



**Summary Report for Group III Potential  
Release Locations,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:  
**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:  
**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:  
**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

**DOCUMENT TRANSMITTAL**

Contract No. N62742-94-D-0048

To: Department of the Navy  
 Base Realignment and Closure  
 Program Management Office West  
 1455 Frazee Road, Suite 900  
 San Diego, CA 92108-4310  
 Attention: Kyle Olewnik, Remedial Project Manager

DATE: October 21, 2005  
 CTO #: 104  
 LOCATION: MCAS, El Toro

FROM: Crispin G. Wanyoike 

DESCRIPTION: Summary Report for Group III Potential Release Locations, Environmental Baseline Sur  
Former Marine Corps Air Station, El Toro, California

TYPE:  Contract Deliverable (Cost)  CTO Deliverable (Technical)  Other

VERSION: \_\_\_\_\_ REVISION #s: \_\_\_\_\_

ADMIN RECORD: Yes  No  Category \_\_\_\_\_ Confidential   
 (PM to Identify)

NUMBER OF COPIES SUBMITTED: 12/11C/1E

COPIES TO (Include Name, and No of Copies):

- |   |   |
|---|---|
| <u>Mr. Richard Muza (USEPA) - 1C</u>                      | <u>Mr. William Hammerle (Lennar) - 1C</u> |
| <u>Mr. Frank Cheng (DTSC) - 1C</u>                        | <u>Ms. Diane Silva (SWDIV) - 3C (1*)</u>  |
| <u>Mr. John Broderick (CRWQCB) - 1C</u>                   | <u>Earth Tech PMO - 1C</u>                |
| <u>Mr. Jim Kikta (BRAC PM) - 1C</u>                       | _____                                     |
| <u>Mr. Dan Jung (City of Irvine) - 1C</u>                 | _____                                     |
| <u>Ms. Marcia Rudolph (RAB) - 1C</u>                      | _____                                     |
| <u>LCDR Tricia Samora (Commandant Marine Corps) - w/o</u> | _____                                     |
| <u>AC/S ENVIRON MGT (MCAS Miramar) - w/o</u>              | _____                                     |
| <u>Mr. Robert L. Woodings (RAB) - w/o</u>                 | _____                                     |

O = Original  
 C = Copy  
 E = Enclosed  
 \* = Unbound  
 w/o = without enclosure

---

## CONTENTS

Acronyms and Abbreviations	v
1. Introduction	1
2. Background	1
2.1 MCAS El Toro Background	1
2.2 PRL Investigation Background	1
3. Investigation Methodology	5
3.1 Sampling Methodology	5
3.2 Laboratory Analysis and Quality Assurance	6
3.3 Risk Screening Methodology	7
4. Investigation Results and Recommendations	8
5. References	9

### TABLES

Table 1: Correlation between Issues and Analytes	6
Table 2: Summary of Assessments and Recommendations for Group III PRLs	9

### FIGURES

Figure 1: Project Location Map	3
--------------------------------	---

### ATTACHMENTS

Attachment 1:	Summary Report – PRL 295
Attachment 2:	Summary Report – PRL 296
Attachment 3:	Summary Report – PRL 297
Attachment 4:	Summary Report – PRL 315
Attachment 5:	Summary Report – PRL 324
Attachment 6:	Summary Report – PRL 326
Attachment 7:	Summary Report – PRL 369
Attachment 8:	Summary Report – PRL 380
Attachment 9:	Summary Report – PRL 390
Attachment 10:	Summary Report – PRL 605
Attachment 11:	Summary Report – PRL 606
Attachment 12:	Summary Report – PRL 643
Attachment 13:	Summary Report – PRL 655
Attachment 14:	Summary Report – PRL Rail Road

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

BCT	BRAC Cleanup Team
BRAC	Base Realignment and Closure
Cal-modified	California-modified
CFR	Code of Federal Regulations
COPC	chemical of potential concern
EBS	environmental baseline survey
EPA	Environmental Protection Agency
EPC	exposure point concentration
HI	hazard index
HQ	hazard quotient
MCAS	Marine Corps Air Station
NFECF PEARL	Naval Facilities Engineering Command, Pacific
NFECF SDIEGO	Naval Facilities Engineering Command, Southwest
NFI	no further investigation
PAH	polynuclear aromatic hydrocarbon
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	potential release location
SRU	silver recovery unit
SVOC	semi-volatile organic compound
THQ	target hazard quotient
TPH	total petroleum hydrocarbons
TCR	target cancer risk
VOC	volatile organic compound
VSI	visual site inspection

## 1. Introduction

This summary report presents the results of environmental investigations conducted at 14 potential release locations (PRLs) at the former Marine Corps Air Station (MCAS) El Toro, California. The investigations included review of available records, visual site inspections (VSIs), and soil sampling. Based on the results of these investigations, this report provides an evaluation of environmental conditions and indicates whether significant releases of hazardous substances have occurred into the environment at these PRLs.

The environmental investigations of PRLs were initiated by the Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO, formerly abbreviated as SWDIV) as authorized by the Base Realignment and Closure (BRAC) Cleanup Team (BCT) in a meeting held on 29 September 2004 at Former MCAS El Toro. During this meeting, the BCT authorized NFEC SW SDIEGO to prepare investigation plans and perform field investigations of the PRLs at the former MCAS El Toro without prior approval from the BCT. The main purpose of this was to expedite the assessment of the PRLs. NFEC SW SDIEGO is responsible for evaluating each PRL, preparing the most appropriate sampling plan, conducting site investigations, assessing whether a release has occurred, and submitting final summary reports with conclusions and recommendations to the BCT.

The investigations reported in this document are substantially equivalent to the preliminary assessment pursuant to the National Oil and Hazardous Substances Contingency Plan in Title 40 Code of Federal Regulations (CFR), Section (§) 300.410 (a) and (c), and 40 CFR § 300.420 (a) and (b). The investigations are also substantially equivalent to the investigations of real property pursuant to Community Environmental Response Facilitation Act, Public Law 102-425, 19 October 1992, as it amends Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980.

This document was prepared for NFEC SW SDIEGO, as authorized by the Pacific Division, Naval Facilities Engineering Command (NFEC P PEARL, formerly abbreviated as PACNAVFAC-ENGCOR) under contract task order no. 0104 of the Comprehensive Long-Term Environmental Action Navy II program, contract no. N62742-94-D-0048.

## 2. Background

### 2.1 MCAS EL TORO BACKGROUND

Former MCAS El Toro is located in south-central Orange County, California, approximately 8 miles southeast of Santa Ana and 12 miles northeast of Laguna Beach (Figure 1). Former MCAS El Toro covers approximately 4,738 acres. Land use around former MCAS El Toro includes commercial, light industrial, agricultural, and residential. MCAS El Toro closed on 2 July 1999, as a part of the BRAC Act.

### 2.2 PRL INVESTIGATION BACKGROUND

During the 2003 environmental baseline survey (EBS), 76 facilities/features were identified at the former MCAS El Toro as being associated with a potential release of contaminants to the environment (Earth Tech 2003a). These facilities or features were assigned PRL designations because of one or more of the following factors:

- Records reported a release of hazardous substances to the environment.

PAGE NO. 2

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

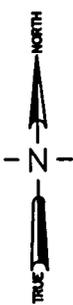
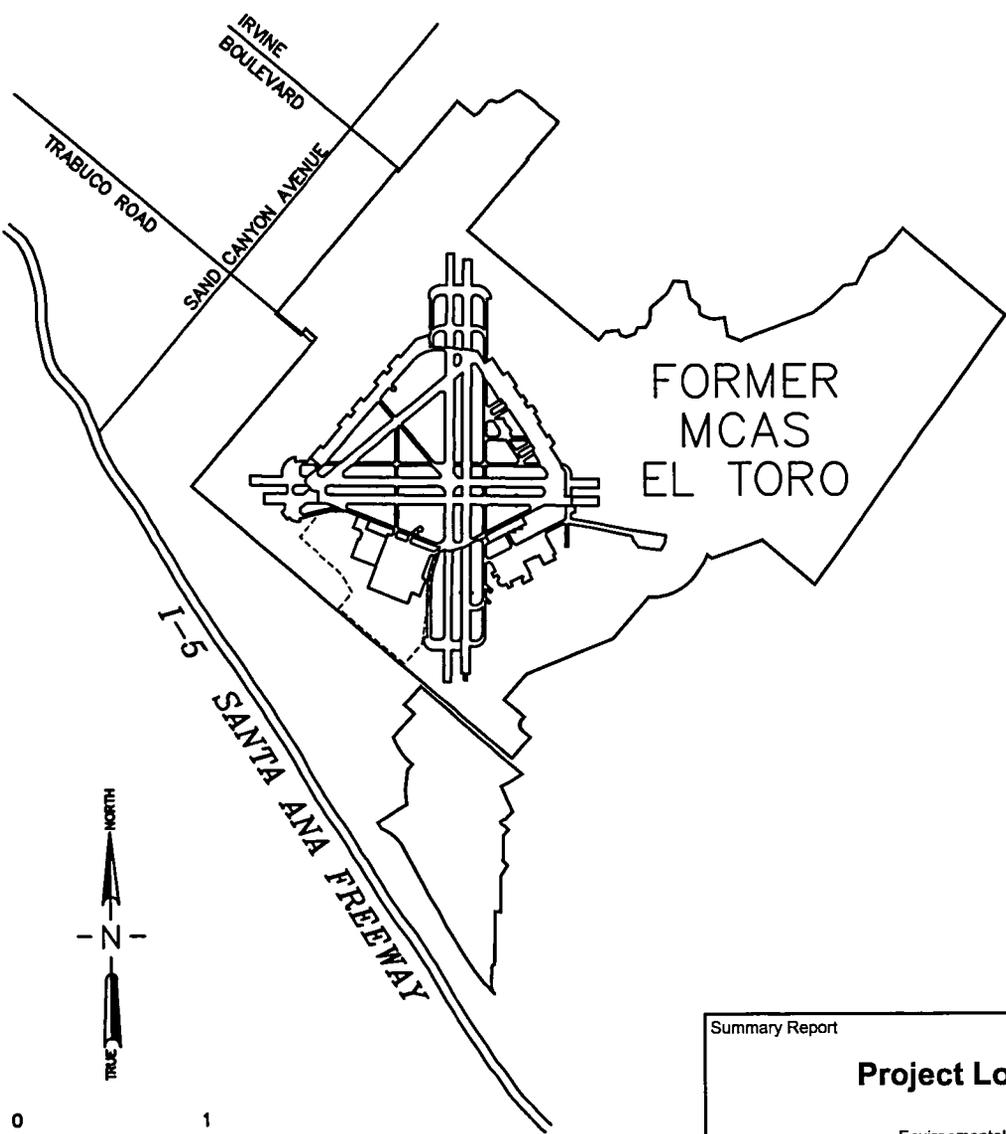
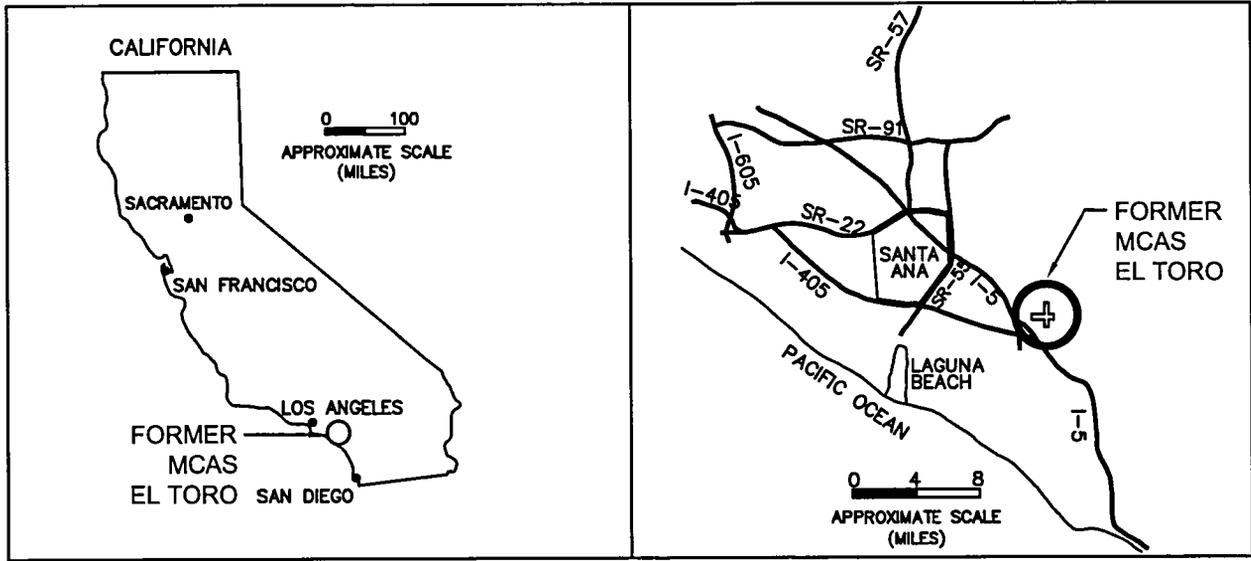
FIGURE 1 – PROJECT LOCATION MAP

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280

E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



Summary Report		<b>Project Location Map</b>	
Environmental Baseline Survey		Former MCAS El Toro	
Date 10-05	Project No. 54506		Figure 1
		 A Tyco International Ltd. Company	

File: L:\work\work\EB\S\CAD\PA\Non-transferrable\_PRLs\SummaryReports\Group III\Final\Figure 1.dwg Date: Oct 18, 2005 - 12:58pm

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

- Observations during the VSI conducted in 2002 indicated a potential release of hazardous substances to the environment.
- Activities undertaken during operation of the station had a high probability of releasing hazardous substances to the environment.

The sites identified were designated as "PRL," followed by the associated building number or feature (e.g., 296, Rail Road, etc.). None of these PRLs was identified by previous investigations or surveys, with the exception of PRL 46 (Silver Recovery Unit [SRU] 03A), PRL 133 (SRU 03B), PRL 312 (SRU 03), and PRL 439 (SRU 010). These PRLs were previously identified as SRU locations of concern and were considered for further evaluation as PRLs to investigate the SRU and associated potential releases at these facilities.

Twenty-three of the 76 PRLs were investigated in 2003, and one PRL (PRL 400) was investigated in February 2004. The results of the 2003 investigations are presented in the final report for the EBS (Earth Tech 2003a), and the results for the 2004 investigation are presented in a draft technical memorandum (Earth Tech 2004a). Of those investigated, 17 PRLs were found to have no significant release and the regulatory agencies concurred that no further investigation (NFI) was required.

For management purposes, the remaining 59 PRLs are being addressed in four groups. Group I is comprised of 16 PRLs: PRL 22, PRL 47, PRL 105, PRL 114, PRL 118, PRL 245/246, PRL 374, PRL 442, PRL 617/618, PRL 658, PRL 671/672, PRL 673, PRL 886/887, PRL 1585, PRL 1601, and PRL Runway Infield Area. The sampling for Group I of the PRLs was conducted in October 2004, and the results of the investigations are provided in a summary report (Earth Tech 2005a). Group II is comprised of 5 PRLs: PRL 51, PRL 310, PRL 370, PRL 445, and PRL 923. The sampling for Group II of the PRLs was conducted in January 2005, and the results of the investigations are provided in a summary report (Earth Tech 2005b). Group III is comprised of 14 PRLs: PRL 295, PRL 296, PRL 297, PRL 315, PRL 324, PRL 326, PRL 369, PRL 380, PRL 390, PRL 605, PRL 606, PRL 643, PRL 655, and PRL Rail Road. The sampling for Group III of the PRLs was conducted in April and May 2005, and the results of the investigations are provided in this summary report. The investigation results for the remaining group will be presented in a subsequent summary report.

### **3. Investigation Methodology**

For each Group III PRL, records review, VSIs, and/or soil sampling were conducted to evaluate whether a release of hazardous substances or pollutants into the environment has occurred. The purpose of the records review and VSI was to identify environmentally significant issues. If any environmentally significant issue was identified, soil sampling for further assessment of the release was performed. If an environmentally significant issue was not identified, NFI was recommended for the location.

#### **3.1 SAMPLING METHODOLOGY**

Once the environmentally significant issues were identified for each PRL, a sampling program was designed to assess whether a significant release of hazardous substances occurred. Sample locations were selected based on the following criteria:

- Where a report or visual evidence of a direct release of hazardous substance to the environment existed, such as stained soil or stressed vegetation, soil samples were collected at that location.

- Where a report or visual evidence of a release existed on concrete or pavement, such as significant staining, etching, or corrosion, soil samples were collected below the bottom of the floor slab or pavement.
- Where past operations involved the use of hazardous substances and the presence of features such as sumps, floor drains, storm drains, cracks, or pits may have resulted in the release of these substances to the environment, soil samples were collected in the vicinity of the features.
- Where evidence of direct releases of hazardous substances containing heavy metals to the sewer via drain pipes existed based on information regarding past activities or operations, samples of the drain pipe contents were collected and/or soil samples were collected beneath or adjacent to the drains. Drain samples were only analyzed for specific metals related to the substances used at the facility.

Table 1 lists the chemicals of potential concern (COPCs) recommended for analysis in relation to the issues found at each PRL.

**Table 1: Correlation between Issues and Analytes**

Issue	COPCs
Batteries/Battery Shop	lead, cadmium, nickel, negative logarithm of hydrogen ion concentration (pH)
X-ray/Film Development (SRU)	silver
Printing	volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs)
Painting	VOCs, total petroleum hydrocarbons (TPH), lead, cadmium, chromium, cobalt, mercury
Vehicle Wash Rack	VOCs, TPH
Airplane Wash Rack	VOCs, TPH
Dental/Medical Laboratory	copper, mercury, silver, tin
Boiler Room	chromium (total), chromium (hexavalent) if chromium (total) exceeds background
Ordnance Shop (Mechanical Shop)	VOCs, TPH
Hydraulic Lifts	TPH
Fueling Area	VOCs, TPH
Plating Processes	VOCs, cadmium, chromium, copper, lead, nickel, mercury, zinc, cyanide, pH

### 3.2 LABORATORY ANALYSIS AND QUALITY ASSURANCE

Laboratory analysis and data validation were performed in accordance with the specifications and requirements of the *Draft Work Plan* (Earth Tech 2002) and subsequent *Sampling and Analysis Plan Amendment No. 1* (Earth Tech 2004b). Laboratories solicited for this project successfully completed evaluation by the Naval Facilities Engineering Service Center. Laboratory performance was further evaluated through data package reviews and oversight by the project chemist.

Data reported in the project report are flagged with the following appropriate qualifiers to indicate the usability:

- J estimated concentration
- N presumptive evidence of the identification of an analyte
- R rejected data (unusable)
- U not detected above laboratory reporting limit

Combinations of qualifiers such as UJ and NJ are possible. Where the validation qualifiers affect the project decision recommendations, the individual PRL reports discuss the issues and the uncertainty or qualifications of the conclusions.

### 3.3 RISK SCREENING METHODOLOGY

Risk screening was performed for each Group III PRL to evaluate the risks associated with potential exposures to chemicals identified in the soil at each PRL. The results of this risk screening are presented in the summary reports for individual PRLs provided as attachments to this report.

The approach used for the risk screening consisted essentially of three elements: selection of COPCs, exposure point concentration (EPC) quantification, and risk quantification.

#### 3.3.1 Selection of COPCs

For each PRL, COPCs were identified as the chemicals that were detected in at least one sample and have Environmental Protection Agency (EPA) Region 9 or California-modified (Cal-modified) cancer or noncancer residential preliminary remediation goals (PRGs) (EPA Region 9 2004).

#### 3.3.2 EPC Quantification

The maximum detected concentrations of COPCs were used as EPCs (maximum EPCs) for risk screening.

#### 3.3.3 Risk Quantification

For each PRL, maximum excess (incremental) cancer risk using maximum EPC and a respective carcinogenic PRG was estimated using the following formula:

$$\text{Excess Cancer Risk} = TCR \times \frac{EPC_i}{PRG_i}$$

where:

TCR = target incremental lifetime cancer risk of  $10^{-6}$

$EPC_i$  = Maximum EPC for  $COPC_i$

$PRG_i$  = EPA Region 9 or Cal-modified PRG for  $COPC_i$  in soils based on carcinogenic effects

A Hazard Quotient (HQ), using EPC and noncarcinogenic PRG, was calculated using the following formula:

$$HQ = THQ \times \frac{EPC_i}{PRG_i}$$

where:

THQ = target HQ of 1

$PRG_i$  = EPA Region 9 or Cal-modified PRG for  $COPC_i$  in soils based on noncarcinogenic effects

The cumulative residential excess cancer risk for exposure to multiple COPCs at a PRL was estimated using the following equation:

$$\text{Cumulative Excess Cancer Risk} = \sum \left[ \text{TCR} \times \frac{\text{EPC}_i}{\text{PRG}_i} \right]$$

The cumulative noncarcinogenic hazard index (HI) for exposure to multiple COPCs at a PRL was estimated as follows:

$$\text{Cumulative Noncarcinogenic HI} = \sum \left[ \text{THQ} \times \frac{\text{EPC}_i}{\text{PRG}_i} \right]$$

#### 4. Investigation Results and Recommendations

The investigation results, conclusions, and recommendations for all Group III PRLs are presented in summary reports provided as attachments to this report. The attachments are organized as follows:

- Attachment 1: Summary Report – PRL 295
- Attachment 2: Summary Report – PRL 296
- Attachment 3: Summary Report – PRL 297
- Attachment 4: Summary Report – PRL 315
- Attachment 5: Summary Report – PRL 324
- Attachment 6: Summary Report – PRL 326
- Attachment 7: Summary Report – PRL 369
- Attachment 8: Summary Report – PRL 380
- Attachment 9: Summary Report – PRL 390
- Attachment 10: Summary Report – PRL 605
- Attachment 11: Summary Report – PRL 606
- Attachment 12: Summary Report – PRL 643
- Attachment 13: Summary Report – PRL 655
- Attachment 14: Summary Report – PRL Rail Road

Table 2 presents an assessment summary and recommendation for the Group III PRLs.

**Table 2: Summary of Assessments and Recommendations for Group III PRLs**

PRL	Assessment Summary	Recommendation
295	All issues and concerns addressed in previous investigations.	No further investigation (NFI)
296	Soil samples analyzed for cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, zinc, cyanide, and pH.  The concentration of lead (155 milligram/kilogram [mg/kg]) in the soil sample collected at 10 feet below ground surface at location HA2 adjacent to Anodizing Pit No. 2 is not indicative of a significant release although it exceeds the residential PRG of 150 mg/kg. No other metal analytes exceeded residential PRGs.	NFI
297	Soil samples analyzed for cadmium, chromium, copper, lead, nickel, silver, zinc, pH, and cyanide.  The concentration of lead (214 mg/kg) in the soil sample collected at location HA1 in the Tank Shop at 4 feet below ground surface is not indicative of a significant release although it exceeds the residential PRG of 150 mg/kg. No other metal analytes exceeded residential PRGs.	NFI
315	Soil samples analyzed for TPH, cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, zinc, pH, and cyanide.	NFI
324	Soil samples analyzed for VOCs, polynuclear aromatic hydrocarbons (PAHs), TPH, cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, and pH.	NFI
326	Soil samples analyzed for VOCs, TPH, cadmium, chromium, cobalt, lead, and mercury.	NFI
369	Soil samples analyzed for VOCs, SVOCs, TPH, and pesticides.	NFI
380	All issues and concerns addressed in previous investigations.	NFI
390	Soil samples analyzed for VOCs, TPH, cadmium, chromium, cobalt, lead, mercury, nickel, and pH.	NFI
605	Soil sample analyzed for arsenic during this investigation and for VOCs, SVOCs, TPH, and metals during the previous investigation.	NFI
606	Soil sample analyzed for arsenic during this investigation and for VOCs, SVOCs, TPH, and metals during the previous investigation.	NFI
643	All issues and concerns addressed in previous investigations.	NFI
655	Soil samples analyzed for VOCs and TPH.	NFI
Rail Road	Soil samples analyzed for PAHs.	NFI

## 5. References

Earth Tech, Inc (Earth Tech). 2002. *Draft Work Plan Preliminary Assessment of Locations of Concern, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFECSW SDIEGO. May.

\_\_\_\_\_. 2003a. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA: NFECSW SDIEGO. September.

\_\_\_\_\_. 2003b. *Final Finding of Suitability to Transfer (Portions of Parcels I, II, III, and V, and Parcel IV) Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFECSW SDIEGO. November.

