory Blank Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 15, 2001

LDC Report Date: March 8, 2001

Matrix: Soil/Water

Parameters: Total Petroleum Hydrocarbons as Gasoline

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B155

Sample Identification

18609-4212A
18609-4213A
18609-4214A
18609-4215A

Introduction

This data review covers 3 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Gasoline.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0% .

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as gasoline contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Field Blanks

Sample 18609-4212 was identified as a trip blank. No total petroleum hydrocarbons as gasoline contaminants were found in this blank.

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Gasoline - Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Total Petroleum Hydrocarbons as Gasoline - Laboratory Blank Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 15, 2001

LDC Report Date: March 8, 2001

Matrix: Soil/Water

Parameters: Volatiles

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B155

Sample Identification

18609-4212A
18609-4213A
18609-4214A
18609-4215A

Introduction

This data review covers 3 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8260A for Volatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999) as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

Average relative response factors (RRF) for all volatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% for all calibration check compounds and less than or equal to 50.0% for all other compounds.

All of the continuing calibration RRF values were greater than or equal to 0.05 .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No volatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No field duplicates were identified in this SDG.

XVII. Field Blanks

Sample 18609-4212 was identified as a trip blank. No volatile contaminants were found in this blank.

MCAS El Toro, DO #70
Volatiles - Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Volatiles - Laboratory Blank Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro, DO #70

Collection Date: February 15, 2001

LDC Report Date: March 8, 2001

Matrix: Soil

Parameters: Metals

Validation Level: NFESC Level C

Laboratory: EMAX Laboratories, Inc.

Sample Delivery Group (SDG): 01B155

Sample Identification

18609-4213 A
18609-4214 A
18609-4215 A
18609-4214MS
18609-4214MSD

Introduction

This data review covers 5 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7000 for Metals. The metals analyzed were Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. *Calibration*

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Lead	0.228 mg/Kg	All samples in SDG 01B155
ICB/CCB	Zinc	9.42 ug/L	All samples in SDG 01B155

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Although ICP serial dilution analysis was not required by the method, it was performed by the laboratory. The analysis criteria were met.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro, DO #70
Metals - Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

MCAS El Toro, DO #70
Metals - Laboratory Blank Data Qualification Summary - SDG 01B155

No Sample Data Qualified in this SDG

Appendix E
Land Survey

6115350 6115550 6115750 6115950 6116150 6116350 6116550 6116750 6116950 6117150 6117350 6117550

2190140

MCAS, EL TORO

SITE APH05 D.0.70

2189940

2190740

2189540

2189340

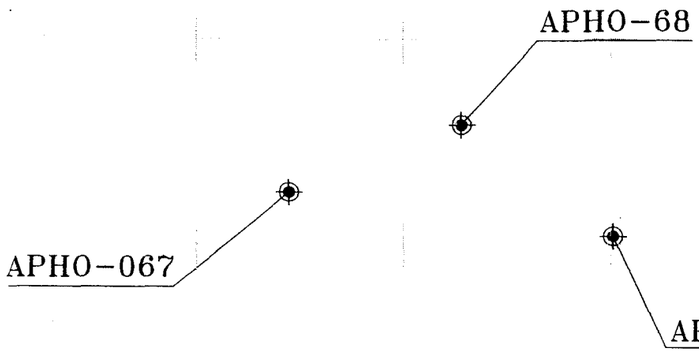
2189140

2188940

2188740

SAMPE COORDINATE LISTING

NORTHING	EASTING	FS	DESCRIPTION
2189547.47	6117152.21	416.88	APHO-43
2189590.26	6116838.36	412.30	APHO-067
2189656.41	6117007.78	414.92	APHO-68

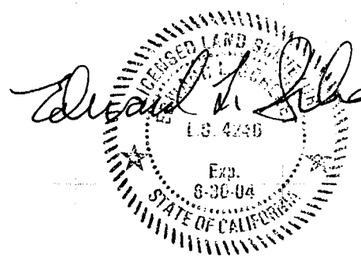


Graphic Scale

150 0 75 150

(In Feet)

1 inch = 150 ft.



LEGEND

- SAMPLE POINTS
- VALVE
- FS FINISH SURFACE
- TC TOP OF CURB
- FH FIRE HYDRANT
- CHAIN LINK FENCE

DATE OF SURVEY: 2-22-01

CAL VADA SURVEYING, INC.

108 Business Center Dr, Corona, Ca 92880-1782

PHONE: (909) 280-9960 FAX: (909) 280-9746

JOB NO. 97102APH05

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