\_\_\_\_\_. 2004a. *Draft Technical Memorandum, Phase II Investigation Sampling and Analysis Results/Risk Screening, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFECSW SDIEGO. April.

\_\_\_\_\_. 2004b. *Draft Sampling and Analysis Plan Amendment No. 1 Preliminary Assessment of Locations of Concern, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Honolulu, HI: NFEC SW SDIEGO. March.

\_\_\_\_\_. 2005a. *Summary Report for Group I Potential Release Locations, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Long Beach, CA: NFEC SW SDIEGO. February.

\_\_\_\_\_. 2005b. *Summary Report for Group II Potential Release Locations, Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. Long Beach, CA: NFEC SW SDIEGO. March.

Environmental Protection Agency, United States, Region 9 (EPA Region 9). 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

**Attachment 1**  
**Summary Report**  
**PRL 295**



**Summary Report for PRL 295,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Conclusions and Recommendations	1
4. References	2

## FIGURES

Figure 1: Site Location Map – PRL 295	5
Figure 2: Site Plan – PRL 295	7

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

BNI	Bechtel National, Inc.
EBS	environmental baseline survey
DoN	Department of the Navy
IRP	Installation Restoration Program
LOC	location of concern
MCAS	Marine Corps Air Station
NFECSW SDIEGO	Southwest Division, Naval Facilities Engineering Command
PRL	potential release location
RFA	Resource Conservation and Recovery Act Facility Assessment
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound

## 1. Background

Potential Release Location (PRL) 295 is associated with Building 295, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as A and R Test and Check Hangar in the 1948 and 1949 station lists, and as Flight Test and Check Hangar in the 1950 and 1954 station lists. The facility description was Hangar in the 1958 list; Storage, Marine Corps in the 1973 list; and Maintenance Hangar 01 in the 1997 list. The last known description was Maintenance Hangar 01 Space, Maintenance Hangar 02 Space, and Maintenance Hangar OH Space. Figure 2 shows the plan of Building 295 and the surrounding area.

Two locations of concern (LOCs) were associated with this site. RFA 71 (identified during the Resource Conservation and Recovery Act Facility Assessment [RFA] [NFEC SW SDIEGO 1993] and subsequently changed into Installation Restoration Program [IRP] Site 7, Unit 1) was a less-than-90-day temporary accumulation area for which concurrence with the Department of the Navy's (DoN) recommendation for no further action was obtained from the Department of Toxic Substances Control in a letter dated 27 January 2000. UST 295 was a 1,000-gallon diesel underground storage tank (UST) that was removed and the site closed by the Regional Water Quality Control Board in a letter dated 11 April 1997.

Activities and processes taking place at the facility and equipment present included aircraft maintenance, touch-up painting, washing, degreasing pits, and processing pits.

## 2. Issues and Concerns

The following issues and concerns associated with PRL 295 were identified during the records review, previous investigations, and visual site inspections conducted in 2002 in support of the 2003 Environmental Baseline Survey (EBS) (NFEC SW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- Activities and processes taking place at the facility may have resulted in releases of solvents and/or petroleum hydrocarbons to the environment. However, Building 295 was extensively investigated as a potential source of volatile organic compounds (VOC) contamination during Phase I and II remedial investigations at IRP Site 24 (BNI 1997). These investigations included a review of floor plans for Building 295 to determine locations where solvents may have been used (e.g., paint shops and degreaser pits), and to identify storm drains and industrial waste sewer line tie-ins and discharge points. Additionally, soil-gas and soil sampling were conducted at various locations inside and outside the building to assess the nature and extent of vadose zone VOC and/or total petroleum hydrocarbons (TPH) contamination. Building 295 was determined not to be a source of VOC or TPH contamination (BNI 1997). Based on further records review in 2005, the DoN concluded that VOCs and TPH at Building 295 have been adequately investigated and addressed through past investigations. Consequently, the work areas within and in the vicinity of Building 295, including former degreaser pits, and paint areas, do not require further investigation for releases of VOCs and TPH.

## 3. Conclusions and Recommendations

The LOCs associated with this site have been investigated and closed by regulatory agencies. The issues and concerns identified in the 2003 EBS have been addressed by previous investigations or do not fall under the scope of this project. Therefore, no further investigation is recommended for PRL 295.

#### 4. References

Bechtel National, Inc. (BNI). 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A-Site 24 Marine Corps Air Station El Toro, California, Volume I*. March.

Drawing: A & R Flight Test & Check Hangar, Stair and Toilet. 1944. September.

Drawing: Building 295 - Hangar; First Floor Plan.

Drawing: A & R Flight Test & Check Hangar; Plans, Elevations and Schedule. 1944. September.

*SCS Oil and Hazardous Substances Spill Prevention, Control & Countermeasure Field Survey Report & SPCC Plan*. 1979. November.

Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro Installation Restoration Program Draft Resource Conservation and Recovery Act (RCRA) Facility Assessment Report, Volume IV, Survey of Air Emission Sources*. July.

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

## Figures

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

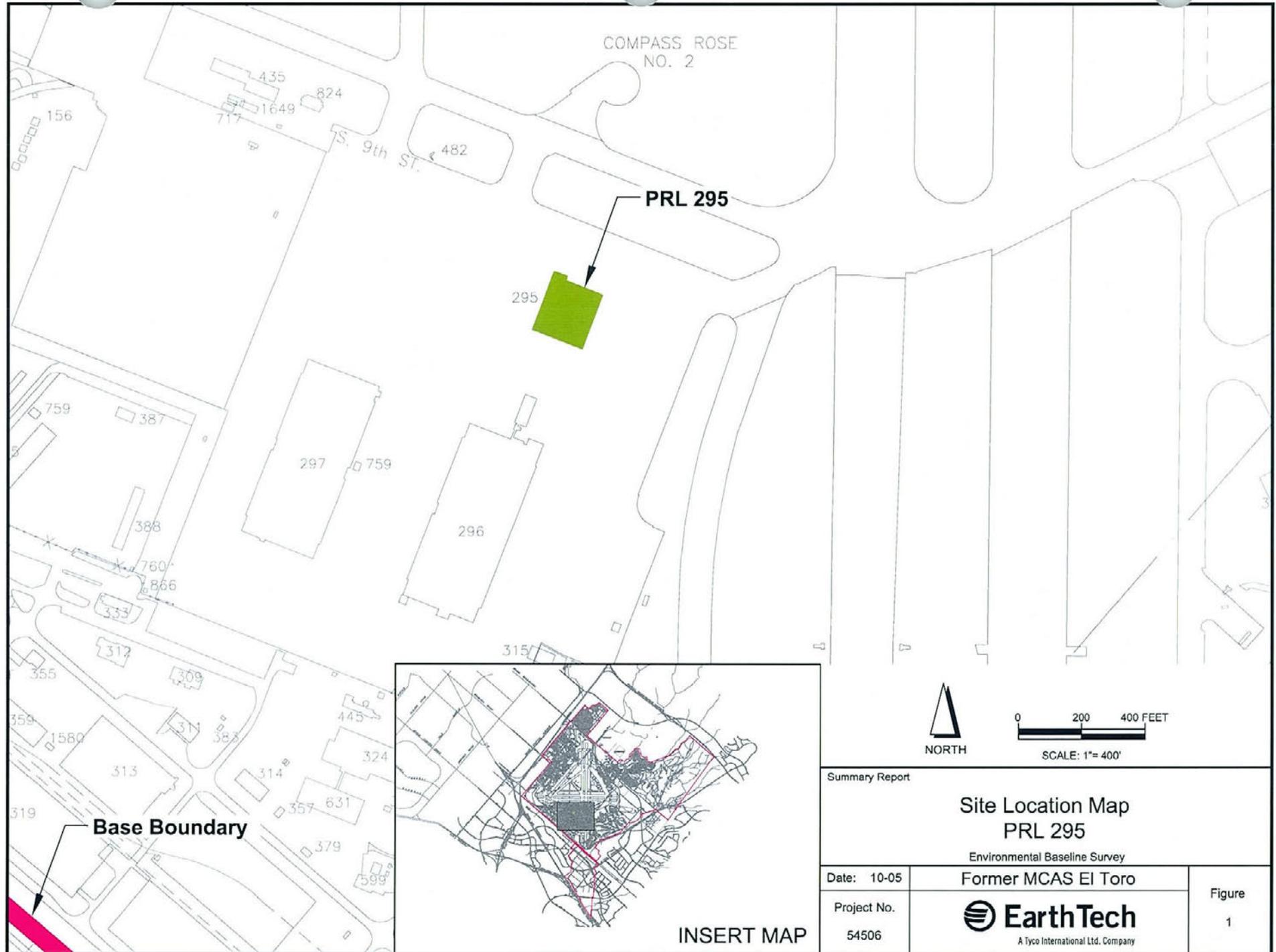
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 295

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK



Building 295  
(Facing Northeast)



Building 295 Interior  
(Facing Northeast)



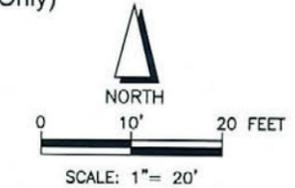
Exterior Paint Area  
(Facing North)



**LEGEND:**

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Storm Drain
- Fence Line
- IRP Site 7, Unit 1 Boundary

- Manhole
- Transformer
- Storm Drain
- Fire Hydrant
- Water Valve
- Gas Meter
- Approximate 1993 Phase I RI Monitoring Well Location (Bechtel, 1997)  
(Total Depth: 170 to 240 ft bgs; Groundwater Analytes: VOCs, SVOCs, TPH, Metals, and General Chemistry; Soil Analytes: VOCs)
- Approximate Phase II RI Hand Auger Location (Bechtel, 1997)  
(Sample Depth: 2.5 to 15 ft bgs; Analytes: VOCs)
- Approximate Phase I RI Soil Gas Location (Bechtel, 1997) (Sample Depth: 30 ft bgs; Analytes: VOCs and TPH)
- Approximate Phase II RI CPT Adjacent to Soil Gas Sample Location, Symbol Implies Nearby 24SG1 Soil Gas Sample Location (Bechtel, 1997) (Sample Depth: 30 ft bgs to Groundwater; Lithology Only)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 295</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS EI Toro	Figure
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	2

**Attachment 2**  
**Summary Report**  
**PRL 296**



**Summary Report for PRL 296,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	2
4. Investigation Results	3
4.1 Analytical Results and Quality Assurance	3
4.2 Results Evaluation and Risk Screening	3
5. Conclusions and Recommendations	4
6. References	4

## TABLES

Table 1: Sampling and Analyses Summary – PRL 296	7
Table 2: Analytical Results Summary – PRL 296	9
Table 3: Risk Screening – PRL 296	11

## FIGURES

Figure 1: Site Location Map – PRL 296	15
Figure 2: Site Plan – PRL 296	17

## APPENDICES

- A Validated Laboratory Analytical Data
- B Land Surveying Data

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BNI	Bechtel National, Inc.
EPA	Environmental Protection Agency
HI	hazard index
HA	hand auger
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
NFECSW SDIEGO	Southwest Division, Naval Facilities Engineering Command
mg/kg	milligram per kilogram
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	potential release location
RFA	Resource Conservation and Recovery Act Facility Assessment
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 296 is associated with Building 296, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as A and R Hangar in the 1948 and 1949 station lists, and as A and R Hangar No. 2 in the 1950 and 1954 station lists. The facility description was Hangar in the 1958 list, Maintenance Hangar/Aircraft Ground Support Equipment Shop/Engine Shop in the 1973 list, and as Ground Support Equipment Shop in the 1997 list. The last known description was Maintenance Hangar OH Space, Transformer Room, Boiler Room, Armory, Storage, and Maintenance Hangar. Figure 2 shows the plan of Building 296 and the surrounding area.

Activities known to have taken place at this facility include metal plating, degreasing and equipment cleaning, and painting. The building included the following shops: Paint, Machine, Plastic, Oxygen, Propeller, Dope, and a Paint and Dope Mixing Room. Assorted pits, sumps, and industrial sinks associated with these activities were also present. Historical features within Building 296 include an abrasive blast unit, parts cleaning tanks, portable abrasive blast, recycling units, a salt bath furnace, a heavy-duty furnace, and a dispatch oven.

One location of concern was associated with this site. UST 296, a 6,000-gallon, diesel underground storage tank (UST), was removed and the site was closed by the Regional Water Quality Control Board in a letter dated 11 April 1997.

Building 296 was extensively investigated as a potential source of volatile organic compound (VOC) contamination during Phase I and II remedial investigations at Installation Restoration Program (IRP) Site 24 (BNI 1997). These investigations included a review of floor plans for Building 296 to determine locations where solvents may have been used (e.g., paint shops and degreaser pits), and to identify storm drain and industrial waste sewer line tie-ins and discharge points. Additionally, soil-gas and soil sampling were conducted at various locations within the building to assess the nature and extent of vadose zone VOC and/or total petroleum hydrocarbons (TPH) contamination. Subsequent to these investigations, soil-vapor extraction was conducted in an area encompassing Building 296 to remediate VOC contamination in the vadose zone of IRP Site 24 (Earth Tech 2002). This remedial action has been completed and a closure report has been approved by the regulatory agencies. VOCs and TPH at Building 296 have been adequately investigated and addressed by the IRP Site 24 remedial action for the vadose zone source area. Consequently, the work areas within and in the vicinity of Building 296, including former degreaser pits, degreaser tanks, paint spray booths, and paint and dope rooms, do not need to be further investigated for releases of VOCs and TPH.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and visual site inspections (VSIs) conducted in 2002 in support of the 2003 Environmental Baseline Survey (NFECSW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- The locations of the former Paint Room, Paint Spray Booths, Paint and Dope Mixing Room, Anodizing Pit, a Pipe Trench, and Pit No. 5 were not investigated for potential releases of paint- and anodizing-related metals to the environment during previous investigations at IRP Site 24. Further investigation was recommended.
- VOCs were detected in shallow soil samples collected adjacent to Degreaser Pit No. 4. This is indicative of a release from the pit, but the area was not investigated for potential releases of metals to the environment. Further investigation was recommended.

- Degreaser Pit No. 1 was investigated for potential releases of VOCs to soil. Soil samples did not indicate a release. No further investigation was recommended for this feature.
- The former locations of Nickel-Cadmium and Lead-Acid Battery Shops were not investigated for potential releases of battery-related metals and acids to the environment during previous investigations at IRP Site 24. Further investigation was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release of hazardous substances or pollutants has occurred to the environment. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

### **3. Sampling and Analysis Summary**

Sampling was conducted for PRL 296 in April 2005. The sample locations are shown on Figure 2 and a summary of sampling and analyses performed is provided in Table 1.

One soil sample was collected at location HA1, near the floor drain associated with the former Paint Spray Booth in the northern portion of Building 296 to assess whether paint-related materials have been released to the environment via the floor drain. The sample was collected 1 foot below the ground surface (bgs) using hand auger (HA) equipment and analyzed for paint-related metals: i.e., lead, cadmium, chromium, cobalt, and mercury.

Two soil samples were collected at location HA2, adjacent to Anodizing Pit No. 2 to assess whether plating-related substances have been released to the environment via the pits. The samples were collected at 5 and 10 feet bgs using HA equipment and analyzed for plating-related parameters: cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide and negative logarithm of hydrogen ion concentration (pH).

Two soil samples were collected at locations HA3, near the floor drain in the former Nickel-Cadmium Battery Shop and HA4, near the floor drain in the former Lead-Acid Battery Shop to assess whether hazardous substances from batteries have been released to the environment via the floor drains. The samples were collected 1 foot bgs using HA equipment and analyzed for battery-related parameters: lead, nickel, cadmium, and pH.

Two soil samples were collected at location HA5, adjacent to Degreaser Pit No. 4 to assess whether heavy metals have been released to the environment from the pit. The samples were collected at 5 and 10 feet bgs using HA equipment and analyzed for lead, cadmium, chromium, cobalt, and mercury.

One soil sample was collected at location HA6 in the former location of the Paint Spray Booth to assess whether paint-related wastes have been released to the environment from the operation of the booth. The sample was collected 4 feet bgs using HA equipment and analyzed for paint-related metals: i.e., lead, cadmium, chromium, cobalt, and mercury.

One soil sample was collected at location HA7 near the floor drain in the former Dope Shop to assess whether releases of paint-related metals have occurred to the environment via the floor drain. The sample was collected 3 feet below bgs using HA equipment and analyzed for lead, cadmium, chromium, cobalt, and mercury.

One soil sample was collected at location HA8 near the pipe trench in the Machine Shop to assess whether releases of paint-related metals have occurred to the environment via the trench. The sample

was collected 3 feet bgs using HA equipment and analyzed for lead, cadmium, chromium, cobalt, and mercury.

One soil sample was collected at location HA9 adjacent to Pit No. 5 to assess whether releases of metals have occurred to the environment via the pit. The sample was collected 5 feet bgs using HA equipment and analyzed for lead, cadmium, chromium, cobalt, and mercury.

## **4. Investigation Results**

This section presents analytical results and discusses the results of data evaluation and risk screening.

### **4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE**

The analytical results for the samples collected at PRL 296 along with the United States Environmental Protection Agency (EPA) Region 9 or California-modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

### **4.2 RESULTS EVALUATION AND RISK SCREENING**

The pH values indicate that the soil is slightly basic and no release of acid has taken place in the vicinity of the sampling locations.

Cyanide was not detected above the laboratory reporting limit. Of the metals analyzed (cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, and zinc), lead, detected at a concentration of 155 milligram per kilogram (mg/kg) in the soil sample collected at location HA2 at 10 feet bgs (adjacent to Anodizing Pit No. 2), exceeded its California-modified residential PRG of 150 mg/kg. Lead was detected at a concentration of 75.3 mg/kg in the soil sample collected at location HA2 at 5 feet bgs, which is greater than the MCAS El Toro background value (BNI 1996) of 15.1 mg/kg. None of the detected metals except cobalt, copper, and lead exceeded their respective MCAS El Toro background values (BNI 1996).

Although the concentration of lead at location HA2 slightly exceeds the residential PRG, it does not appear to be indicative of a significant release. Evidence to support this conclusion includes the absence of any other elevated metal concentrations at HA2, which would likely be present if a release of contaminants due to processing activities had occurred. Further, samples collected at other process pits with similar activities at Building 296 did not have elevated concentrations of lead or other metals either, as might be expected if a release due to processing operations had occurred. Therefore, it does not appear that the single detection of lead above the residential PRG is indicative of wide-spread contamination.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 296. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of metals at PRL 296 is  $7.9E-08$ , which is below the EPA point of departure risk level of  $1E-06$ . The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of metals is expressed as a hazard index (HI) of 1.08, which is

above the target HI of 1. The maximum exposure point concentration for lead (155 mg/kg) reported in the surface soil sample at location HA2 accounts for nearly 95 percent of the noncancer HI.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 296 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling was conducted for this assessment. The concentration of lead in the soil sample from location HA2 was greater than the corresponding residential soil PRG; however it is not indicative of a significant release. This conclusion is based on the absence of other metals at elevated concentrations in the sample from location HA2 and the absence of elevated concentrations of all metal analytes at other sample locations at PRL 296. No further investigation is recommended for PRL 296.

## 6. References

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.
- . 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A-Site 24 Marine Corps Air Station El Toro, California, Volume I*. March.
- . 1997. *Draft Final Phase II Remedial Investigation Report, Operable Unit 2A – Site 24, MCAS El Toro, California*. March.
- Earth Tech, Inc. (Earth Tech). 2002. *Draft Final Site Closure Report Vadose Zone Remediation IRP Site 24, Volatile Organic Compounds Source Area, Former MCAS-El Toro, California*. Honolulu, HI. June.
- Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- . 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.
- MCAS. 1971. Modifications, Repairs and Equipment Installation in Buildings 295, 296, and 315; Building 296: First Floor North Area; New and Modified Floor Plan. NAVFAC Drawing No. 6004955. El Toro (Santa Ana), CA. May.
- . 1971. Modifications, Repairs and Equipment Installation in Buildings 295, 296, and 315; Building 296: First Floor South Area; New and Modified Floor Plan. NAVFAC Drawing No. 6004959. El Toro (Santa Ana), CA. May.
- . 1989. Repairs to Various Buildings (MET 624 and TU 625); Paint Spray Booth Plan and Section Building # 296. NAVFAC Drawing No.: 6272267. September.
- Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 1: Sampling and Analyses Summary – PRL 296

Analytical Group and Method <sup>a</sup>	Sample Location	HA1	HA2	HA2	HA3	HA4	HA5	HA5	HA6	HA7	HA8	HA9
	EPA ID	LJ377	LJ375	LJ376	LJ373	LJ374	LJ379	LJ380	LJ381	LJ382	LJ378	LJ385
	Sample Depth (feet bgs)	1	5	10	1	1	5	10	4	3	3	5
	Sampling Technique	HA										
Cadmium 6010B		X	X	X	X	X	X	X	X	X	X	X
Chromium 6010B		X	X	X	—	—	X	X	X	X	X	X
Cobalt 6010B		X	—	—	—	—	X	X	X	X	X	X
Copper 6010B		—	X	X	—	—	—	—	—	—	—	—
Lead 6010B		X	X	X	X	X	X	X	X	X	X	X
Mercury 7471A		X	—	—	—	—	X	X	X	X	X	X
Nickel 6010B		—	X	X	X	X	—	—	—	—	—	—
Silver 6010B		—	X	X	—	—	—	—	—	—	—	—
Zinc 6010B		—	X	X	—	—	—	—	—	—	—	—
pH 9045C		—	X	X	X	X	—	—	—	—	—	—
Cyanide 9010B		—	X	X	—	—	—	—	—	—	—	—

## Notes:

— = not analyzed

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 2: Analytical Results Summary - PRL 296

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL296-HA1	PRL296-HA2	PRL296-HA2	PRL296-HA3	PRL296-HA4	PRL296-HA5	PRL296-HA5	PRL296-HA6	PRL296-HA7	PRL296-HA8	PRL296-HA9
			Sample Depth	1 feet bgs	5 feet bgs	10 feet bgs	1 feet bgs	1 feet bgs	5 feet bgs	10 feet bgs	4 feet bgs	3 feet bgs	3 feet bgs	5 feet bgs
			EPA ID	LJ377	LJ375	LJ376	LJ373	LJ374	LJ379	LJ380	LJ381	LJ382	LJ378	LJ385
<b>Metals (mg/kg)</b>														
Cadmium	2.35	37		0.51	0.6	0.54	0.15	0.52	0.49	0.3	0.52	0.97	1	0.75
Chromium	26.9	211		8.1	11.7	14.7	NA	NA	6.2	13.1	6.3	11.7	11.1	9.1
Cobalt	6.98	903		5.5	NA	NA	NA	NA	3.5	<u>7.5</u>	3.1	5.8	5.2	4.2
Copper	10.5	3,129		NA	7.9	<u>10.9</u>	NA	NA	NA	NA	NA	NA	NA	NA
Lead <sup>c</sup>	15.1	150		2.1	<u>75.3</u>	<b>155</b>	5.6	5.7	1.6	2.4	1.5	3.7	2.7	3.1
Mercury	0.22	23		0.085 J	NA	NA	NA	NA	0.07 J	0.083 J	0.053 J	0.12 J	0.066 J	0.13 J
Nickel	15.3	1,564		NA	8.7	9.1	8.2	7.1	NA	NA	NA	NA	NA	NA
Zinc	77.9	23,463		NA	50.9	61.8	NA	NA	NA	NA	NA	NA	NA	NA
<b>General Chemistry</b>														
pH	-	-		NA	9.1	8.74	9.31	8.65	NA	NA	NA	NA	NA	NA

Notes

Concentrations in **bold** indicate values greater than the residential soil PRGs and the former MCAS El Toro background values

Concentrations with *italic underline* indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

-- = value does not exist

NA= not analyzed

bgs = below ground surface

J = indicates an estimated value

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for lead were compared to Cal-modified PRG (2004) since they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 3: Risk Screening Results - PRL 296

COPC	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Metals (mg/kg)</b>								
Cadmium	2.35	1	1.4E+03	3.7E+01	7.1E-10	0.9%	2.7E-02	2.5%
Chromium	26.9	14.7	2.1E+02	--	7.0E-08	88.6%	--	--
Cobalt	6.98	7.5	9.0E+02	1.4E+03	8.3E-09	10.5%	5.4E-03	0.5%
Copper	10.5	10.9	--	3.1E+03	--	--	3.5E-03	0.3%
Lead <sup>f</sup>	15.1	155	--	1.5E+02	--	--	1.0E+00	95.4%
Mercury	0.22	0.13	--	2.3E+01	--	--	5.5E-03	0.5%
Nickel	15.3	9.1	--	1.6E+03	--	--	5.8E-03	0.5%
Zinc	77.9	61.8	--	2.3E+04	--	--	2.6E-03	0.2%
<b>Cumulative Maximum Risk</b>					<b>7.9E-08</b>		<b>1.08E+00</b>	

Notes:

-- = value does not exist

mg/kg= milligram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Analytical results for lead were compared to Cal-modified PRG (2004) since they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 296

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

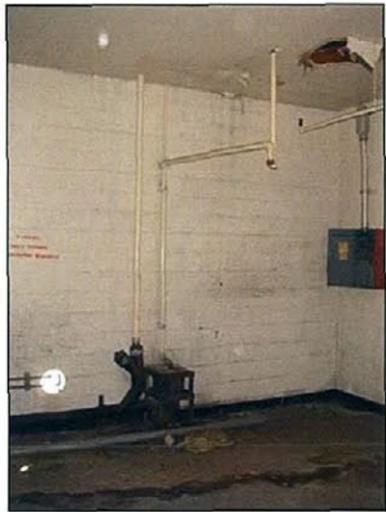
TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK

File: L:\work\506\work\EB5\CAD\PA\Non-transferrable\_PRLs\SummaryReports\Group III\Final\SR\_PRL\_296.dwg Time: Oct 20, 2005 -- 9:47am



Former Paint and Dope Room with Remnants of Piping (Facing South)



Lead-Acid Battery Shop North East Corner (Facing South)

**LEGEND:**

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Industrial Waste Water
- S** Sink
- WC** Restroom
- Former Process Pit or Trench
- Clean Out
- Manhole
- Transformer
- Fire Hydrant
- Water Valve
- Gas Meter
  
- Approximate 1991 Soil Boring Locations (Sample Depth: Below the Tank; Analytes: TPH and BTEX)
- Approximate Phase II RI Soil Boring Location; Completed as Soil Vapor Extraction Well (Bechtel, 1997) (Sample Depth: 85 to 129 ft bgs; Analytes: VOCs)
- Approximate Phase II RI Hand Auger Location (Bechtel, 1997) (Sample Depth: 2.5 to 15 ft bgs; Analytes: VOCs)
- Approximate Phase I RI Soil Gas Location (Bechtel, 1997) (Sample Depth: 30 ft bgs; Analytes: VOCs and TPH)
- Approximate Phase II RI CPT Adjacent to Soil Gas Sample Location, Symbol Implies Nearby 24SG1 Soil Gas Sample Location (Bechtel, 1997) (Sample Depth: 30 ft bgs to Groundwater; Lithology Only)
- Approximate Phase II RI CPT Adjacent to Hydropunch Location, Symbol Implies Nearby Hydropunch Location (Bechtel, 1997) (Sample Depth: 85 to 120 ft bgs and 300 to 350 ft bgs; Groundwater Analytes: VOCs, SVOCs, and TPH)
- SVE Wells (Earth Tech, 2002) (Total Depth: 71 to 105 ft bgs; Analytes: VOCs)
- Soil Sample Location (Earth Tech, 2005) (Sample Depth: 1 to 10 ft bgs; Analytes: Metals, pH, and Cyanide)

Summary Report		
<b>Site Plan</b>		
<b>PRL 296</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	Figure
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	2 Sheet 1 of 2

PAGE NO. 18

THIS PAGE IS INTENTIONALLY LEFT BLANK

File: L:\work\506\work\EES\CAD\PA\Non-transferable\_PRLs\SummaryReports\Group III\Final\SR\_PRL\_296.dwg Time: Oct 20, 2005 - 9:45am

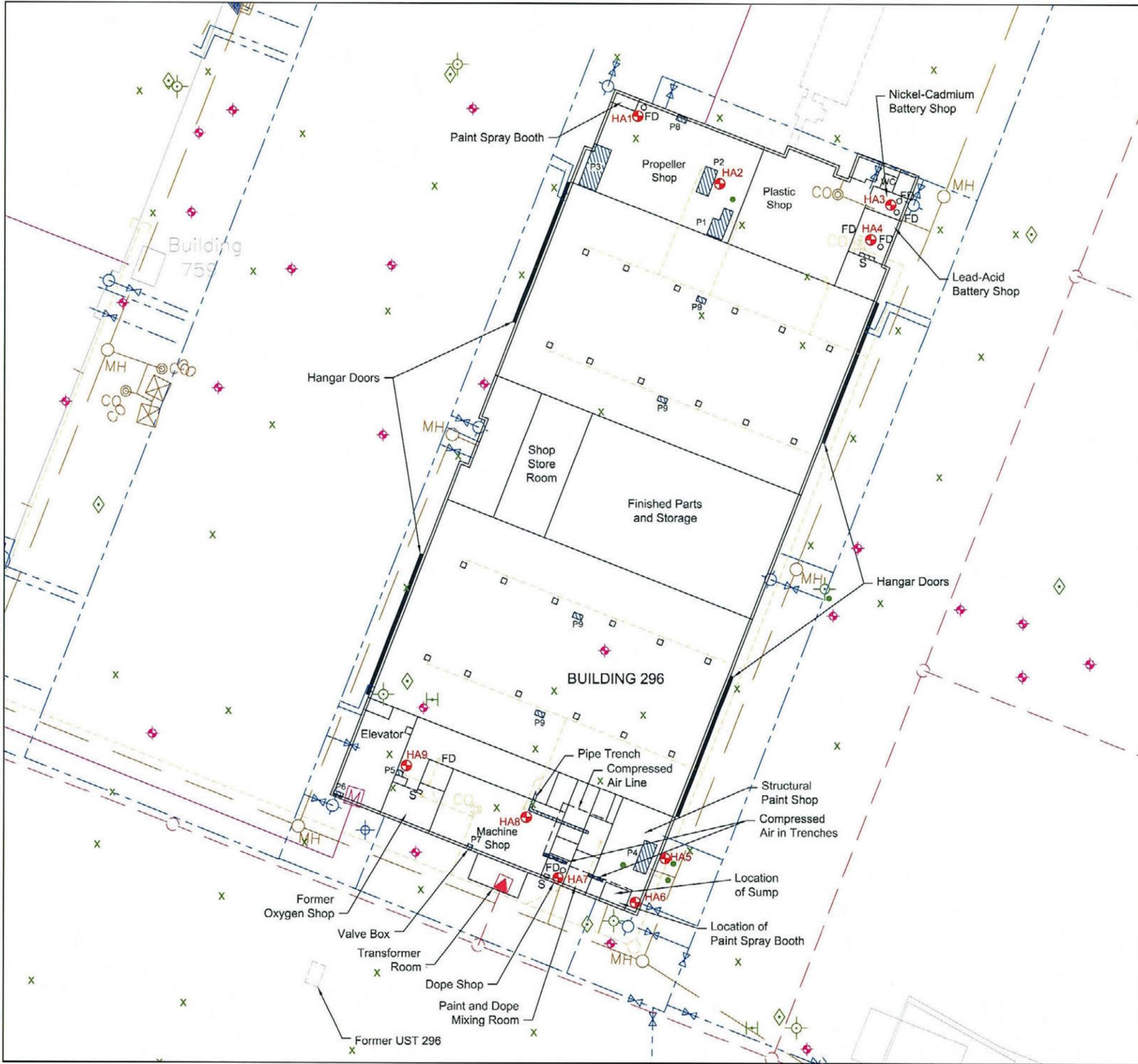
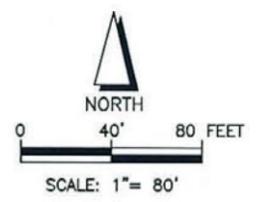


Table 1: List of Process Pits in Building 296

Pit Number	Dimensions (feet) <sup>1</sup>	Hangar Area	Description
1	21 x 12 x 2.4	Propeller Shop	Degreaser Tank, Rinse Tanks
2	18 x 9 x 7.7	Propeller Shop	Anodizing Pit Tanks: Paint Strip, Alkali Soak, Alkali Rinse, Anodize, Anodize Rinse
3	20 x 1.5 x 7	Propeller Shop	Propeller Balancing Pits
4	18.5 x 11.7 x 7.3	Structural Paint Shop	Degreaser Pit
5	3 x 4.5 x 3	Oxygen Shop	Drained to Sewer
6	3 x 4.5 x 3	Utility Pit	Steam Supply Connections
7	3 x 4.5 x 3	Utility Pit	Condensate Valve Box
8	3 x 4.5 x 3	Utility Pit	Steam Supply Connections
9	3 x 4.5 x 3	Utility Pit	Compressed Air Distribution Pits

Notes:  
 1 Dimensions reported as length (in reference to building's longitudinal axis) by width by depth (deepest point) in feet. Dimensions are inside dimensions and do not include 8 to 10-inch walls and bottom slabs.



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 296</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	Figure
Project No. 54506	 A Tyco International Ltd. Company	2
		Sheet 2 of 2

**Appendix A**  
**Validated Laboratory Analytical Data**

**Validated Analytical Data for PRL 296**

		EPA ID:	LJ377	LJ375	LJ376	LJ373	LJ374	LJ379	LJ380	LJ381	LJ382	LJ378	LJ385
		Location ID:	PRL296-HA1	PRL296-HA2	PRL296-HA2	PRL296-HA3	PRL296-HA4	PRL296-HA5	PRL296-HA5	PRL296-HA6	PRL296-HA7	PRL296-HA8	PRL296-HA9
		Sample Type:	SS										
		Sample Depth:	1	5	10	1	1	5	10	4	3	3	5
		Sample Date:	21-Apr-05	22-Apr-05									
Parameter	Units	Analytical Method <sup>1</sup>											
<b>Metals</b>													
Cadmium	mg/kg	6010B	0.51	0.6	0.54	0.15	0.52	0.49	0.3	0.52	0.97	1	0.75
Chromium	mg/kg	6010B	8.1	11.7	14.7	NA	NA	6.2	13.1	6.3	11.7	11.1	9.1
Cobalt	mg/kg	6010B	5.5	NA	NA	NA	NA	3.5	7.5	3.1	5.8	5.2	4.2
Copper	mg/kg	6010B	NA	7.9	10.9	NA							
Lead	mg/kg	6010B	2.1	75.3	155	5.6	5.7	1.6	2.4	1.5	3.7	2.7	3.1
Mercury	mg/kg	7471A	0.085 J	NA	NA	NA	NA	0.07 J	0.083 J	0.053 J	0.12 J	0.066 J	0.13 J
Nickel	mg/kg	6010B	NA	8.7	9.1	8.2	7.1	NA	NA	NA	NA	NA	NA
Silver	mg/kg	6010B	NA	0.57 U	0.59 U	NA							
Zinc	mg/kg	6010B	NA	50.9	61.8	NA							
<b>Others</b>													
Moisture	%	ASTM D 2216	10.6	12.9	15.2	3.2	8.3	6.3	10	9.5	13.2	7.8	11.2
Cyanide	mg/kg	9010	NA	2.9 U	2.9 U	NA							
pH	pH	9040	NA	9.1	8.74	9.31	8.65	NA	NA	NA	NA	NA	NA

Notes:

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

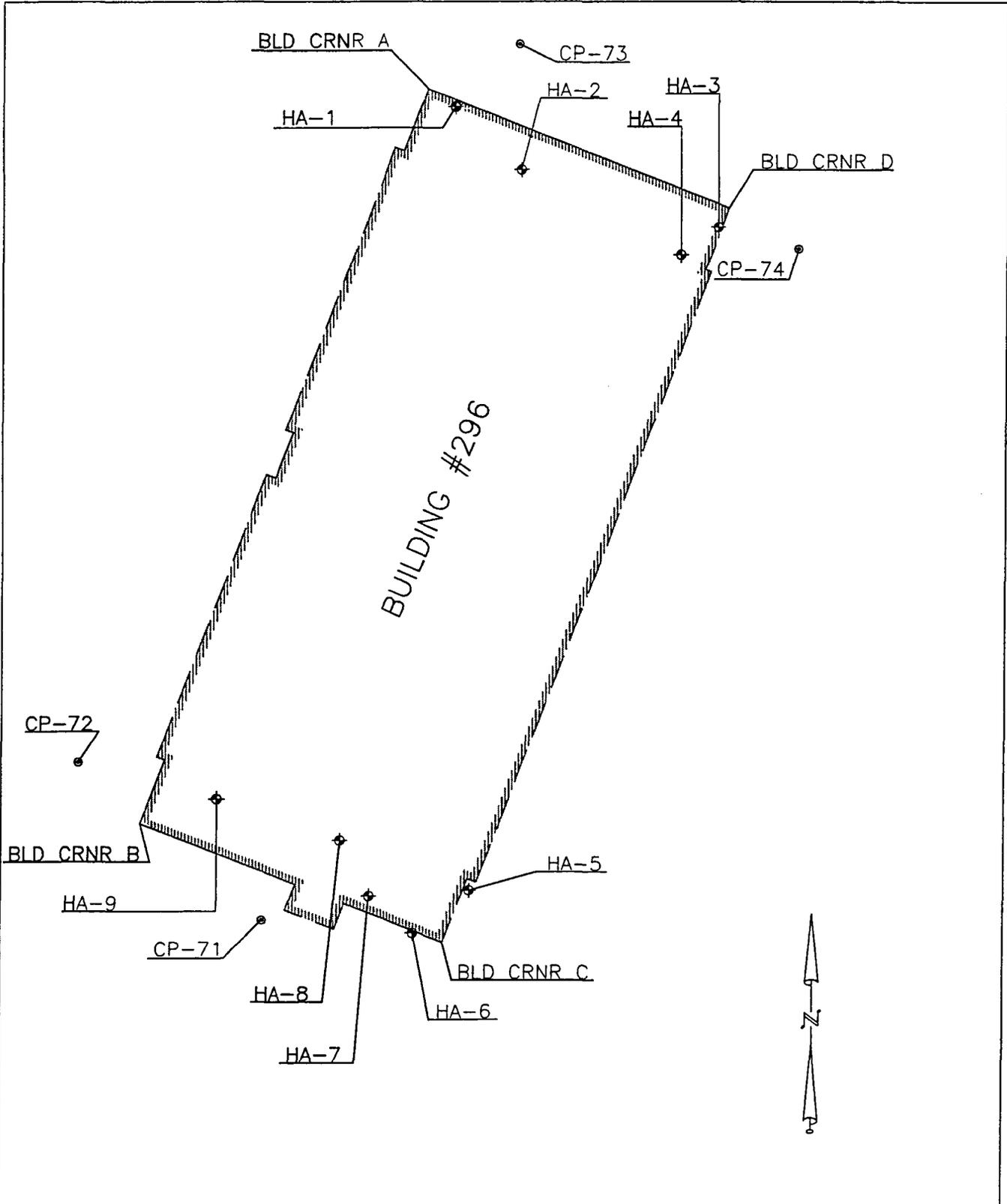
J = indicates an estimated value

ASTM = American Society of Testing and Materials

NA= not analyzed

SS = Soil Sample

**Appendix B**  
**Land Surveying**



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #296

SCALE:	1" = 100'	DATE:	06-06-05
BY:	JCL	JOB NO.:	04-1058-2227.000-535

BUILDING #296 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2188895.80	6110277.81	
BLD CRNR B	2188352.89	6110066.17	
BLD CRNR C	2188265.15	6110291.80	
BLD CRNR D	2188807.78	6110503.50	
CP 71	2188281.53	6110157.31	291.81
CP 72	2188398.35	6110020.48	291.38
CP 73	2188928.57	6110345.59	291.69
CP 74	2188777.72	6110554.79	292.43
BLD 296-HA 1	2188882.81	6110298.15	292.52
BLD 296-HA 2	2188836.04	6110347.52	292.43
BLD 296-HA 3	2188793.69	6110495.15	293.11
BLD 296-HA 4	2188773.25	6110466.94	292.97
BLD 296-HA 5	2188303.51	6110311.00	292.21
BLD 296-HA 6	2188271.76	6110269.68	292.42
BLD 296-HA 7	2188299.06	6110235.87	292.74
BLD 296-HA 8	2188340.18	6110214.41	292.74
BLD 296-HA 9	2188370.90	6110122.97	292.81



17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #296

SCALE: NONE DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 3**  
**Summary Report**  
**PRL 297**



**Summary Report for PRL 297,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	2
3. Sampling and Analysis Summary	2
4. Investigation Results	3
4.1 Analytical Results and Quality Assurance	3
4.2 Results Evaluation and Risk Screening	3
5. Conclusions and Recommendations	4
6. References	4

## TABLES

Table 1: Sampling and Analyses Summary – PRL 297	9
Table 2: Analytical Results Summary – PRL 297	11
Table 3: Risk Screening – PRL 297	15

## FIGURES

Figure 1: Site Location Map – PRL 297	19
Figure 2: Site Plan – PRL 297	21

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BNI	Bechtel National, Inc.
COPC	chemical of potential concern
DoN	Department of the Navy
DTSC	Department of Toxic Substances Control
EPA	Environmental Protection Agency
JEG	Jacob Engineering
HA	hand augering
HI	hazard index
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
mg/kg	milligram per kilogram
NFA	no further action
OCHCA	Orange County Health Care Agency
OWS	oil-water separator
PRG	preliminary remediation goal
pH	negative logarithm of hydrogen ion concentration
PRL	potential release location
RFA	Resource Conservation and Recovery Act Facility Assessment
TAA	Temporary Accumulation Area
TPH	total petroleum hydrocarbons
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 297 is associated with Building 297 located in the southwest quadrant of the former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as A and R Hangar in the 1948 and 1949 station lists, A and R Hangar No. 3 in the 1950 and 1954 station lists, and as Hangar in the 1958 list. The facility description was Maintenance Hangar, Avionics Shop/Airframe Shop, Parachute and Survival Equipment, GRO in the 1973 list and as Maintenance Hangar OH Space in the 1997 list. The last known description was Maintenance Hangar 02 Space, Maintenance Hangar 01 Space, Maintenance Hangar OH Space, Boiler Room. Figure 2 shows the plan of Building 297 and the surrounding area.

Activities known to have taken place at this facility include metal plating, degreasing, and equipment cleaning. The building included the following shops: Machine, Woodworking, Tank, Heat Treat, Metal, Tubing, Welding, Plating and Anodizing, and Wing. Assorted pits, sumps, and industrial sinks associated with these activities were also present.

Ten locations of concern were associated with this site. OWS 297B (located southwest of Building 297, outside the area shown in drawing) was a 100-gallon oil water separator (OWS), which has been removed and the site has been closed by the Orange County Health Care Agency (OCHCA) in a letter dated 11 July 1997. RFA 74 was an aircraft wash area identified during the Resource Conservation and Recovery Act Facility Assessment (RFA) for which the Department of Toxic Substances Control (DTSC) concurred with the Department of the Navy's (DoN's) recommendation for no further action (NFA) in a letter dated 23 July 1996. RFAs 78, 79, 80, 81, and 82 were drum storage areas for which NFA was proposed in the final RFA report (JEG 1993) and regulatory concurrence was obtained in a letter dated 23 July 1996. TAA 297 was a less-than-90-day temporary accumulation area (TAA) for which sampling results identified soil contamination to a depth of 5 feet below ground surface (bgs), and soil removal was recommended. TAA 297 and the RFA sites previously mentioned (RFAs 78, 79, 80, 81, and 82) were evaluated based on DTSC comments dated 5 November 2002. A site closure report for TAA 297 was submitted in March 2002. UST 297A was a 600-gallon, diesel underground storage tank (UST) that was removed and the site closed by OCHCA in a letter dated 9 December 1996. UST 297C (located southwest of Building 297, outside the area shown on Figure 2) was a 185-gallon, waste-oil UST that was removed and the site closed by OCHCA in a letter dated 11 July 1997.

Building 297 was extensively investigated as a potential source of volatile organic compound (VOC) contamination during Phase I and II remedial investigations at Installation Restoration Program (IRP) Site 24 (BNI 1997). These investigations included review of floor plans for Building 297, to determine locations where solvents may have been used (e.g., paint shops and degreaser pits), and to identify storm drain and industrial waste sewer line tie-ins and discharge points. Additionally, soil-gas and soil sampling were conducted at various locations within the building to assess the nature and extent of vadose zone VOC and/or total petroleum hydrocarbons (TPH) contamination. Subsequent to these investigations, soil-vapor extraction was conducted in an area encompassing Building 297 to remediate the VOC contamination in the vadose zone of IRP Site 24 (Earth Tech 2002). This remedial action was completed and a closure report was approved by the regulatory agencies. VOCs and TPH at Building 297 have been adequately investigated and addressed by the IRP Site 24 remedial action for the vadose zone source area. Consequently, the work areas within and in the vicinity of Building 297 including degreaser pits, degreaser tanks, stripping tanks, the plating and anodizing shop, and wash rack do not need to be further investigated for releases of VOCs and TPH.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and visual site inspections (VSIs) conducted in 2002 in support of the 2003 Environmental Baseline Survey (NFECSW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- The locations of former processing pits in the Tank and Heat Treat Shops were not investigated for potential releases of metals to the environment during previous investigations at IRP Site 24. Further investigation was recommended.
- VOCs were detected in shallow soil samples collected adjacent to the Process Pit No. 8 in the Plating and Anodizing Shop, indicating a release from the pit, but the area was not investigated for potential releases of metals to the environment. Further investigation was recommended.
- Degreaser Pit No. 10 was investigated for potential releases of VOCs to soil. Soil samples did not indicate a release. No further investigation was recommended for this feature.
- A Flammable Materials Storage Room (formerly an elevator room) with exposed soil was identified in the southern part of Building 297. Further investigation was recommended.
- The location of the X-Ray Operations room within Building 297 was not investigated for releases of metals to the environment during previous investigations at IRP Site 24. Further investigation was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release of hazardous substances or pollutants has occurred to the environment. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

## 3. Sampling and Analysis Summary

Sampling was conducted for PRL 297 in April 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

Soil samples were collected at five locations (HA1, HA2, HA3, HA4, and HA5) adjacent to process pit numbers 1, 2, 5, 12, 13, and 15 in the Tank and Heat Treat Shops located in the center of the building to assess the subsurface for releases of metal-containing substances from the pits. At each location, two soil samples were collected at 5 and 10 feet bgs using hand augering (HA) equipment. The exception was location HA1 where one sample was collected from a depth of 4 feet bgs and obstructions in three boreholes prevented the collection of the 10-foot sample. All soil samples were analyzed for cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, and negative logarithm of hydrogen ion concentration (pH).

Two soil samples were collected at location HA6, adjacent to process pit numbers 3 and 4, and the furnace sump in the Heat Treat Shop located in the center of the building to assess the subsurface for releases of metal-containing substances. The soil samples were collected at 8 and 16 feet bgs using HA equipment and analyzed for cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, and pH.

Soil samples were collected at five locations (HA7, HA8, HA9, HA10, and HA11) adjacent to process pits numbers 6, 7, and 8 in the Plating and Anodizing Shop area to assess whether releases of plating solutions containing heavy metals have occurred. At each location, soil samples were

collected at 5 and 10 feet bgs using HA equipment and analyzed for cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, and pH.

One soil sample was collected at location HA12 in the Flammable Materials Storage Room in the southern part of Building 297 to assess whether a release of paint- and plating-related heavy metals has occurred. The sample was collected at 1 foot bgs using HA equipment and analyzed for cadmium, cobalt, chromium, copper, lead, mercury, nickel, silver, zinc, cyanide, and pH.

Two soil samples were collected at locations HA13 and HA14. The samples were collected at 2 feet bgs using HA equipment and analyzed for cadmium, cobalt, chromium, copper, lead, mercury, nickel, silver, zinc, cyanide, and pH.

## **4. Investigation Results**

This section presents analytical results and discusses the results of data evaluation and risk screening.

### **4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE**

The analytical results for the samples collected at PRL 297 along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

### **4.2 RESULTS EVALUATION AND RISK SCREENING**

The pH values range from 4.99 to 10.3 with the majority falling between 7.4 and 9.2 representing neutral to basic conditions. The value of 4.99, representing acidic conditions, was detected at location HA12, Flammable Materials Storage Room. The value of 10.3, representing basic conditions, was detected at location HA14, inside the plating and anodizing pit.

Cyanide was not detected above the laboratory reporting limit. None of the metals (cadmium, chromium, copper, lead, nickel, silver, and zinc) exceeded their respective California-modified residential PRG (EPA 2004) values, except lead. Lead was detected at a concentration of 214 milligram per kilogram (mg/kg) in the soil sample collected at location HA1 at 4 feet bgs in the Tank Shop.

Although the concentration of lead at location HA1 slightly exceeds the residential PRG, it does not appear to be indicative of a significant release. Evidence to support this conclusion includes the absence of any other elevated metal concentrations at HA1, which would likely be present if a release of contaminants due to processing activities had occurred. Further, samples collected at other process pits with similar activities at Building 297 did not have elevated concentrations of lead or other metals either, as might be expected if a release due to processing operations had occurred. Therefore, it does not appear that the single detection of lead above the residential PRG is indicative of wide-spread contamination.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 297. The methodology for risk screening is presented in Section 3.3 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 297 is 5.04E-07, which is below the EPA point of departure risk level of 1E-06. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs, expressed as the hazard index (HI), is 1.5, which is above the target HI of 1. The maximum exposure point concentration for lead (214 mg/kg) reported in the surface soil sample at location HA1 accounts for nearly 96 percent of the noncancer HI.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 297 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data was conducted for this assessment. The concentration of lead in the soil sample from location HA1 was greater than the corresponding residential soil PRG; however it is not indicative of a significant release. This conclusion is based on the absence of other metals at elevated concentrations in the sample from location HA1 and the absence of elevated concentrations of all metal analytes at other sample locations at PRL 297. No further investigation is recommended for PRL 297.

## 6. References

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.
- . 1997. *Draft Final Phase II Remedial Investigation Report, Operable Unit 2A – Site 24, Marine Corps Air Station El Toro, California*. March.
- Earth Tech, Inc. (Earth Tech). 2002. *Draft Final Site Closure Report Vadose Zone Remediation IRP Site 24, Volatile Organic Compounds Source Area, Former MCAS-El Toro, California*. Honolulu, HI. June.
- Eleventh Naval District. 1945. Marine Corps Air Station, Air Base Group-2 El Toro, California, Assembly and Repair Shop, Building No. 3, Plating & Anodizing Shop, Electrical. RW Drawing No. KV40/N5-34(75). August.
- Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. <http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- . 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.
- Marine Corps Air Station. 1971. Modifications, Repairs and Equipment Installation in Buildings 295, 296, and 315; Building 297: First Floor South Area; New and Modified Floor Plan. NAVFAC Drawing No. 6004967. El Toro (Santa Ana), CA. May.
- . 1971. Modifications, Repairs and Equipment Installation in Buildings 295, 296, and 315; Building 297: First Floor, Center Area and Second Floor, South Area, Exist. and Demo. Floor Plans. NAVFAC Drawing No. 6004968. El Toro (Santa Ana), CA. May.

Department of the Navy (DoN). 1944. Marine Corps Air Station, Air Base Group-2 El Toro, California, Assembly and Repair Shop, Building No. 3, Ground Floor Plan, Plumbing. Drawing No. 311,489.

———. 1944. Marine Corps Air Station, Air Base Group-2 El Toro, California, Assembly and Repair Shop, Building Nos. 2 & 3, Pit Details. Drawing. No. 311,481.

———. 1944. Marine Corps Air Station, Air Base Group-2 El Toro, California, Assembly and Repair Shop, Building No. 3, Pit Details. Drawing. No. 311482, 311484.

OHM Remediation (OHM). 1997. *Underground Storage Tank 297C and Oil-Water Separator 297B, Marine Corps Air Station, El Toro, California*. San Diego, CA. June.

Pacific Division, Naval Facilities Engineering Command (NAVFAC EFD) 2002. *Draft Final Site Closure Report, Vadose Zone Remediation IRP Site 24, Former Marine Corps Air Station, El Toro, California*. June.

Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 297**

Sample Location	EPA ID	Sample Depth (feet bgs)	Sampling Technique	Analyte Group and Analytical Method <sup>a</sup>								
				Cadmium 6010B	Chromium 6010B	Copper 6010B	Lead 6010B	Nickel 6010B	Silver 6010B	Zinc 6010B	pH 9045C	Cyanide 9010B
HA1	LJ491	4	HA	X	X	X	X	X	X	X	X	X
HA2	LJ435	5	HA	X	X	X	X	X	X	X	X	X
HA2	LJ436	10	HA	X	X	X	X	X	X	X	X	X
HA3	LJ437	5	HA	X	X	X	X	X	X	X	X	X
HA3	LJ438	10	HA	X	X	X	X	X	X	X	X	X
HA4	LJ439	5	HA	X	X	X	X	X	X	X	X	X
HA4	LJ440	10	HA	X	X	X	X	X	X	X	X	X
HA5	LJ441	5	HA	X	X	X	X	X	X	X	X	X
HA5	LJ442	10	HA	X	X	X	X	X	X	X	X	X
HA6	LJ391	8	HA	X	X	X	X	X	X	X	X	X
HA6	LJ392	16	HA	X	X	X	X	X	X	X	X	X
HA7	LJ387	5	HA	X	X	X	X	X	X	X	X	X
HA7	LJ388	10	HA	X	X	X	X	X	X	X	X	X
HA8	LJ389	5	HA	X	X	X	X	X	X	X	X	X
HA8	LJ390	10	HA	X	X	X	X	X	X	X	X	X
HA9	LJ393	5	HA	X	X	X	X	X	X	X	X	X
HA9	LJ394	10	HA	X	X	X	X	X	X	X	X	X
HA10	LJ396	5	HA	X	X	X	X	X	X	X	X	X
HA10	LJ397	10	HA	X	X	X	X	X	X	X	X	X
HA11	LJ443	5	HA	X	X	X	X	X	X	X	X	X
HA11	LJ444	10	HA	X	X	X	X	X	X	X	X	X
HA12	LJ386	1	HA	X	X	X	X	X	X	X	X	X
HA13	LJ398	2	HA	X	X	X	X	X	X	X	X	X
HA14	LJ399	2	HA	X	X	X	X	X	X	X	X	X

Notes:

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 2: Analytical Results Summary - PRL 297

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL 297-HA1	PRL 297-HA2	PRL 297-HA2	PRL 297-HA3	PRL 297-HA3	PRL 297-HA4	PRL 297-HA4	PRL 297-HA5	PRL 297-HA5	PRL 297-HA6	PRL 297-HA6		
			Sample Depth	4 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	8 ft bgs	16 ft bgs
			EPA ID	LJ491	LJ435	LJ436	LJ437	LJ438	LJ439	LJ440	LJ441	LJ442	LJ391	LJ392		
<b>Metals (mg/kg)</b>																
Cadmium	2.35	37		0.9	1.2 J	0.68 J	1 J	0.62 J	0.98 J	0.28 J	1.3 J	0.93 J	0.3	1.5		
Chromium	26.9	211		15	19.1	16.1	15.9	17.3	15.9	9.3	15.4	14	5.9	22.7		
Copper	10.5	3,129		<u>11.7</u>	<u>12.2</u>	9.8	<u>10.6</u>	9.6	10.2	6.1	<u>11.2</u>	9.7	5.9	<u>15.5</u>		
Lead <sup>c</sup>	15.1	150		<b>214</b>	5.2	4.2	4.8	4.5	4.4	2.3	<u>54.7</u>	<u>34.4</u>	19	6.5		
Nickel	15.3	1,564		12.5	<u>16 J</u>	9.4 J	12.9 J	10.7 J	12.3 J	5.9 J	13.5 J	11.5 J	5.9	<u>15.4</u>		
Silver	0.539	391		0.61 U	0.58 U	0.59 U	0.59 U	0.59 U	0.57 U	0.54 U	0.59 U	0.43	0.55 U	0.65 U		
Zinc	77.9	23,463		65.5	67	62.8	60.2	68.7	58.8	35.6	60.2	53.5	25.9	101		
<b>General Chemistry</b>																
pH	-	-		8.04	8.1	9.19	8.21	8.95	8.81	9.03	8.5	8.62	8.56	8.36		

Notes

Concentrations in bold indicate values greater than the residential soil PRGs and the former MCAS El Toro background values

Concentrations with italic underline indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

- = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

J = indicates an estimated value

mg/kg= milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 2: Analytical Results Summary - PRL 297

Analyte	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL 297-HA7	PRL 297-HA7	PRL 297-HA8	PRL 297-HA8	PRL 297-HA9	PRL 297-HA9	PRL 297-HA10	PRL 297-HA10	PRL 297-HA11	PRL 297-HA11	PRL 297-HA12	PRL 297-HA13	PRL 297-HA14		
			Sample Depth	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	1 ft bgs	2 ft bgs	2 ft bgs
			EPA ID	LJ387	LJ388	LJ389	LJ390	LJ393	LJ394	LJ396	LJ397	LJ443	LJ444	LJ386	LJ398	LJ399		
<b>Metals (mg/kg)</b>																		
Cadmium	2.35	37		0.63	0.9	0.37	1.1	0.73	0.47	0.74	1	0.58 J	0.7 J	0.87	0.29	0.27		
Chromium	26.9	211		9.1	15.5	6.7	18.7	9.2	8.2	7.6	17	10.5	11.1	106	4.1	3.6		
Copper	10.5	3,129		7.1	<u>10.8</u>	4	12.1	5.8	4.7	4.8	<u>10.9</u>	5.7	6.4	<u>24.9</u>	2.7	3.3		
Lead <sup>c</sup>	15.1	150		6.1	<u>19.1</u>	1.8	6	18	2.3	3.2	4.4	2.7	<u>140</u>	4.7	1.8	1.6		
Nickel	15.3	1,564		7.5	11.7	4.9	14	8.2	6.7	6.5	12.8	7.5 J	8 J	7.3	3.3	3.4		
Silver	0.539	391		0.063	0.26	0.53 U	0.15	0.56 U	0.54 U	0.55 U	0.64 U	0.53 U	0.54 U	0.57 U	0.54 U	0.54 U		
Zinc	77.9	23,463		37.8	62.5	27.2	77.1	33.8	32.1	31.1	65.6	36.7	40.7	55.5	16.7	16.3		
<b>General Chemistry</b>																		
pH	-	-		8.66	8.64	8.53	8.83	8.63	9.25	8.67	8.53	7.37	8.5	4.99	9.09	10.3		

Notes

- Concentrations in **bold** indicate values greater than the residential soil PRGs and the former MCAS EI Toro background values
- Concentrations with italic underline indicate values greater than the former MCAS EI Toro background, but less than the residential soil PRGs
- = value does not exist
- bgs = below ground surface
- U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit
- J = indicates an estimated value
- mg/kg= milligram per kilogram
- <sup>a</sup> Source: BNI 1996
- <sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)
- <sup>c</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 3: Risk Screening Results - PRL 297

COPC	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Metals (mg/kg)</b>								
Cadmium	2.35	1.5	1.4E+03	3.7E+01	1.1E-09	0.2%	4.1E-02	2.7%
Chromium	26.9	106	2.1E+02	--	5.0E-07	99.8%	--	--
Copper	10.5	24.9	--	3.1E+03	--	--	8.0E-03	0.5%
Lead <sup>f</sup>	15.1	214	--	1.5E+02	--	--	1.4E+00	95.7%
Nickel	15.3	16	--	1.6E+03	--	--	1.0E-02	0.7%
Silver	0.539	0.43	--	3.9E+02	--	--	1.1E-03	0.1%
Zinc	77.9	101	--	2.3E+04	--	--	4.3E-03	0.3%
<b>Cumulative Maximum Risk</b>					<b>5.0E-07</b>		<b>1.5E+00</b>	

Notes:

-- = value does not exist

mg/kg= milligram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 18

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

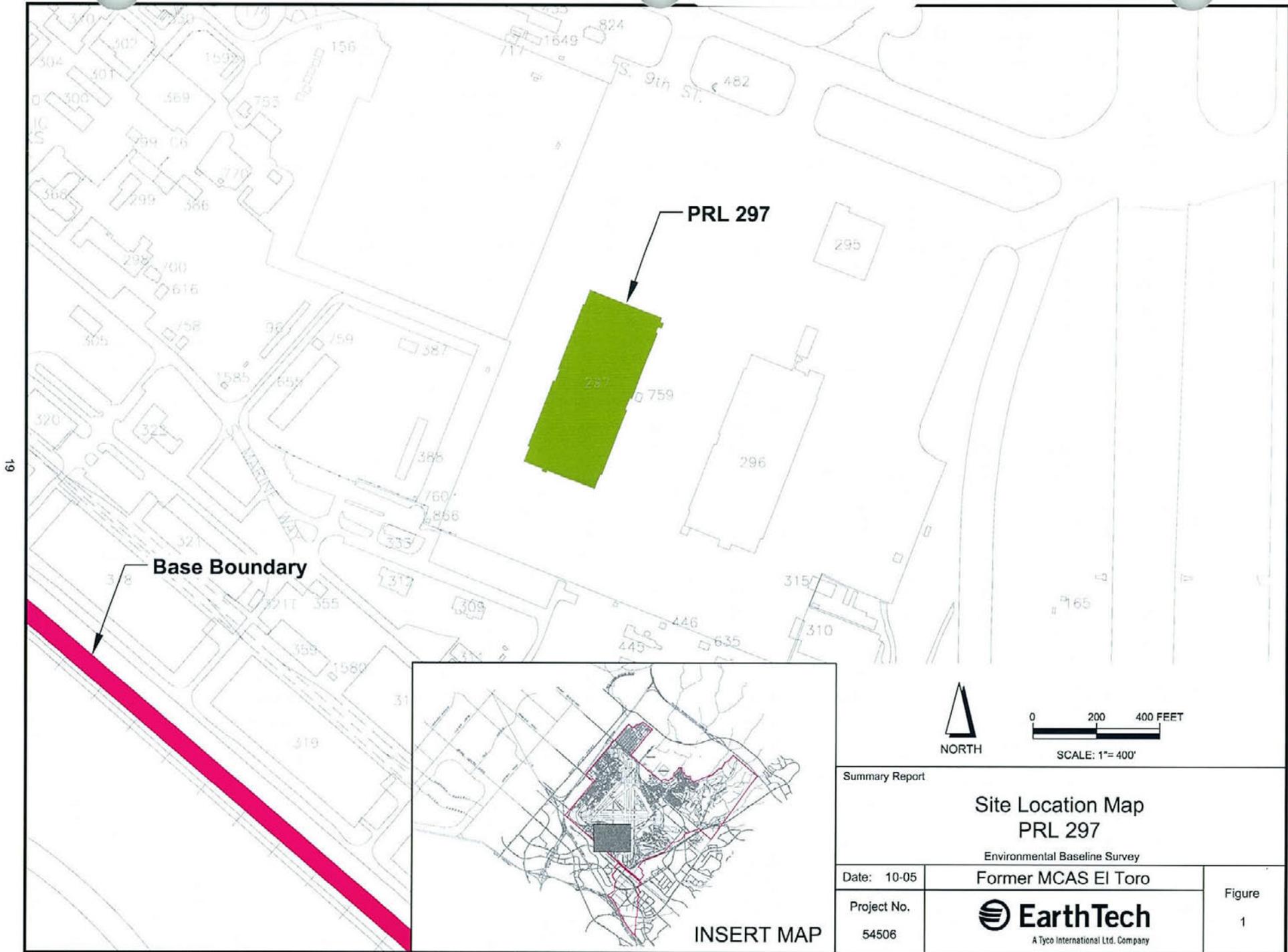
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 297

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 20

THIS PAGE IS INTENTIONALLY LEFT BLANK



Building 297 (Facing North)



Damaged Floor in South Elevator Room/Hazardous Material Storage Room Adjacent to Pit No. 9 (Facing North)



Interior of Building 297 (Facing South)

**LEGEND:**

- Sanitary Sewer
- Storm Sewer
- - - Water Line
- Natural Gas Line
- Electrical Line
- ⊙ CO Clean Out
- MH Manhole
- ▲ Transformer
- ⊕ Fire Hydrant
- ⊗ Water Valve
- Ⓜ Gas Meter
- ▭ Equipment Pad
- ▨ Former Process Pit or Trench
- ⊗ Approximate 1993 Phase I RI Monitoring Well Location (Bechtel, 1997)  
(Total Depth: 170 to 240 ft bgs; Groundwater Analytes: VOCs, SVOCs, TPH, Metals and General Chemistry; Soil Analytes: VOCs)
- ⊕ Approximate 1993 RFA Soil Boring Location  
(Sample Depth: 5 to 25 ft bgs; Analytes: TPH and VOCs)
- ⊗ Approximate Phase II RI Soil Boring Location; Completed as Soil Vapor Extraction Well (Bechtel, 1997) (Sample Depth: 85 to 129 ft bgs; Analytes: VOCs)
- Approximate Phase II RI Hand Auger Location (Bechtel, 1997)  
(Sample Depth: 2.5 to 15 ft bgs; Analytes: VOCs)
- x Approximate Phase I RI Soil Gas Location (Bechtel, 1997)  
(Sample Depth: 30 ft bgs; Analytes: VOCs and TPH)
- ◇ Approximate Phase II RI CPT Adjacent to Soil Gas Sample Location, Symbol Implies Nearby 24SG1 Soil Gas Sample Location (Bechtel, 1997)  
(Sample Depth: 30 ft bgs to Groundwater; Lithology Only)
- ⊗ Approximate Phase II RI Soil Gas Sample Location Only (Bechtel, 1997)  
(Sample Depth: 30 ft bgs to Groundwater; Analytes: VOCs and TPH)
- ▲ 1997 Confirmatory Sample Location (OHM, 1997)  
(Sample Depth: 18.5 ft bgs; Analytes: TPH and VOCs)
- ⊕ SVE Wells used in Remedial Action for Vadose Zone (Earth Tech) Closure Report (2002)
- HA1 ⊕ Soil Sample Location (Earth Tech, 2005)  
(Sample Depth: 1 to 16 ft bgs; Analytes: Metals, pH, and Cyanide)

Summary Report		
<b>Site Plan</b> <b>PRL 297</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	Figure
Project No. 54506	 EarthTech <small>A Tyco International Ltd. Company</small>	2 Sheet 1 of 2

PAGE NO. 22

THIS PAGE IS INTENTIONALLY LEFT BLANK

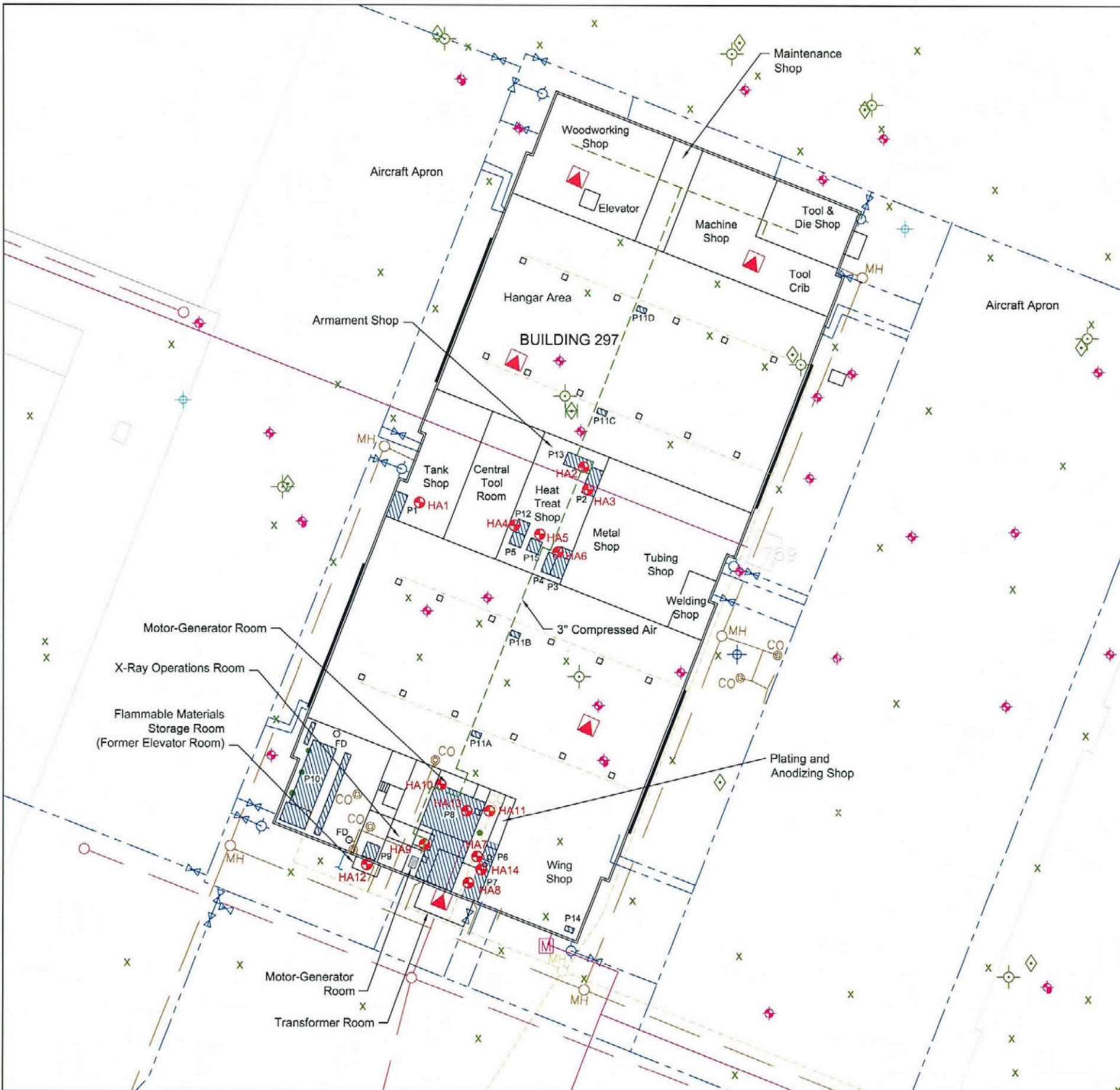
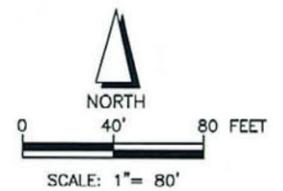


Table 1: List of Process Pits in Building 297

Pit Number	Dimensions (feet)	Hangar Area	Comments
1	23 x 10 x 4.2	Tank Shop	Drains to sump
2	19 x 10 x 3.2	Armament Shop	Tanks: Hot Water Rinse, Lubrite Solution, Warm Water Rinse, Mild Alkaline Cleaner
3	16.4 x 9.6 x 4	Heat Treat Shop	Furnace
3 (Sump)	5 x 5 x 14	Heat Treat Shop	Furnace
4	15.2 x 6.8 x 6.4	Heat Treat Shop	Furnace
5	9 x 9 x 9.3	Heat Treat Shop	Oil Quench Tank
6	13 x 6 x 6	Plating and Anodizing Shop	Degreaser Tank
7	27.8 x 12.2 x 4	Plating and Anodizing Shop	Tanks: Alkali Strip, Rinse, Acid Dip
8	67 x 40 x varies in depth up to 4 feet	Plating and Anodizing Shop	Tanks: Electroclean Tanks (2) Cold Rinse Tanks (3) Reverse Chrome Tank Hard Chrome Plating Tank Alkaline Strip Tank Acid Dip Tanks (2) Hot Rinse Tanks (4) Chromic Dip Tank Zinc Plate Tank Cyanide Dip Tank Cadmium Plate Tank Zinc Strip Tank Cadmium Strip Tank Copper Plate Tank Cadmium Plating Barrel Anodizing Tank Nickel Plating Tank Cleaning Tank
9	9 x 7.5 x 6.5	Plating and Anodizing Shop	Adjacent to elevator
10A	48 x 16 x 3.8	Cleaning Shop	Stripping Tank
10B	18.5 x 15 x 6.7	Cleaning Shop	Stripping (Alkali) Tank
10 (Trench)	16 (Approximate) x 2	Cleaning Shop	Drains to Pit No. 10
11 (4)	4.7 x 6 x 5	Hangar	Compressed Air Distribution Pits (connected to storm drain)
12	7.2 x 7.2 x 2.1	Heat Treat Shop	Water Quench Tank
13	8 x 17 x 3.2	Armament Shop	Tanks: Degreaser
14	4.7 x 6 x 5	Wing Shop	Compressed Air Distribution Pit (connected to storm drain)
15	9 x 9 x 9.3	Heat Treat Shop	Water Quench Tank

Notes:

1 Dimensions reported as length (in reference to building's longitudinal axis) by width by depth (deepest point) in feet. Dimensions are inside dimensions and do not include 8 to 10-inch concrete walls and bottom slabs.



Note: Features and Interior Layout are Approximate and May Not be to Scale

Summary Report		
<b>Site Plan</b> <b>PRL 297</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS EI Toro	Figure
Project No. 54506	 A Tyco International Ltd. Company	2
		Sheet 2 of 2

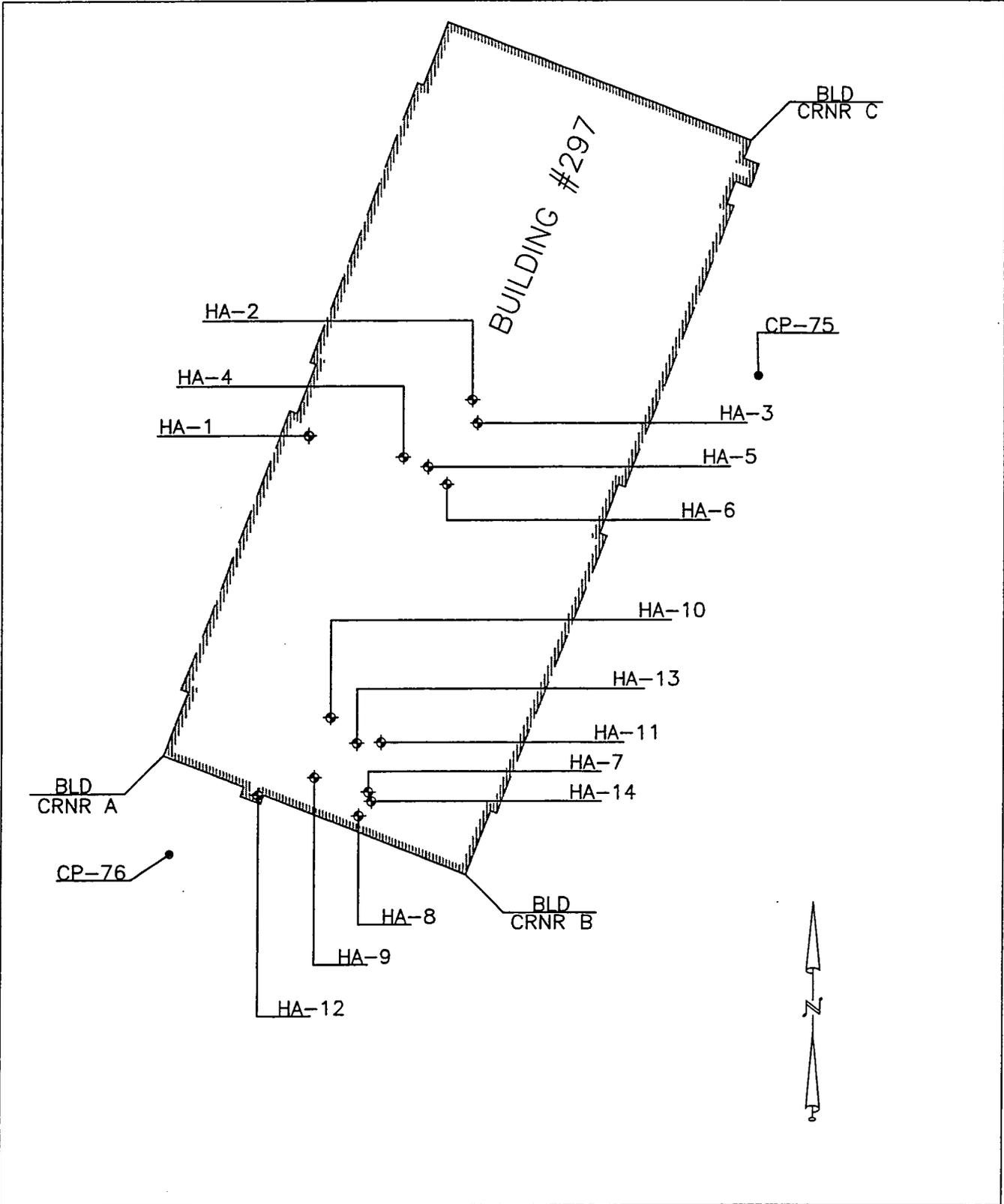
**Appendix A**  
**Validated Laboratory Analytical Data**

Validated Analytical Data for PRL 297

EPA ID:	LJ491	LJ435	LJ436	LJ437	LJ438	LJ439	LJ440	LJ441	LJ442	LJ391	LJ392	LJ387	LJ388	LJ389	LJ390	LJ393	LJ394	LJ396	LJ397	LJ443	LJ444	LJ386	LJ398	LJ399		
Location ID:	PRL297-HA1	PRL297-HA2	PRL297-HA2	PRL297-HA3	PRL297-HA3	PRL297-HA4	PRL297-HA4	PRL297-HA5	PRL297-HA5	PRL297-HA6	PRL297-HA6	PRL297-HA7	PRL297-HA7	PRL297-HA8	PRL297-HA8	PRL297-HA9	PRL297-HA9	PRL297-HA10	PRL297-HA10	PRL297-HA11	PRL297-HA11	PRL297-HA12	PRL297-HA13	PRL297-HA14		
Sample Type:	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS		
Sample Depth:	4	5	10	5	10	5	10	5	10	8	16	5	10	5	10	5	10	5	10	5	10	1	2	2		
Sample Date:	02-May-05	28-Apr-05	28-Apr-05	28-Apr-05	28-Apr-05	28-Apr-05	28-Apr-05	28-Apr-05	28-Apr-05	22-Apr-05	22-Apr-05	28-Apr-05	28-Apr-05	22-Apr-05	22-Apr-05	22-Apr-05										
Parameter	Units	Analytical Method <sup>1</sup>																								
<b>Metals</b>																										
Cadmium	mg/kg	6010B	0.9	1.2 J	0.68 J	1 J	0.62 J	0.98 J	0.28 J	1.3 J	0.93 J	0.3	1.5	0.63	0.9	0.37	1.1	0.73	0.47	0.74	1	0.58 J	0.7 J	0.87	0.29	0.27
Chromium	mg/kg	6010B	15	19.1	16.1	15.9	17.3	15.9	9.3	15.4	14	5.9	22.7	9.1	15.5	6.7	18.7	9.2	8.2	7.6	17	10.5	11.1	106	4.1	3.6
Copper	mg/kg	6010B	11.7	12.2	9.8	10.6	9.6	10.2	6.1	11.2	9.7	5.9	15.5	7.1	10.8	4	12.1	5.8	4.7	4.8	10.9	5.7	6.4	24.9	2.7	3.3
Lead	mg/kg	6010B	214	5.2	4.2	4.8	4.5	4.4	2.3	54.7	34.4	19	6.5	6.1	19.1	1.8	6	18	2.3	3.2	4.4	2.7	140	4.7	1.8	1.6
Nickel	mg/kg	6010B	12.5	16 J	9.4 J	12.9 J	10.7 J	12.3 J	5.9 J	13.5 J	11.5 J	5.9	15.4	7.5	11.7	4.9	14	8.2	6.7	6.5	12.8	7.5 J	8 J	7.3	3.3	3.4
Silver	mg/kg	6010B	0.61 U	0.58 U	0.59 U	0.59 U	0.59 U	0.57 U	0.54 U	0.59 U	0.43	0.55 U	0.65 U	0.063	0.26	0.53 U	0.15	0.56 U	0.54 U	0.55 U	0.64 U	0.53 U	0.54 U	0.57 U	0.54 U	0.54 U
Zinc	mg/kg	6010B	65.5	67	62.8	60.2	68.7	58.8	35.6	60.2	53.5	25.9	101	37.8	62.5	27.2	77.1	33.8	32.1	31.1	65.6	36.7	40.7	55.5	16.7	16.3
<b>Others</b>																										
Moisture	%	ASTM D 2216	17.7	14.1	15	15.3	15.6	12.1	7.7	14.6	11.8	9.1	22.6	15.5	21.6	5.3	20.5	10.3	6.9	8.4	21.3	5.9	7.9	11.9	8.2	7.3
Cyanide	mg/kg	9010	3 U	2.9 U	2.9 U	3 U	3 U	2.8 U	2.7 U	2.9 U	2.8 U	2.7 U	3.2 U	3 U	3.2 U	2.6 U	3.1 U	2.8 U	2.7 U	2.7 U	3.2 U	2.7 U	2.7 U	2.8 U	2.7 U	2.7 U
pH	pH	9040	8.04	8.1	9.19	8.21	8.95	8.81	9.03	8.5	8.62	8.56	8.36	8.66	8.64	8.53	8.83	8.83	9.25	8.67	8.53	7.37	8.5	4.99	9.09	10.3

Notes:  
<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.  
 U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.  
 J = indicates an estimated value  
 ASTM = American Society of Testing and Materials  
 SS = Soil Sample

**Appendix B**  
**Land Surveying**



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #297

SCALE:	1" = 100'	DATE:	06-06-05
BY:	JCL	JOB NO.:	04-1058-2227.000-535

BUILDING #297 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2188552.98	6109553.69	
BLD CRNR B	2188464.65	6109779.55	
BLD CRNR C	2189007.60	6109991.18	
CP 75	2188833.63	6109996.93	286.53
CP 76	2188479.95	6109558.47	285.51
BLD 297-HA 1	2188789.50	6109661.33	286.74
BLD 297-HA 2	2188815.89	6109783.71	286.79
BLD 297-HA 3	2188798.64	6109787.53	286.80
BLD 297-HA 4	2188773.36	6109732.58	286.77
BLD 297-HA 5	2188766.11	6109750.76	286.67
BLD 297-HA 6	2188753.32	6109764.70	286.63
BLD 297-HA 7	2188525.61	6109706.29	286.79
BLD 297-HA 8	2188507.96	6109699.07	286.79
BLD 297-HA 9	2188536.47	6109666.13	286.73
BLD 297-HA 10	2188580.94	6109677.97	286.75
BLD 297-HA 11	2188562.37	6109715.94	286.61
BLD 297-HA 12	2188523.50	6109623.87	286.36
BLD 297-HA 13	2188561.86	6109697.55	286.76
BLD 297-HA 14	2188518.80	6109708.66	286.78

**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310) 327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #297

SCALE: NONE DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 4**  
**Summary Report**  
**PRL 315**



**Summary Report for PRL 315,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	1
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	3
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 315	7
Table 2: Analytical Results Summary – PRL 315	9
Table 3: Risk Screening – PRL 315	11

## FIGURES

Figure 1: Site Location Map – PRL 315	15
Figure 2: Site Plan – PRL 315	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
BNI	Bechtel National, Inc
EPA	Environmental Protection Agency
HA	hand auger
HI	hazard index
MCAS	Marine Corps Air Station
NFECSW SDIEGO	Southwest Division, Naval Facilities Engineering Command
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	potential release location
TPH	total petroleum hydrocarbon
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 315 is associated with Building 315, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Drop Forge Building in the 1948, 1949, 1950, and 1954 station lists and as Group Machine Shop in the 1958 list. The facility description was Public Workshop in the 1973 list and Squadron Headquarters in the 1997 station list, which is the last known description. Figure 2 shows the plan of Building 315 and the surrounding area.

Industrial processes suspected to have occurred at this facility include equipment painting, abrasive blast paint removal, chrome plating, and welding. Further evaluation is recommended.

The only location of concern associated with this site was AST 315. AST 315 was a 500-gallon, propane, aboveground storage tank (AST) that was removed on 20 March 2001. Department of Toxic Substances Control concurred with no further action for AST 315 in a letter dated 16 July 2002.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and visual site inspections (VSIs) conducted in 2002 in support of the 2003 Environmental Baseline Survey (NFECSSW SDIEGO 2003), and in 2005 as part of supplemental site reconnaissance:

- Activities associated with this building may have led to a release of hazardous substances or pollutants to the ground or sewer system via the floor drains. Further investigation of the subsurface near the floor drains was recommended.
- A vent hood and a floor drain are situated in the southeast corner of the facility. Activities that may have required the use of a hood include painting, abrasive blast paint removal, chrome plating, and welding. For these activities, substances used may have resulted in releases of toxic or hazardous substances to the ground via the floor drain located beneath the hood. Further investigation was recommended.
- A crack in the floor slab was observed adjacent to damaged and stained concrete floor slab during the 2002 VSI and subsequent site reconnaissance. Further investigation was recommended.
- Former abrasive blast unit is listed on survey of air emissions sources (NFECSSW SDIEGO 1993). Disposal of abrasive grit is not documented in Resource Conservation and Recovery Act Facility Assessment or other former reports. Some grits may have contained radiological components. However, no signs of existing or past spent grit were observed during the 2002 VSI (NFECSSW SDIEGO 2003). No further investigation was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

## 3. Sampling and Analysis Summary

Sampling was conducted for PRL 315 in April 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

Six soil samples were collected adjacent to floor drains and the crack in the floor at locations HA1, HA2, HA3, HA4, HA4A, and HA5 to assess whether releases of hazardous substances from plating, painting, and other processes took place at the facility. The samples were collected 1 foot below the drain inverts or floor slab using hand auger (HA) equipment and analyzed for total petroleum hydrocarbons (TPH), plating and paint-related metals (cadmium, chromium, cobalt, copper, lead, nickel, mercury, silver, and zinc), cyanide, and negative logarithm of hydrogen ion concentration (pH). The results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

## 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 315 along with the United States Environmental Protection Agency (EPA) Region 9 or California-Modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA Region 9 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

### 4.2 RESULTS EVALUATION AND RISK SCREENING

The pH values indicate that the soil is slightly basic, and is indication that no significant release of acid has taken place in the vicinity of the sampling locations.

The main contribution to the TPH detection at locations HA1, HA2, HA3, HA4, HA4A, and HA5 is associated with motor oil and diesel oil. However, the concentration of TPH at these locations is not indicative of a significant release. Furthermore, the detection is assessed to be representative of the maximum concentration in soil as the samples were collected adjacent to the nearest sources of release, i.e., the floor drains. No PRGs exist for TPH or its subcategories (i.e., TPH<sub>g</sub>, TPH<sub>d</sub>, and TPH<sub>m</sub>).

Cyanide was not detected above the laboratory reporting limit, and none of the metals (cadmium, chromium, cobalt, copper, lead, mercury, nickel, silver, and zinc) exceeded their respective residential PRGs (EPA Region 9 2004), although concentrations exceeding the former MCAS El Toro background values (BNI 1996) for cadmium, cobalt, copper, lead, nickel, and silver were observed.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 315. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of metals at PRL 315 is 1.6E-07, which is below the EPA point of departure risk level of 1E-06. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of metals, expressed as the hazard index (HI), is 6.0E-01, which is below the target HI of 1.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 315 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data indicates that no significant release of hazardous substances or pollutants has occurred at PRL 315. The detected concentrations of metals were less than their residential PRGs, and are not indicative of a release. The cancer risk at PRL 315 is less than the EPA point of departure value of  $1E-06$ , and the noncancer risk is less than the target HI of 1. Based on these observations and results, no further investigation is recommended for PRL 315.

## 6. References

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.
- . 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A-Site 24 MCAS El Toro, California, Volume I*. March.
- Earth Tech, Inc. (Earth Tech). 2002. *Draft Final Closure Report Vadose Zone Remediation IRP Site 24, Volatile Organic Compounds Source Area, Former MCAS, El Toro, California*. June.
- Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- . 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.
- MCAS El Toro. 1971. Modifications, Repairs and Equipment Installation in Buildings 295, 296, 297 & 315, Building 297: First Floor, South Area; New and Modified Floor Plan. Drawing # 6004971, June.
- Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro, California Installation Restoration Program Final RCRA Facility Assessment Report, Vol. IV., Survey of Air Emission Sources*. July.
- . 1994. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Remedial Investigation/Feasibility Study, Final Soil Gas Survey Technical Memorandum Sites 24 and 25*. October.
- . 2001. *Marine Corps Air Station El Toro, California, Technical Memorandum, Summary Report, Former Above-ground Storage Tank (AST) Site 315*. July.
- . 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 315**

Analytical Group and Method <sup>a</sup>	Sample Location	HA1	HA2	HA3	HA4	HA4A	HA5
	EPA ID	LJ368	LJ369	LJ370	LJ371	LJ445	LJ372
	Sample Depth (feet bgs)	3	1.5	1.5	1.5	3	0.5
	Sampling Technique	HA	HA	HA	HA	HA	HA
TPH <sup>b</sup> 8015B		X	X	X	X	X	X
Cadmium 6010B		X	X	X	X	X	X
Chromium 6010B		X	X	X	X	X	X
Cobalt 6010B		X	X	X	X	X	X
Copper 6010B		X	X	X	X	X	X
Lead 6010B		X	X	X	X	X	X
Mercury 7471A		X	X	X	X	X	X
Nickel 6010B		X	X	X	X	X	X
Silver 6010B		X	X	X	X	X	X
Zinc 6010B		X	X	X	X	X	X
pH 9045C		X	X	X	X	X	X
Cyanide 9010B		X	X	X	X	X	X

## Notes:

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

<sup>b</sup> Analytical results for TPH are reported as TPH as gasoline (TPHg) TPH as diesel (TPHd), and TPH as motor oil (TPHm).

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 315**

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL315-HA1	PRL315-HA2	PRL315-HA3	PRL315-HA4	PRL315-HA4A	PRL315-HA5
			Sample Depth	3 feet bgs	1.5 feet bgs	1.5 feet bgs	1.5 feet bgs	3 feet bgs	0.5 feet bgs
			EPA ID	LJ368	LJ369	LJ370	LJ371	LJ445	LJ372
<b>Total Petroleum Hydrocarbons (mg/kg)</b>									
TPH as Diesel	--	--		1 J	11 U	11 U	45 J	74 J	23
TPH as Motor Oil	--	--		7 J	30	4 J	210	370	110
<b>Metals (mg/kg)</b>									
Cadmium	2.35	37		0.72	0.32	0.69	0.8	<u>6.6 J</u>	0.67
Chromium	26.9	211		14.3	11.8	13.5	13.4	21.2	11.8
Cobalt	6.98	903		6.4	<u>44.9</u>	<u>13.1</u>	5.4	6.6	<u>8.9</u>
Copper	10.5	3,129		7.6	<u>17.7</u>	10.4	9.3	<u>22.7</u>	8.3
Lead <sup>c</sup>	15.1	150		5.1	4.9	4.6	8.4	<u>53.3</u>	<u>16.5</u>
Mercury	0.22	23		0.067 J	0.085 J	0.063 J	0.084 J	0.12 J	0.12 J
Nickel	15.3	1,564		11	12.9	11.6	10.3	<u>18.9 J</u>	9.2
Silver	0.539	391		0.56 U	<u>2.6</u>	0.33	0.55 U	0.58 U	0.59 U
Zinc	77.9	23,463		46.2	47.6	49	52.6	70	53.2
<b>General Chemistry</b>									
pH	--	--		9.22	9.11	8.82	8.74	8.87	9.05

**Notes**

Concentrations with *italic underline* indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

-- = value does not exist

NA= not analyzed

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

J = indicates an estimated value

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 315**

COPC	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Metals (mg/kg)</b>								
Cadmium	2.35	6.6	1.4E+03	3.7E+01	4.7E-09	3.0%	1.8E-01	29.7%
Chromium	26.9	21.2	2.1E+02	--	1.0E-07	64.9%	--	--
Cobalt	6.98	44.9	9.0E+02	1.4E+03	5.0E-08	32.1%	3.3E-02	5.4%
Copper	10.5	22.7	--	3.1E+03	--	--	7.3E-03	1.2%
Lead <sup>f</sup>	15.1	53.3	--	1.5E+02	--	--	3.6E-01	59.2%
Mercury	0.22	0.12	--	2.3E+01	--	--	5.1E-03	0.9%
Nickel	15.3	18.9	--	1.6E+03	--	--	1.2E-02	2.0%
Silver	0.539	2.6	--	3.9E+02	--	--	6.6E-03	1.1%
Zinc	77.9	70	--	2.3E+04	--	--	3.0E-03	0.5%
<b>Cumulative Maximum Risk</b>					<b>1.6E-07</b>		<b>6.0E-01</b>	

**Notes:**

-- = value does not exist

mg/kg= milligram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Analytical results for lead were compared to Cal-Modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

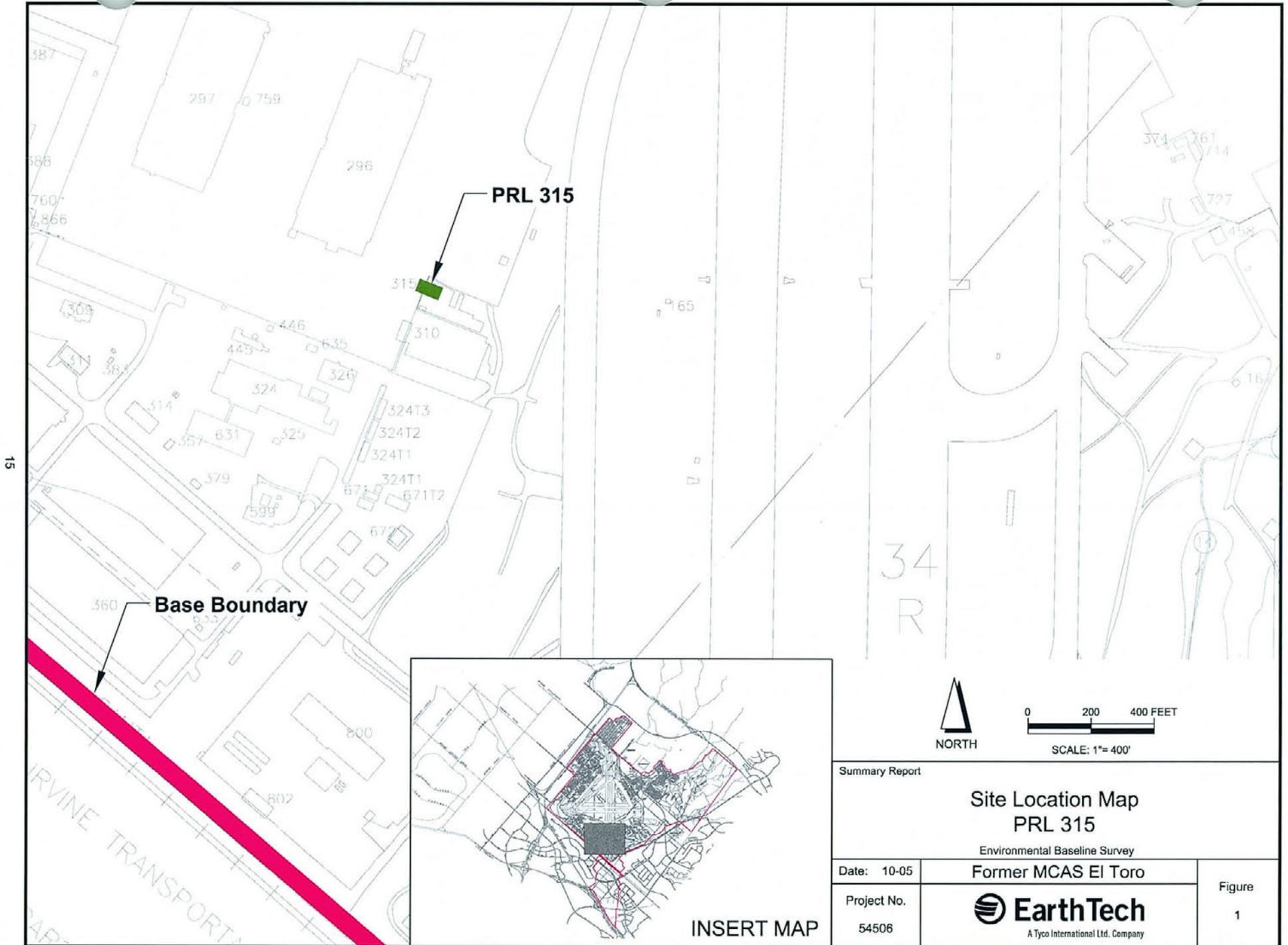
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 315

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 16

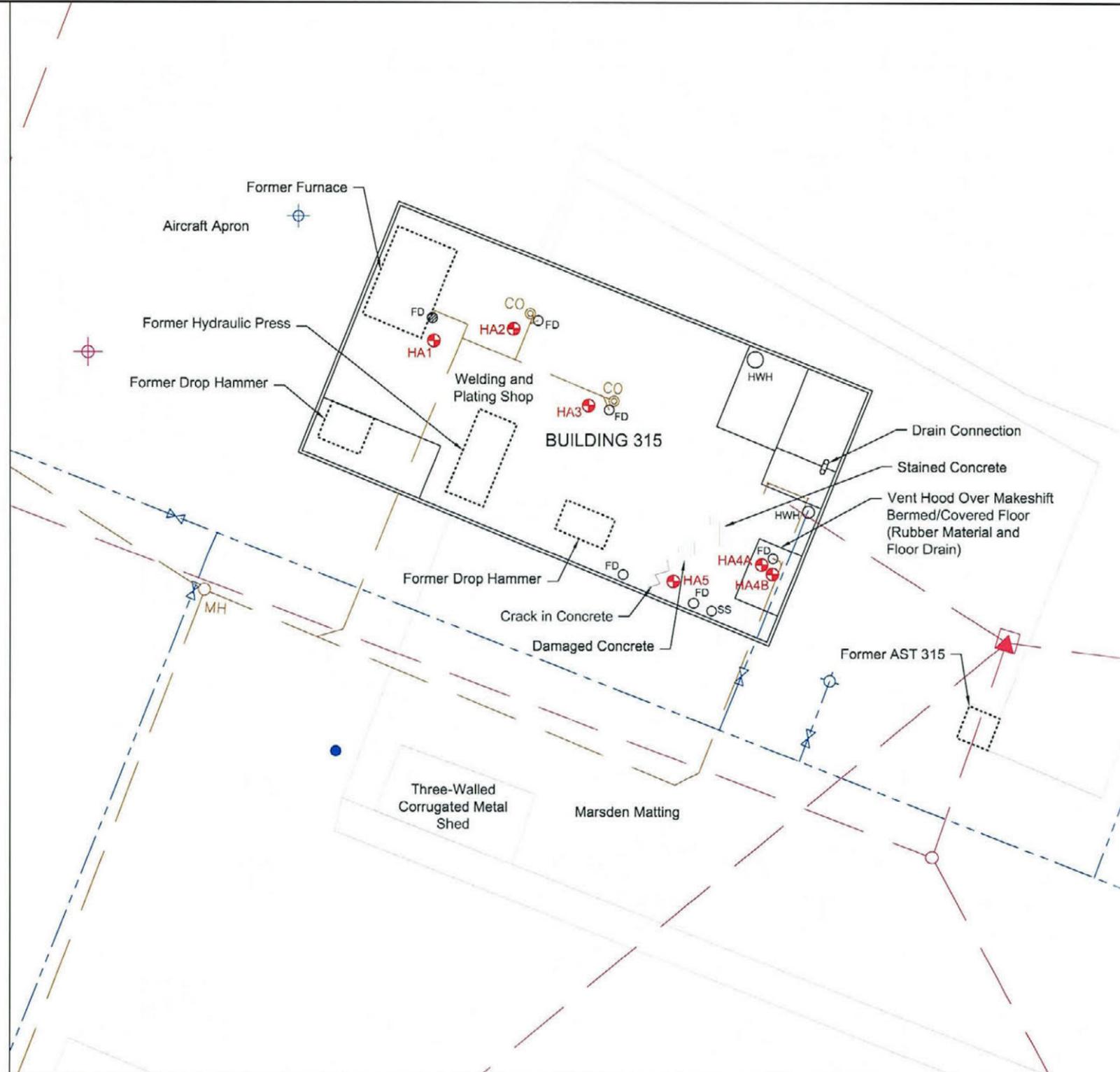
THIS PAGE IS INTENTIONALLY LEFT BLANK



Building 315  
(Facing West)

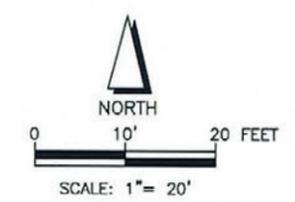


Floor Drain and Vent Hood  
(Facing East)



**LEGEND:**

- Sanitary Sewer
- - - Water Line
- - - Electrical Line
- HWH Hot Water Heater
- SS Safety Shower
- <sup>FD</sup> Floor Drain
- <sup>FD</sup> Filled in Floor Drain
- <sup>CO</sup> Clean Out
- <sup>MH</sup> Manhole
- ▲ Transformer
- ⊕ Fire Hydrant
- ⊠ Water Valve
- ⊕ Approximate Gas Sample Location (NFEC SW SDIEGO, 1994) (Sample Depth: 15 ft bgs; Analytes: TPH, TCE, and Freon 113)
- Approximate Soil Sample Location (Bechtel, 1997) (Sample Depth: 2 to 25 ft bgs; Analytes: VOCs and TPHe)
- ⊕ SVE Wells (Earth Tech, 2002) (Total Depth: 105 ft bgs; Analytes: VOCs)
- Soil Sample Location (Earth Tech, 2005) (Sample Depth: 0.5 to 3 ft bgs; Analytes: TPH, Metals, pH, and Cyanide)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 315</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	
Project No. 54506	 EarthTech A Tyco International Ltd. Company	Figure 2

File: L:\work\54506\work\EB\CAD\PA\Non-transferable\_PRLs\SummaryReports\Group III\Final\SR\_PRL\_315.dwg Time: Oct 18, 2005 - 1:35pm

**Appendix A**  
**Validated Laboratory Analytical Data**

**Validated Analytical Data for PRL 315**

		EPA ID:	LJ368	LJ369	LJ370	LJ371	LJ445	LJ372
		Location ID:	PRL315-HA1	PRL315-HA2	PRL315-HA3	PRL315-HA4	PRL315-HA4A	PRL315-HA5
		Sample Type:	SS	SS	SS	SS	SS	SS
		Sample Depth:	3	1.5	1.5	1.5	3	0.5
		Sample Date:	21-Apr-05	21-Apr-05	21-Apr-05	21-Apr-05	28-Apr-05	21-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>						
<b>Total Petroleum Hydrocarbons</b>								
Gasoline	mg/kg	8015B GRO	9.2 U	9.6 U	9.9 U	8.6 U	12 U	10 U
PHC as Diesel Fuel	mg/kg	8015B DRO	1 J	11 U	11 U	45 J	74 J	23
Motor Oil	mg/kg	8015B DRO	7 J	30	4 J	210	370	110
<b>Metals</b>								
Cadmium	mg/kg	6010B	0.72	0.32	0.69	0.8	6.6 J	0.67
Chromium	mg/kg	6010B	14.3	11.8	13.5	13.4	21.2	11.8
Cobalt	mg/kg	6010B	6.4	44.9	13.1	5.4	6.6	8.9
Copper	mg/kg	6010B	7.6	17.7	10.4	9.3	22.7	8.3
Lead	mg/kg	6010B	5.1	4.9	4.6	8.4	53.3	16.5
Nickel	mg/kg	6010B	11	12.9	11.6	10.3	18.9 J	9.2
Silver	mg/kg	6010B	0.56 U	2.6	0.33	0.55 U	0.58 U	0.59 U
Zinc	mg/kg	6010B	46.2	47.6	49	52.6	70	53.2
Mercury	mg/kg	7471A	0.067 J	0.085 J	0.063 J	0.084 J	0.12 J	0.12 J
<b>Others</b>								
Moisture	%	ASTM D 2216	10.9	9.2	11.6	9.7	13.7	15
Cyanide	mg/kg	9010	2.8 U	2.8 U	2.8 U	2.8 U	2.9 U	2.9 U
pH	pH	9040	9.22	9.11	8.82	8.74	8.87	9.05

**Notes:**

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

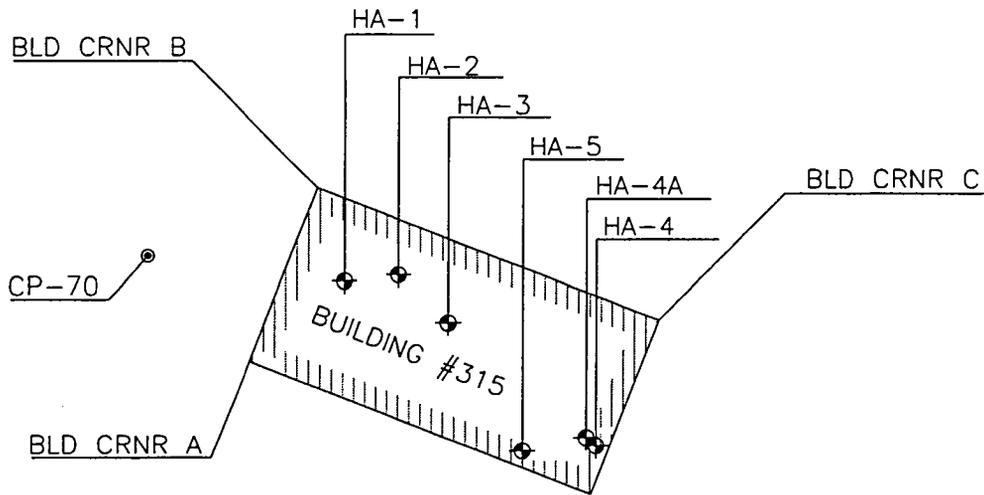
U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = indicates an estimated value

ASTM = American Society of Testing and Materials

SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #315 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2188154.30	6110461.86	
BLD CRNR B	2188193.02	6110476.95	
BLD CRNR C	2188124.69	6110537.84	
CP 70	2188177.94	6110438.69	291.40
BLD 315-HA 1	2188172.20	6110482.94	292.41
BLD 315-HA 2	2188173.60	6110495.11	292.40
BLD 315-HA 3	2188162.83	6110506.22	292.44
BLD 315-HA 4A	2188137.29	6110536.77	292.39
BLD 315-HA 4	2188135.44	6110538.95	292.28
BLD 315-HA 5	2188134.33	6110522.49	292.43



**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310) 327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #315

SCALE: 1"=40' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 5**  
**Summary Report**  
**PRL 324**



**Summary Report for PRL 324,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	2
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	3
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 324	7
Table 2: Analytical Results Summary – PRL 324	9
Table 3: Risk Screening – PRL 324	17

## FIGURES

Figure 1: Site Location Map – PRL 324	21
Figure 2: Site Plan – PRL 324	23

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BNI	Bechtel National, Inc.
COPC	chemical of potential concern
DoN	Department of the Navy
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
EPC	exposure point concentration
HA	hand augering
HI	hazard index
MCAS	Marine Corps Air Station
µg/kg	microgram per kilogram
mg/kg	milligram per kilogram
NFA	no further action
OCHCA	Orange County Health Care Agency
OWS	oil-water separator
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
pH	negative logarithm of hydrogen ion concentration
PRG	preliminary remediation goal
PRL	potential release location
RWQCB	Regional Water Quality Control Board
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 324 is associated with Building 324 located in the southwest quadrant of the former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Engine Overhaul and Test Cells in the 1948, 1949, 1950, and 1954 station lists and as Storage (Secured Test Cells) in the 1958 list. The facility description was Applied Instruction Building, Engine Test Cells, Carbon Dioxide Plant, and Armory in the 1973 list and Applied Instruction in the 1997 list. The last known description was Applied Instruction, Carbon Dioxide Storage, and Storage. Figure 2 shows the plan of Building 324 and the surrounding area.

Activities known to have taken place at this facility include cleaning and degreasing, metal plating, machining, engine maintenance, painting, and printing. Assorted pits, sumps, floor drains, and industrial sinks associated with these activities were also present.

Twelve locations of concern were associated with this site. Aerial Photograph Anomaly 18 was described as stains along the westerly side of Building 324. Upon further investigation, no further action (NFA) was recommended with concurrence from the Department of Toxic Substances Control (DTSC) in a letter dated 26 June 1999. No evidence of staining or release was identified during the 2002 visual site inspection (VSI) conducted in support of the 2003 Environmental Baseline Survey (EBS). OWS 324-1 and OWS 324-2 were 1,000-gallon, oil/water separators (OWSs) that were closed by the Regional Water Quality Control Board (RWQCB) in a letter dated 7 April 1999. PCB A2 was a storage area for polychlorinated biphenyl (PCB)-containing equipment for which the DTSC concurred with the Department of the Navy (DoN) recommendation for NFA in a letter dated 28 September 2001. Solid Waste Management Unit 95 was a hazardous waste storage area that was investigated during the Resource Conservation and Recovery Act Facility Assessment (NFECWS SDIEGO 1993) and for which the DTSC concurred with the DoN recommendation for NFA in a letter dated 23 July 1996. USTs 324A, 324B, 324C, and 324D were 8,000-gallon underground storage tanks (USTs) containing jet fuel (JP-5) that were removed and the sites closed by the Orange County Health Care Agency (OCHCA) in a letter dated 18 March 1998. UST 324E was a 2,000-gallon, diesel UST that was removed and the site closed by the OCHCA in a letter dated 9 December 1996. UST 324F was a 2,000-gallon, fuel UST that was removed and the site closed by the OCHCA in a letter dated 18 March 1998. UST 324G was a 1,500-gallon, waste-oil UST that was removed and the site closed by the OCHCA in a letter dated 23 October 2000.

## 2. Issues and Concerns

The following issues and concerns associated with PRL 324 were identified during the records review, previous investigations, and VSIs conducted in 2002 in support of the 2003 EBS (NFECWS SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- Process areas where degreasing and cleaning, metal plating, engine maintenance, painting, and printing activities occurred included structures such as former pits, sumps, floor drains, and sinks with subsurface piping. A potential exists for releases of hazardous substances or pollutants (i.e., solvents, petroleum hydrocarbons, and heavy metals) to the ground through cracks and corrosion of the structures and associated piping. Further investigation was recommended.
- Former jet engine test cells. Concerns included the jet fuel piping in and beneath the floor, and oil-containing equipment that may have been used inside the test cell facilities. Further investigation was recommended.
- Stained concrete observed during the 2002 VSI beneath a valve situated in the hydraulic lift system room of Building 324 appeared to indicate a leak of hydraulic fluid. The stain was

minor and occurred over intact, concrete flooring and there is no indication a release to ground has occurred. No further investigation was recommended.

- Hydraulic lifts observed in test cells. No evidence of releases of hazardous substances or pollutants was observed near the hydraulic lifts. No further investigation of these features was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

### **3. Sampling and Analysis Summary**

Sampling was conducted for PRL 324 in April and May 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

Soil samples were collected at 16 locations (HA1, HA2, HA2B, HA3, HA4A, HA4B, HA5, HA5A, HA6, HA7, HA8, HA10, HA12, HA15, HA16, and HA17) throughout Building 324. The locations were selected to cover the process areas where activities could have resulted in releases of hazardous substances or pollutants to the ground and are deemed to be representative of subsurface conditions. The areas targeted for sampling include the former degreaser pits (HA4A, HA4B, HA5, HA5B, HA6, HA8, HA16, HA17), patched concrete in cleaning/degreasing areas (HA1, HA16, HA17), and former process drain lines (HA2, HA2B, HA3, HA7, HA10, HA12, and HA15). The soil samples were collected at depths ranging from 3 to 10 feet below ground surface (bgs) using hand auger (HA), and analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), cadmium, chromium, copper, lead, nickel, silver, zinc, cyanide, and negative logarithm of hydrogen ion concentration (pH). The results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

Soil samples were collected at three locations (HA9, HA11, and HA13) to assess the subsurface soil for releases of fuel or combustion byproducts from the jet engine test cell operations. At each location, one sample was collected at a depth of 1 foot below the bottom of the drain invert using HA equipment and analyzed for VOCs, TPH, and polynuclear aromatic hydrocarbons (PAHs).

## **4. Investigation Results**

This section presents analytical results and discusses the results of data evaluation and risk screening.

### **4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE**

The analytical results for the samples collected at PRL 324 along with the United States Environmental Protection Agency (EPA) Region 9 or California-modified residential preliminary residential goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix presents land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report. In addition, it was noted that methylene chloride was reported in field and laboratory quality control samples, and the sample results qualified accordingly.

### **4.2 RESULTS EVALUATION AND RISK SCREENING**

The pH values indicate that the soil is basic, and is not indicative that a release of acid has taken place in the vicinity of the sampling locations.

TPH was detected in the soil samples collected from locations throughout Building 324. The major contributor to the TPH detection was from the group of TPH associated with motor oil. However, the concentration of TPH at these locations is not indicative of a significant release. Furthermore, the detections are assessed to be representative of the maximum concentrations in soil as the samples were collected adjacent to the nearest sources of release. No PRGs exist for TPH or its subcategories (i.e., TPH<sub>g</sub>, TPH<sub>d</sub>, and TPH<sub>m</sub>).

Cyanide was not detected above the laboratory reporting limit, and none of the metals (cadmium, chromium, copper, lead, nickel, and zinc) exceeded their respective residential PRGs (EPA 2004), although concentrations exceeding the former MCAS El Toro background values (BNI 1996a) for copper, lead, and silver were observed. None of the detected PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, and pyrene) exceeded their residential PRGs or former MCAS El Toro anthropogenic reference levels (BNI 1996b), and none of the detected VOCs (acetone, 1,1,2,2-tetrachloroethane, trichloroethene, and di-isopropyl ether) exceeded their residential PRGs.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 324. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 324 is 2.6E-07, which is below the EPA point of departure risk level of 1E-06. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as a hazard index (HI) of 2.6E-01, which is below the target HI of 1.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 324 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data indicate that a significant release of hazardous substances or pollutants has not occurred at PRL 324. The concentrations of TPH in the soil samples do not indicate that there has been a significant release of hydrocarbons to the soil, and the concentrations of all other chemicals were less than their residential PRGs, and are not indicative of a release. The cancer risk at PRL 324 is less than the EPA point of departure value of 1E-06, and the noncancer risk is less than the target HI of 1. Based on these observations and results, no further investigation is recommended for PRL 324.

## 6. References

- Bechtel National, Inc. (BNI). 1996a. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.
- . 1996b. *Final Report, Anthropogenic PAH Reference-Level Study, MCAS El Toro, California*. San Diego, California. July.
- . 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A – Site 24 MCAS El Toro, California, Vol. I*. March.
- Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.

<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

———. 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

Jacobs Engineering. 1994. *MCAS El Toro, California, Installation Restoration Program, Remedial Investigation/Feasibility Study, Final Soil Gas Survey Technical Memorandum Sites 24 and 25*. San Diego. October.

Navy Department. 1945. Building No. 324, Engine Overhaul Building Test Cells, Sewer and Drainage. (Record 29 May 1945) Y and D Drawing No. 9452.

———. 1962. Building No.324, Alterations for Aircraft Systems Training Building, Floor Plan. (Record 17, Jan 69) Y and D Drawing. No. 977342. September.

———. 1969. Building No. 324, Alterations for Aircraft Systems Training Building, Floor Plan. (Record 17, Jan 69) Y and D Drawing. No. 977342. September.

OHM Remediation Services Corp. (OHM). 1998. *Tank Removal and Site Closure Report, USTs 324A, 324B, 324C, 324D and 324F, MCAS El Toro, CA*. February

Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro, California, Installation Restoration Program Final RCRA Facility Assessment Report, Vol. IV, Survey of Air Emission Sources*. July.

———. 1996. Phase II RI Report, Figure 3-4, Floor Plan of Hangar Building (324) Site 24. February.

———. 1998. *MCAS El Toro, California, Site Assessment Report, Oil/Water Separator Sites 324-1 and 324-2*. June.

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 1: Sampling and Analyses Summary – PRL 324

Sample Location	EPA ID	Sample Depth (feet bgs)	Sampling Technique	Analyte Group and Analytical Method <sup>a</sup>					
				Metals <sup>b</sup> 6010B	pH 9045C	Cyanide 9010B	VOCs 8260B	TPH <sup>c</sup> 8015B	PAHs 8270-SIM
HA1	LJ402	5	HA	X	X	X	X	X	—
HA1	LJ403	10	HA	X	X	X	X	X	—
HA2	LJ477	5	HA	X	X	X	X	X	—
HA2	LJ478	10	HA	X	X	X	X	X	—
HA2B	LJ412	3	HA	X	X	X	X	X	—
HA3	LJ407	5	HA	X	X	X	X	X	—
HA3	LJ408	7	HA	X	X	X	X	X	—
HA4A	LJ409	5	HA	X	X	X	X	X	—
HA4A	L410	10	HA	X	X	X	X	X	—
HA4B	LJ411	3	HA	X	X	X	X	X	—
HA5	L413	5	HA	X	X	X	X	X	—
HA5A	LJ476	10	HA	X	X	X	X	X	—
HA6	LJ446	5	HA	X	X	X	X	X	—
HA6	LJ447	10	HA	X	X	X	X	X	—
HA7	LJ416	5	HA	X	X	X	X	X	—
HA7	LJ417	10	HA	X	X	X	X	X	—
HA8	LJ418	5	HA	X	X	X	X	X	—
HA8	LJ419	10	HA	X	X	X	X	X	—
HA9	LJ479	3	HA	—	—	—	X	X	X
HA10	LJ420	5	HA	X	X	X	X	X	—
HA10	LJ421	10	HA	X	X	X	X	X	—
HA11	LJ422	3	HA	—	—	—	X	X	X
HA12	LJ423	5	HA	X	X	X	X	X	—
HA12	LJ424	10	HA	X	X	X	X	X	—
HA13	LJ425	5	HA	X	X	X	X	X	—
HA13	LJ426	10	HA	X	X	X	X	X	—
HA15	LJ429	4	HA	—	—	—	X	X	X
HA16	LJ430	5	HA	X	X	X	X	X	—
HA16	LJ431	10	HA	X	X	X	X	X	—
HA17	LJ432	3	HA	X	X	X	X	X	—

## Notes:

— = not analyzed

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.<sup>b</sup> Metals analyzed were cadmium, chromium, copper, lead, nickel, silver, and zinc.<sup>c</sup> Analytical results for TPH are reported as TPH as gasoline (TPHg), TPH as diesel (TPHd), and TPH as motor oil (TPHm).

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 324**

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	MCAS El Toro Anthropogenic Reference Level <sup>a</sup>		Residential Soil PRG <sup>b</sup>	Sample Location	PRL 324-HA1	PRL 324-HA1	PRL 324-HA2	PRL 324-HA2	PRL 324-HA2B	PRL 324-HA3	PRL 324-HA3	PRL 324-HA4A
		Maximum Value	95% UCL		Sample Depth	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	3 ft bgs	5 ft bgs	7 ft bgs	5 ft bgs
					EPA ID	LJ402	LJ403	LJ477	LJ478	LJ412	LJ407	LJ408	LJ409
<b>Total Petroleum Hydrocarbons (mg/kg)</b>													
TPH as Diesel	--	--	--	--		11 U	12 U	12U	2J	10U	11 U	5J	11U
TPH as Motor Oil	--	--	--	--		3 J	2 J	12U	4J	2J	25	29	1J
<b>Volatile Organic Compounds (µg/kg)</b>													
Acetone	--	--	--	1.4E+07		98 U	110 U	34J	14J	110U	110 U	94U	99U
1,1,2,2-Tetrachloroethane	--	--	--	4.1E+02		4.9 U	5.4 U	5.4U	4.8U	5.5U	5.4 U	4.7U	5U
Trichloroethene	--	--	--	5.3E+01		4.9 U	5.4 U	5J	4.8U	5.5U	5.4 U	4.7U	5U
Di-Isopropyl Ether	--	--	--	--		4.9 U	5.4 U	5.4U	4.8U	5.5U	5.4 U	4.7U	5U
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>													
Benzo(a)anthracene	--	70	22	6.2E+02		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	--	110	27	6.2E+01		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	--	95	28	6.2E+02		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	--	95	29	--		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene <sup>c</sup>	--	100	24	3.8E+02		NA	NA	NA	NA	NA	NA	NA	NA
Chrysene <sup>c</sup>	--	100	31	3.8E+03		NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	150	45	2.3E+06		NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	--	140	41	2.3E+06		NA	NA	NA	NA	NA	NA	NA	NA
<b>Metals (mg/kg)</b>													
Cadmium	2.35	--	--	3.7E+01		0.47	0.92	0.7	2.3	0.71	0.64	0.64	0.6
Chromium	26.9	--	--	2.1E+02		7.3	11.8	25.6	8.9	6.4	9.2	11	10.1
Copper	10.5	--	--	3.1E+03		4.9	8	<u>12.3</u>	<u>57.7</u>	2.2	5.7	7.8	6.1
Lead <sup>c</sup>	15.1	--	--	1.5E+02		2 J	3.9 J	4.3	3.6	14.1J	3.3 J	<u>25.2J</u>	3.3J
Nickel	15.3	--	--	1.6E+03		6.2 J	9.7 J	13.4	7.6	2.3J	6.9 J	8.7 J	7.6J
Silver	0.539	--	--	3.9E+02		0.56 U	0.61 U	0.62U	<u>1</u>	0.25UJ	0.56 U	0.053 UJ	0.57U
Zinc	77.9	--	--	2.3E+04		28.2	45.4	77.5	51.5	9.9	35.1	40.9	38.1
<b>General Chemistry</b>													
pH	--	--	--	--		8.13	7.98	8.52	8.42	9.8	8.62	9.16	8.87

**Notes**

Concentrations with *italic underline* indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

NA= not analyzed

-- = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg= milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for benzo(k)fluoranthene, chrysene, and lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 324**

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	MCAS El Toro Anthropogenic Reference Level <sup>a</sup>		Residential Soil PRG <sup>b</sup>	Sample Location	PRL 324-HA4A	PRL 324-HA4B	PRL 324-HA5	PRL 324-HA5A	PRL 324-HA6	PRL 324-HA6	PRL 324-HA7	PRL 324-HA7
		Maximum Value	95% UCL		Sample Depth	10 ft bgs	3 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs	5 ft bgs	10 ft bgs
					EPA ID	LJ410	LJ411	LJ413	LJ476	LJ446	LJ447	LJ416	LJ417
<b>Total Petroleum Hydrocarbons (mg/kg)</b>													
TPH as Diesel	--	--	--	--		0.5J	11U	12U	11U	12U	11U	12U	11U
TPH as Motor Oil	--	--	--	--		2J	4J	2J	2J	3J	11U	1J	0.9J
<b>Volatile Organic Compounds (µg/kg)</b>													
Acetone	--	--	--	1.4E+07		97U	110U	110U	96.8	100U	91U	100U	100U
1,1,2,2-Tetrachloroethane	--	--	--	4.1E+02		4.8U	5.3U	5.3U	4.5U	5.1U	4.6U	5.1U	5.2U
Trichloroethene	--	--	--	5.3E+01		4.8U	5.3U	5.3U	4.5U	5.1U	4.6U	5.1U	5.2U
Di-Isopropyl Ether	--	--	--	--		4.8U	5.3U	5.3U	4.5U	1J	2J	5.1U	5.2U
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>													
Benzo(a)anthracene	--	70	22	6.2E+02		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	--	110	27	6.2E+01		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	--	95	28	6.2E+02		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	--	95	29	--		NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene <sup>c</sup>	--	100	24	3.8E+02		NA	NA	NA	NA	NA	NA	NA	NA
Chrysene <sup>c</sup>	--	100	31	3.8E+03		NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	150	45	2.3E+06		NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	--	140	41	2.3E+06		NA	NA	NA	NA	NA	NA	NA	NA
<b>Metals (mg/kg)</b>													
Cadmium	2.35	--	--	3.7E+01		0.7	0.25J	0.99	0.83	0.93J	0.67J	0.96	0.87
Chromium	26.9	--	--	2.1E+02		10.9	4.6	13.5	8.5	15.7	9.5	16.2J	9.8J
Copper	10.5	--	--	3.1E+03		6.9	2.7	9.3	7.5	<u>11.1</u>	6.9	<u>10.8</u>	5.4
Lead <sup>c</sup>	15.1	--	--	1.5E+02		3.6J	1.9J	4.8J	3.6	6	4	4.7	3
Nickel	15.3	--	--	1.6E+03		8.3J	3.6J	10.6J	8.5	11.7J	7.2J	11.7	8.4
Silver	0.539	--	--	3.9E+02		0.57U	0.54U	0.61U	0.57U	0.6U	0.56U	0.16UJ	0.55U
Zinc	77.9	--	--	2.3E+04		40.9	18.2	54.1	42.6	65.3	34.3	64.3J	35.5J
<b>General Chemistry</b>													
pH	--	--	--	--		8.63	8.78	8.16	9.04	8.2	8.69	8.51	7.85

**Notes**

Concentrations with *italic underline* indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

NA= not analyzed

-- = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg= milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for benzo(k)fluoranthene, chrysene, and lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 324**

Analyte	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	MCAS EI Toro Anthropogenic Reference Level <sup>a</sup>		Residential Soil PRG <sup>b</sup>	Sample Location	PRL 324-HA8	PRL 324-HA8	PRL 324-HA9	PRL 324-HA10	PRL 324-HA10	PRL 324-HA11	PRL 324-HA12	PRL 324-HA12
		Maximum Value	95% UCL		Sample Depth	5 ft bgs	10 ft bgs	3 ft bgs	5 ft bgs	10 ft bgs	3 ft bgs	5 ft bgs	10 ft bgs
					EPA ID	LJ418	LJ419	LJ479	LJ420	LJ421	LJ422	LJ423	LJ424
<b>Total Petroleum Hydrocarbons (mg/kg)</b>													
TPH as Diesel	--	--	--	--		2J	0.5J	12U	11U	0.3J	1J	0.9J	11U
TPH as Motor Oil	--	--	--	--		2J	1J	12U	1J	1J	3J	1J	11U
<b>Volatile Organic Compounds (µg/kg)</b>													
Acetone	--	--	--	1.4E+07		110U	100U	9J	110U	100U	92U	100U	94U
1,1,2,2-Tetrachloroethane	--	--	--	4.1E+02		5.5U	5U	5.9U	5.4U	5.2U	4.6U	5.1U	4.7U
Trichloroethene	--	--	--	5.3E+01		5.5U	5U	5.9U	5.4U	5.2U	4.6U	5.1U	4.7U
Di-isopropyl Ether	--	--	--	--		5.5U	5U	5.9U	5.4U	5.2U	4.6U	5.1U	4.7U
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>													
Benzo(a)anthracene	--	70	22	6.2E+02		NA	NA	29U	NA	NA	2J	NA	NA
Benzo(a)pyrene	--	110	27	6.2E+01		NA	NA	29U	NA	NA	1J	NA	NA
Benzo(b)fluoranthene	--	95	28	6.2E+02		NA	NA	29U	NA	NA	2J	NA	NA
Benzo(g,h,i)perylene	--	95	29	--		NA	NA	29U	NA	NA	0.8J	NA	NA
Benzo(k)fluoranthene <sup>c</sup>	--	100	24	3.8E+02		NA	NA	29U	NA	NA	1J	NA	NA
Chrysene <sup>c</sup>	--	100	31	3.8E+03		NA	NA	29U	NA	NA	2J	NA	NA
Fluoranthene	--	150	45	2.3E+06		NA	NA	29U	NA	NA	2J	NA	NA
Pyrene	--	140	41	2.3E+06		NA	NA	29U	NA	NA	2J	NA	NA
<b>Metals (mg/kg)</b>													
Cadmium	2.35	--	--	3.7E+01		0.86	0.83	NA	0.68	1	NA	0.75	0.95
Chromium	26.9	--	--	2.1E+02		9J	9.8J	NA	11.7J	12.4J	NA	14.2J	11.4J
Copper	10.5	--	--	3.1E+03		5.9	5.9	NA	7.2	7.1	NA	8.1	7
Lead <sup>c</sup>	15.1	--	--	1.5E+02		2.8	2.7	NA	3.4	3	NA	3.7	3.1
Nickel	15.3	--	--	1.6E+03		8	7.9	NA	8.9	9.6	NA	10.3	9.3
Silver	0.539	--	--	3.9E+02		0.064UJ	0.55U	NA	0.12UJ	0.071UJ	NA	0.16UJ	0.072UJ
Zinc	77.9	--	--	2.3E+04		32.4J	35.8J	NA	46.2J	42.7J	NA	52.5J	41.4J
<b>General Chemistry</b>													
pH	--	--	--	--		7.67	7.21	8.95	7.99	7.3	8.05	8.75	8

**Notes**

Concentrations with *italic underline* indicate values greater than the former MCAS EI Toro background, but less than the residential soil PRGs

NA= not analyzed

-- = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg= milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for benzo(k)fluoranthene, chrysene, and lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

Table 2: Analytical Results Summary - PRL 324

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	MCAS El Toro Anthropogenic Reference Level <sup>a</sup>		Residential Soil PRG <sup>b</sup>	Sample Location	PRL 324-HA13	PRL 324-HA13	PRL 324-HA15	PRL 324-HA16	PRL 324-HA16	PRL 324-HA17
		Maximum Value	95% UCL		Sample Depth	5 ft bgs	10 ft bgs	4 ft bgs	5 ft bgs	10 ft bgs	3 ft bgs
					EPA ID	LJ425	LJ426	LJ429	LJ430	LJ431	LJ432
<b>Total Petroleum Hydrocarbons (mg/kg)</b>											
TPH as Diesel	--	--	--	--		0.6J	11U	12U	0.4J	12U	0.4J
TPH as Motor Oil	--	--	--	--		1J	0.8J	12U	1J	2J	1J
<b>Volatile Organic Compounds (µg/kg)</b>											
Acetone	--	--	--	1.4E+07		120U	99U	100U	95U	95U	110U
1,1,2,2-Tetrachloroethane	--	--	--	4.1E+02		5J	4.9U	5U	4.8U	1J	5.5U
Trichloroethene	--	--	--	5.3E+01		6U	4.9U	5U	4.8U	4.7U	5.5U
Di-Isopropyl Ether	--	--	--	--		6U	4.9U	5U	2J	1J	1J
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>											
Benzo(a)anthracene	--	70	22	6.2E+02		NA	NA	29U	NA	NA	NA
Benzo(a)pyrene	--	110	27	6.2E+01		NA	NA	29U	NA	NA	NA
Benzo(b)fluoranthene	--	95	28	6.2E+02		NA	NA	29U	NA	NA	NA
Benzo(g,h,i)perylene	--	95	29	--		NA	NA	29U	NA	NA	NA
Benzo(k)fluoranthene <sup>c</sup>	--	100	24	3.8E+02		NA	NA	29U	NA	NA	NA
Chrysene <sup>c</sup>	--	100	31	3.8E+03		NA	NA	29U	NA	NA	NA
Fluoranthene	--	150	45	2.3E+06		NA	NA	29U	NA	NA	NA
Pyrene	--	140	41	2.3E+06		NA	NA	29U	NA	NA	NA
<b>Metals (mg/kg)</b>											
Cadmium	2.35	--	--	3.7E+01		0.99	0.78	NA	0.77	1.4	0.37
Chromium	26.9	--	--	2.1E+02		16.2J	11.9J	NA	9.4J	16.3J	12.2J
Copper	10.5	--	--	3.1E+03		10.1	6.2	NA	5.4	10.5	3.1
Lead <sup>c</sup>	15.1	--	--	1.5E+02		4.1	2.5	NA	2.5	4.7	2.6
Nickel	15.3	--	--	1.6E+03		12.6	9.2	NA	7.4	13	7.6
Silver	0.539	--	--	3.9E+02		0.11UJ	0.16UJ	NA	0.074UJ	0.14UJ	0.053UJ
Zinc	77.9	--	--	2.3E+04		58.6J	37.3J	NA	32.7J	57.6J	14.1J
<b>General Chemistry</b>											
pH	--	--	--	--		8.13	7.87	8.16	8.23	8	8.47

Notes

Concentrations with *italic underline* indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

NA= not analyzed

-- = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg= milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for benzo(k)fluoranthene, chrysene, and lead were compared to Cal-modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 324**

COPC	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
				Carcinogenic		Noncarcinogenic	
				Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Volatile Organic Compounds (µg/kg)</b>							
Acetone	96.8	--	1.4E+07	--	--	6.9E-06	0.0%
1,1,2,2-Tetrachloroethane	5	4.1E+02	1.0E+06	1.2E-08	4.8%	4.8E-06	0.0%
Trichloroethene	5	5.3E+01	1.6E+04	9.4E-08	36.9%	3.1E-04	0.1%
Di-Isopropyl Ether	2	--	--	--	--	--	--
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>							
Benzo(a)anthracene	2	6.2E+02	--	3.2E-09	1.3%	--	--
Benzo(a)pyrene	1	6.2E+01	--	1.6E-08	6.3%	--	--
Benzo(b)fluoranthene	2	6.2E+02	--	3.2E-09	1.3%	--	--
Benzo(g,h,i)perylene	0.8	--	--	--	--	--	--
Benzo(k)fluoranthene <sup>f</sup>	1	3.8E+02	--	2.6E-09	1.0%	--	--
Chrysene <sup>f</sup>	2	3.8E+03	--	5.3E-10	0.2%	--	--
Fluoranthene	2	--	2.3E+06	--	--	8.7E-07	0.0%
Pyrene	2	--	2.3E+06	--	--	8.6E-07	0.0%
<b>Metals (mg/kg)</b>							
Cadmium	2.3	1.4E+03	3.7E+01	1.6E-09	0.6%	6.2E-02	23.6%
Chromium	25.6	2.1E+02	--	1.2E-07	47.6%	--	--
Copper	57.7	--	3.1E+03	--	--	1.8E-02	7.0%
Lead <sup>f</sup>	25.2	--	1.5E+02	--	--	1.7E-01	63.8%
Nickel	13.4	--	1.6E+03	--	--	8.6E-03	3.3%
Silver	1	--	3.9E+02	--	--	2.6E-03	1.0%
Zinc	77.5	--	2.3E+04	--	--	3.3E-03	1.3%
<b>Cumulative Maximum Risk</b>				<b>2.6E-07</b>		<b>2.6E-01</b>	

**Notes:**

-- = value does not exist

mg/kg= milligram per kilogram

µg/kg= microgram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Analytical results for benzo(k)fluoranthene, chrysene, and lead were compared to Cal-Modified PRG (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 18

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 20

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

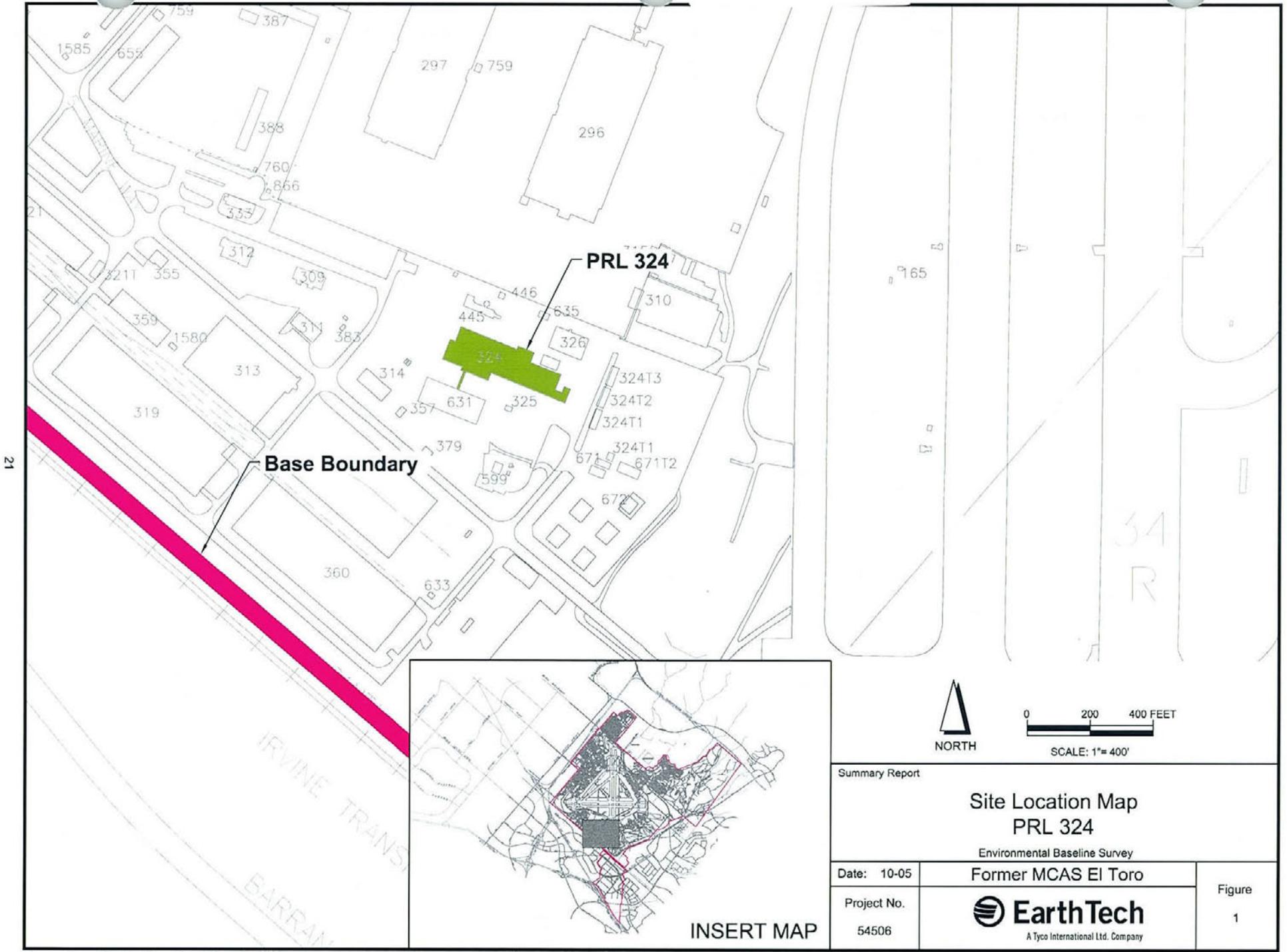
FIGURE 1 – SITE LOCATION MAP  
PRL 324

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)

**SENSITIVE**



**SENSITIVE**

PAGE NO. 22

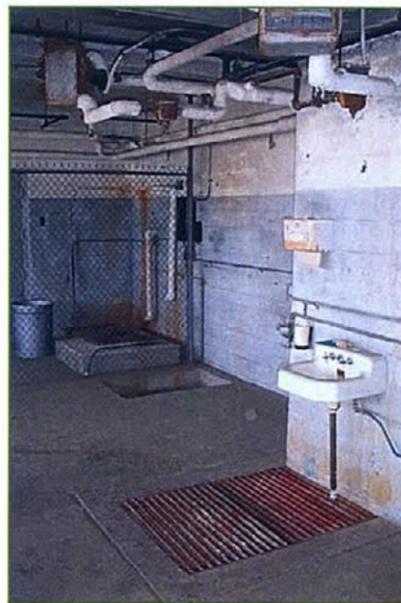
THIS PAGE IS INTENTIONALLY LEFT BLANK



West Corner of Building 324 (Facing South)

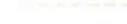


Engine Overhaul Shop at East End of Building 324 (Facing Northwest)



Sink and Sumps in Engine Overhaul Shop (Facing Southwest)

**LEGEND:**

-  Sanitary Sewer
-  Water Line
-  Natural Gas Line
-  Electrical Line
-  Storm Sewer
-  Industrial Waste Water
-  Manhole
-  Transformer
-  Fire Hydrant
-  Water Valve
-  Filled in Floor Drain
-  Floor Drain
-  Air Compressor
-  Sink
-  Restroom
-  Concrete Patch
-  Degreaser Pit (Reference 1, 1945)
-  Raised Concrete
-  Utility Pit/Crawl Space
-  Stairway to Second Floor
-  Approximate Soil Sample Location (NFEC SW SDIEGO, 1993)  
(Sample Depth: 2 to 5 ft bgs; Analytes: VOCs, TPH, SVOCs, Pesticides, PCBs, and Metals)
-  Approximate Soil Gas Sample Location (JEG, 1994)  
(Sample Depth: 12 to 102 ft bgs; Analytes: TPH, TCE, and Freon 113)
-  Approximate 1993 Phase I RI Surface and Near Surface Soil Sample Location (Bechtel, 1997)
-  Approximate Phase II RI Hand Auger Location (Bechtel, 1997)  
(Sample Depth: 2.5 to 15 ft bgs; Analytes: VOCs)
-  Approximate Phase I RI Soil Gas Location (Bechtel, 1997)  
(Sample Depth: 30 ft bgs; Analytes: VOCs and TPH)
-  Approximate Phase II RI CPT Adjacent to Soil Gas Sample Location, Symbol Implies Nearby 24SG1 Soil Gas Sample Location (Bechtel, 1997)  
(Sample Depth: 30 ft bgs to Groundwater; Lithology Only)
-  Approximate Soil Sample Locations (OHM, 1998)  
(Sample Depth: 8 to 14 ft bgs; Analytes: TPH, SVOCs, Pesticides, PCBs, and Metals)
-  Approximate Soil Sample Locations (NFEC SW SDIEGO, 1998)  
(Sample Depth: 11.5 to 51.5 ft bgs; Analytes: TPH, BTEX, MTBE, and VOCs)
-  Approximate Soil Sample Locations (NFEC SW SDIEGO, 1998)  
(Sample Depth: 11.5 to 50.5 ft bgs; Analytes: TPH, BTEX, MTBE, and VOCs)
-  Soil Sample Location (Earth Tech, 2005)  
(Sample Depth: 3 to 10 ft bgs; Analytes: VOCs, TPH, PAHs, Metals, pH, and Cyanide)

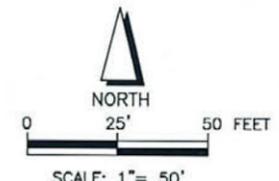
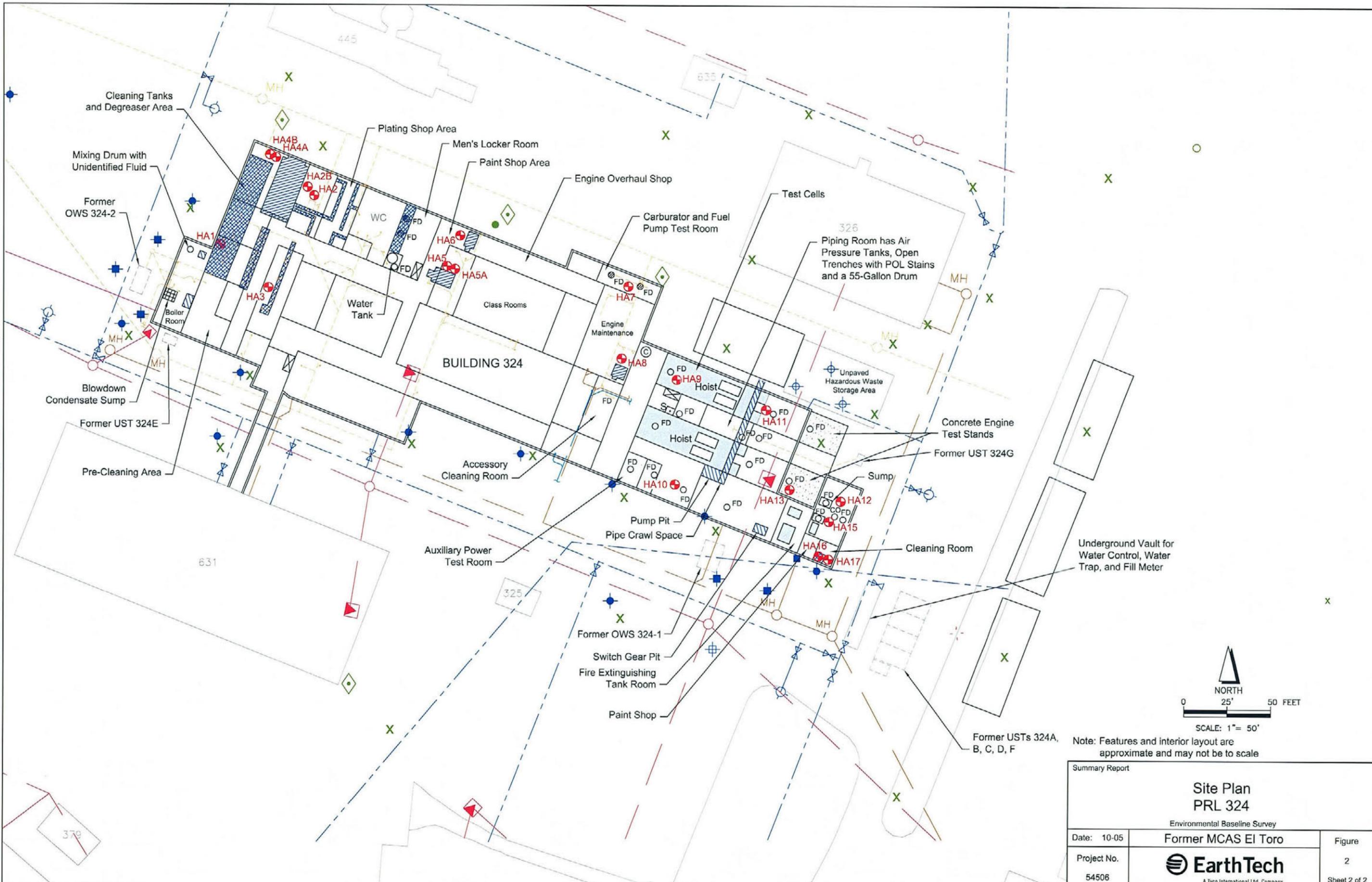
File: L:\work\54506\work\EBS\CAD\PA\Non-transferable\_PRLs\SummaryReports\Group III\Final\SR\_PRL\_324.dwg Time: Oct 18, 2005 - 2:29pm

Summary Report		
<b>Site Plan</b> <b>PRL 324</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	Figure
Project No. 54506	 A Tyco International Ltd. Company	2 Sheet 1 of 2

PAGE NO. 24

THIS PAGE IS INTENTIONALLY LEFT BLANK

File: L:\work\4506\work\EB5\CAD\PA\Non-transferable\_PRLs\SummaryReports\Group III\Final\SR\_PRL\_324.dwg Time: Oct 18, 2005 - 2:38pm



Note: Features and interior layout are approximate and may not be to scale

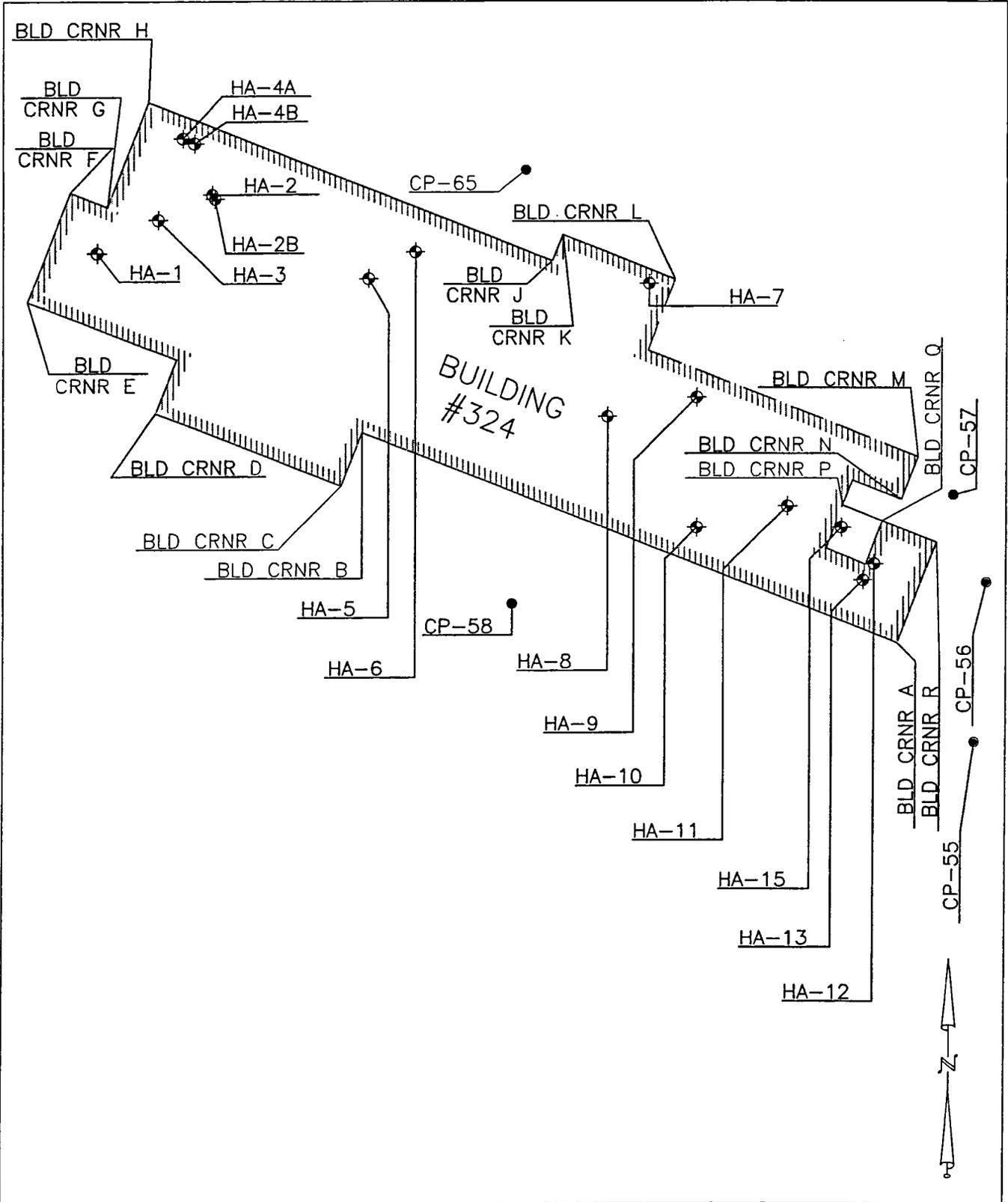
Summary Report		
<b>Site Plan</b> <b>PRL 324</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	Figure
Project No. 54506	 A Tyco International Ltd. Company	2
		Sheet 2 of 2

**Appendix A**  
**Validated Laboratory Analytical Data**

Validated Analytical Data for PRL 324

Parameter	Units	Method <sup>1</sup>	LJ402	LJ403	LJ477	LJ478	LJ412	LJ407	LJ408	LJ409	LJ410	LJ411	LJ413	LJ476	LJ446	LJ447	LJ416	LJ417	LJ418	LJ419	LJ479	LJ420	LJ401	LJ422	LJ423	LJ424	LJ425	LJ426	LJ429	LJ430	LJ431	LJ432
			Location ID	PR1324-HA1	PR1324-HA1	PR1324-HA2	PR1324-HA2	PR1324-HA2B	PR1324-HA3	PR1324-HA3	PR1324-HA3	PR1324-HA4	PR1324-HA4B	PR1324-HA4B	PR1324-HA5	PR1324-HA5A	PR1324-HA5B	PR1324-HA6	PR1324-HA7	PR1324-HA7	PR1324-HA8	PR1324-HA8	PR1324-HA9	PR1324-HA10	PR1324-HA10	PR1324-HA11	PR1324-HA12	PR1324-HA13	PR1324-HA13	PR1324-HA15	PR1324-HA16	PR1324-HA16
Sample Type	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS
Sample Depth	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Sample Date	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05	26-Apr-05		
<b>Organics</b>																																
Moisture	%	ASTM D 2216	10.1	17.7	19.1	8	2.3	10.3	10.3	12.3	12.4	7.7	18	12	10.2	11.3	19.2	8.4	9.3	9	14.9	11.8	8.8	13.8	13.1	9.8	15	8.7	13.8	10.8	13.7	4.7
Chlorine	mg/kg	9010	2.9 U	3 U	3.1 U	2.7 U	2.6 U	2.8 U	2.9 U	2.9 U	2.7 U	3 U	2.8 U	3 U	2.8 U	3.1 U	2.7 U	2.8 U	2.7 U	NA	2.8 U	2.7 U	NA	2.9 U	2.8 U	2.9 U	2.8 U	2.8 U	NA	2.9 U	2.8 U	
Oil	ppm	19040	8.13	7.08	8.52	8.42	8.6	8.62	9.16	8.87	8.63	3.78	8.16	8.04	8.2	8.69	8.51	7.95	7.67	7.21	9.95	7.99	7.3	8.05	8.75	8	8.13	8.28	8	8.47		
<b>Metals</b>																																
Cadmium	mg/kg	6010B	0.47	0.92	0.7	2.3	0.71	0.64	0.64	0.6	0.7	0.25 U	0.99	0.83	0.33 U	0.67 U	0.96	0.87	0.81	0.83	NA	0.88	1	NA	0.75	0.95	0.99	0.78	NA	0.77	1.4	0.37
Chromium	mg/kg	6010B	2.3	11.8	25.6	9.9	8.4	9.2	11	10.1	10.9	4.6	13.5	8.5	15.7	9.5	16.2 U	9.5 U	9.8 U	NA	11.7 U	12.4 U	NA	14.2 U	11.4 U	16.2 U	11.9 U	NA	9.4 U	16.2 U	12.2 U	
Copper	mg/kg	6010B	4.9	3	12.3	5.7	2.2	5.7	7.8	6.1	6.9	4.9	7.5	11.1	6.9	10.8	3.4	5.9	5.9	NA	7.2	7.1	NA	8.1	7	10.1	8.2	NA	5.4	10.5	3.1	
Lead	mg/kg	6010B	2.1	39.1	4.3	3.6	14.1 U	3.3 U	25.2 U	3.3 U	3.6 U	1.9 U	4.0 U	3.6	6	4.7	3	2.8	2.7	NA	3.4	3	NA	3.7	3.1	4.1	2.5	NA	2.5	4.7	2.6	
Nickel	mg/kg	6010B	8.2 U	9.7 U	13.4	7.6	2.3 U	8.9 U	8.7 U	7.8 U	8.3 U	3.6 U	10.8 U	6.5	11.7 U	7.2 U	11.7	8.4	8	7.9	NA	8.3	9.8	NA	10.3	9.3	12.8	9.2	NA	7.4	13	7.8
Silver	mg/kg	6010B	0.58 U	0.61 U	0.62 U	1	0.25 U	0.58 U	0.35 U	0.57 U	0.57 U	0.54 U	0.61 U	0.57 U	0.54 U	0.61 U	0.58 U	0.61 U	0.55 U	0.064 U	0.55 U	NA	0.12 U	0.071 U	NA	0.16 U	0.072 U	0.11 U	0.16 U	0.14 U	0.05 U	
Zinc	mg/kg	6010B	20.2	45.4	77.5	51.5	9.9	35.1	40.9	38.1	40.9	18.2	54.1	42.8	45.3	34.3	74.2 U	35.5 U	32.4 U	35.8 U	NA	48.2 U	42.7 U	NA	52.6 U	41.4 U	58.9 U	37.3 U	NA	32.7 U	57.6 U	14.1 U
<b>Total Polycyclic Hydrocarbons</b>																																
Gasoline	mg/kg	3015B DRO	10 U	10 U	10 U	10 U	10 U	8.6 U	9.6 U	9.7 U	9.7 U	11 U	9.7 U	10 U	9.9 U	10 U	12 U	9.9 U	10 U	10 U	13 U	9.9 U	10 U	9.4 U	11 U	9.5 U	10 U	9.6 U	11 U	9.3 U	9.5 U	11 U
PHC as Diesel Fuel	mg/kg	3015B DRO	11 U	12 U	12 U	2 U	10 U	11 U	5 U	11 U	10 U	11 U	12 U	11 U	12 U	11 U	12 U	11 U	2 U	0.5 U	12 U	11 U	0.3 U	1 U	0.9 U	11 U	0.6 U	11 U	12 U	0.4 U	12 U	0.4 U
Motor Oil	mg/kg	3015B DRO	3 U	3 U	12 U	4 U	2 U	2 U	2 U	1 U	2 U	2 U	2 U	1 U	2 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
<b>Volatiles Organic Compounds</b>																																
Acetone	ug/kg	8250B	98 U	110 U	34 U	1.4 U	110 U	110 U	34 U	26 U	97 U	110 U	110 U	98 U	100 U	91 U	100 U	100 U	110 U	100 U	91 U	110 U	100 U	92 U	100 U	94 U	100 U	99 U	100 U	95 U	110 U	110 U
Benzene	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Bromochloromethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Bromomethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Bromonitroethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
2-Butanone (MEK)	ug/kg	8250B	58 U	110 U	110 U	98 U	110 U	110 U	98 U	100 U	97 U	110 U	110 U	98 U	100 U	91 U	100 U	100 U	110 U	100 U	91 U	110 U	100 U	92 U	100 U	94 U	100 U	99 U	100 U	95 U	110 U	110 U
Carbon Disulfide	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Carbon Tetrachloride	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Chlorobenzene	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Chlorodibromomethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Chloroethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Chloroform	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Chloromethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Dichlorodifluoromethane (R12)	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
1,1-Dichloroethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
1,2-Dichloroethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
1,1-Dichloropropane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
trans-1,2-Dichloropropane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
1,2-Dichloropropane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
cis-1,3-Dichloropropane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
trans-1,3-Dichloropropane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
1,2-Dichlorotetrafluoroethane	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
Ethylbenzene	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4 U	5.2 U	4.8 U	5.1 U	4.7 U	6 U	4.9 U	5 U	4.8 U	4.7 U	5.5 U
2-Hexanone	ug/kg	8250B	4.9 U	5.4 U	5.4 U	4.8 U	5.5 U	5.4 U	4.7 U	5 U	4.8 U	5.3 U	5.3 U	4.5 U	5.1 U	4.6 U	5.1 U	5.2 U	5.5 U	5 U	5.9 U	5.4										

**Appendix B**  
**Land Surveying Data**



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #324

SCALE:	1"=60'	DATE:	06-06-05
BY:	JCL	JOB NO.:	04-1058-2227.000-535

BUILDING #324 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2187695.13	6110204.88	
BLD CRNR B	2187788.62	6109964.78	
BLD CRNR C	2187764.85	6109955.53	
BLD CRNR D	2187797.29	6109872.20	
BLD CRNR E	2187847.08	6109815.30	
BLD CRNR F	2187895.57	6109834.26	
BLD CRNR G	2187889.10	6109850.61	
BLD CRNR H	2187935.83	6109868.97	
BLD CRNR J	2187865.10	6110050.42	
BLD CRNR K	2187876.73	6110055.10	
BLD CRNR L	2187856.89	6110105.64	
BLD CRNR M	2187777.80	6110214.09	
BLD CRNR N	2187758.78	6110206.60	
BLD CRNR P	2187756.21	6110180.35	
BLD CRNR Q	2187749.21	6110198.12	
BLD CRNR R	2187739.86	6110222.27	
CP 55	2187650.93	6110239.25	287.68
CP 56	2187722.11	6110244.44	288.48
CP 57	2187760.89	6110229.77	288.24
CP 58	2187712.51	6110032.52	287.37
CP 65	2187905.47	6110038.61	288.62
BLD 324-HA 1	2187868.65	6109845.97	289.10
BLD 324-HA 2	2187894.55	6109897.12	289.10
BLD 324-HA 2B	2187892.72	6109898.37	289.10
BLD 324-HA 3	2187883.40	6109873.23	289.10
BLD 324-HA 4A	2187919.70	6109884.21	289.11
BLD 324-HA 4B	2187917.38	6109889.23	289.16
BLD 324-HA 5	2187857.27	6109967.64	289.10
BLD 324-HA 6	2187869.08	6109988.65	289.10
BLD 324-HA 7	2187854.98	6110094.10	289.13
BLD 324-HA 8	2187795.64	6110075.15	289.09
BLD 324-HA 9	2187804.17	6110115.53	288.94
BLD 324-HA 10	2187746.26	6110115.54	289.04
BLD 324-HA 11	2187755.72	6110155.66	288.98
BLD 324-HA 12	2187730.15	6110194.40	288.21
BLD 324-HA 13	2187722.93	6110189.36	290.49



17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #324

SCALE: NONE      DATE: 06-06-05

BY: JCL      JOB NO.: 04-1058-2227.000-535

**Attachment 6**  
**Summary Report**  
**PRL 326**



**Summary Report for PRL 326,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:  
**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:  
**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:  
**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	1
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	2
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 326	7
Table 2: Analytical Results Summary – PRL 326	9
Table 3: Risk Screening – PRL 326	11

## FIGURES

Figure 1: Site Location Map – PRL 326	15
Figure 2: Site Plan – PRL 326	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

BNI	Bechtel National, Inc.
COPC	chemical of potential concern
DoN	Department of the Navy
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
HI	hazard index
MCAS	Marine Corps Air Station
NFA	no further action
NFEC SW SDIEGO	Southwest Division Naval Facilities Engineering Command
OCHCA	Orange County Health Care Agency
PRG	preliminary remediation goal
PRL	potential release location
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 326 is associated with Building 326, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). This building was listed as Test Cells in the 1948, 1949, 1950, and 1954 station lists and as Storage (Secured Test Cells) in the 1958 station list. The facility description was Storage, Marine Corps/General Warehouse in the 1973 list and as Hazardous/Flammable Storehouse in the 1997 list, which is the last known description. Figure 2 shows the plan of Building 326 and the surrounding area.

An engine test cell and paint spray room were observed during the 2002 visual site inspection (VSI) conducted in support of the Environmental Baseline Survey (EBS) (NFECSW SDIEGO 2003). Pits in the center of each bay of the building were identified as potential hydraulic lifts. The pits were inaccessible during the VSI.

Three locations of concern were associated with this site. UST 326A was a 1,700-gallon underground storage tank (UST) containing JP-5 that was removed and the site closed by the Orange County Health Care Agency (OCHCA) in a letter dated 17 April 1998. UST 326B was a 250-gallon UST containing JP-5, which has been abandoned and for which OCHCA concurred with the Department of the Navy (DoN) recommendation for no further action (NFA) in a letter dated 17 April 1998. PCB A2 is a former electronic equipment storage area containing polychlorinated biphenyls (PCBs) that was identified in the EBS Report (NFECSW SDIEGO 1995) and for which the Department of Toxic Substances Control concurred with the DoN recommendation for NFA in a letter dated 28 September 2001.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and VSIs conducted in 2002 in support of the 2003 EBS (NFECSW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- Activities associated with this facility (including engine testing and painting) may have resulted in releases of hazardous substances or pollutants via the floor drains. Further evaluation of the drains was recommended.
- The hydraulic lift pits were assessed for the presence of hydraulic fluid during several site visits. No evidence of releases of hazardous substances or pollutants was observed near the hydraulic lifts. No further investigation of these features was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

## 3. Sampling and Analysis Summary

Sampling was conducted for PRL 326 in April 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

Five soil samples were collected at locations HA1, HA2, HA3, HA4, and HA5 inside the building. The samples were collected 1 foot below the drain inverts (3 feet below ground surface) using hand auger equipment and analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and paint-related metals (cadmium, chromium, cobalt, lead, and mercury). The results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

## 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 326 along with the United States Environmental Protection Agency (EPA) Region 9 or California-modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report. In addition, it was noted that methylene chloride was reported in field and laboratory quality control samples, and the sample results qualified accordingly.

### 4.2 RESULTS EVALUATION AND RISK SCREENING

TPH was detected in the soil samples from locations HA1, HA2, HA3, HA4, and HA5. The major contributors to the TPH detection were from the groups of TPH associated with diesel and motor oil. However, the concentration of TPH at these locations is not indicative of a significant release. Furthermore, the detections were assessed to be representative of the maximum concentration in soil as the samples were collected adjacent to the nearest sources of release, i.e., drain inverts. No PRGs exist for TPH or its subcategories (i.e., TPH<sub>g</sub>, TPH<sub>d</sub>, and TPH<sub>m</sub>).

None of the detected VOCs (tetrachloroethene, toluene, and xylenes) exceeded their respective residential PRGs. With the exception of cobalt, which exceeded the former MCAS El Toro background value (BNI 1996) at locations HA1, HA2, HA3, and HA5, no other metals (i.e. cadmium, chromium, lead, and mercury) exceeded their respective residential PRGs (EPA 2004) or MCAS El Toro background values.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 326. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 326 is 1.3E-07, which is below the EPA point of departure risk level of 1E-06. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as a hazard index (HI) of 1.1E-01, which is below the target HI of 1.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 326 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data indicate that there has not been a significant release of hazardous substances or pollutants at PRL 326. The concentrations of TPH in the soil samples collected near the drains do not indicate that there has been a significant release of hydrocarbons to the soil. The detected concentrations of all chemicals were less than their respective residential PRGs, and are not indicative of a release. The cancer risk at PRL 326 is less than the EPA point of departure value of 1E-06, and the noncancer risk at this PRL is less than the target HI of 1. Based on these observations, no further investigation is recommended for PRL 326.

## 6. References

- Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.
- . 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A-Site 24 Marine Corps Air Station El Toro, California, Volume I*. March.
- Earth Tech, Inc. (Earth Tech). 2002. *Draft Final Site Closure Report Vadose Zone Remediation IRP Site 24, Volatile Organic Compounds Source Area, Former MCAS, El Toro, California*. June.
- Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- . 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.
- Sanitary Sewer Drawings, Storm Sewer Drawings, VSI Sketch*.
- Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro Installation Restoration Program Draft Resource Conservation and Recovery Act (RCRA) Facility Assessment Report, Volume IV, Survey of Air Emission Sources*. July.
- . 1995. *Marine Corps Air Station, El Toro California, Installation Restoration Program Final Baseline Survey Report*. April.
- . 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 326**

Analytical Group and Method <sup>a</sup>	Sample Location	HA1	HA2	HA3	HA4	HA5
	EPA ID	LJ455	LJ451	LJ452	LJ453	LJ454
	Sample Depth (feet bgs)	3	3	3	3	3
	Sampling Technique	Hand Auger				
TPH <sup>b</sup> 8015B		X	X	X	X	X
VOCs 8260B		X	X	X	X	X
Cadmium 6010B		X	X	X	X	X
Chromium 6010B		X	X	X	X	X
Cobalt 6010B		X	X	X	X	X
Lead 6010B		X	X	X	X	X
Mercury 7470A		X	X	X	X	X

**Notes:**

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

<sup>b</sup> Analytical results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 326**

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL326-HA1	PRL326-HA2	PRL326-HA3	PRL326-HA4	PRL326-HA5
			Sample Depth	3 feet bgs				
			EPA ID	LJ455	LJ451	LJ452	LJ453	LJ454
<b>Total Petroleum Hydrocarbons (TPH) (mg/kg)</b>								
TPH as Diesel	--	--		17 U	12 U	12 U	12 U	7 J
TPH as Motor Oil	--	--		1 J	2 J	1 J	12 U	23
<b>Volatile Organic Compounds (µg/kg)</b>								
Tetrachloroethene	--	4.8E+02		7.7 U	5.2 U	0.7 J	5.7 U	4.6 U
Toluene	--	5.2E+05		7.7 U	5.2 U	4.9 U	5.7 U	0.8 J
Xylenes (Total)	--	2.7E+05		23 U	16 U	15 U	17 U	0.8 J
<b>Metals (mg/kg)</b>								
Cadmium	2.35	3.7E+01		1.5 J	1.2 J	0.98 J	0.55 J	0.58 J
Chromium	26.9	2.1E+02		20.7	17	14.3	11	11.9
Cobalt	6.98	9.0E+02		<u>9.5</u>	<u>8.3</u>	<u>7.2</u>	5.7	<u>29.4</u>
Lead <sup>c</sup>	15.1	1.5E+02		6.3	6.6	4.7	3.4	5.9
Mercury	0.22	2.3E+01		0.13	0.071	0.077	0.075	0.065

**Notes**

Concentrations with *italic underline* indicate values greater than the former MCAS El Toro background, but less than the residential soil PRGs

-- = value does not exist

NA= not analyzed

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because it is significantly more protective than the corresponding EPA Region 9 PRG

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 326**

COPC	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Volatile Organic Compounds (µg/kg)</b>								
Tetrachloroethene	--	0.7	4.8E+02	3.8E+04	1.4E-09	1.1%	1.8E-05	0.0%
Toluene	--	0.8	--	6.6E+05	--	--	1.2E-06	0.0%
Xylenes (Total)	--	0.8	--	2.7E+05	--	--	3.0E-06	0.0%
<b>Metals (mg/kg)</b>								
Cadmium	2.35	1.5	1.4E+03	3.7E+01	1.1E-09	0.8%	4.1E-02	36.4%
Chromium	26.9	20.7	2.1E+02	--	9.8E-08	73.7%	--	--
Cobalt	6.98	29.4	9.0E+02	1.4E+03	3.3E-08	24.4%	2.1E-02	19.1%
Lead <sup>f</sup>	15.1	6.6	--	1.5E+02	--	--	4.4E-02	39.5%
Mercury	0.22	0.13	--	2.3E+01	--	--	5.5E-03	5.0%
<b>Cumulative Maximum Risk</b>					<b>1.3E-07</b>		<b>1.1E-01</b>	

**Notes:**

-- = value does not exist

mg/kg = milligram per kilogram

µg/kg = microgram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because it is significantly more protective than the corresponding EPA Region 9 PRG

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 326

FOR ADDITIONAL INFORMATION, CONTACT:

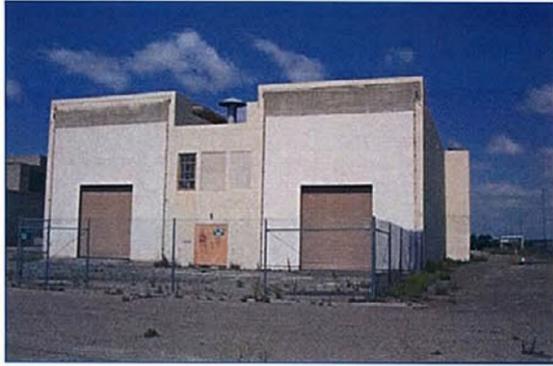
DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK

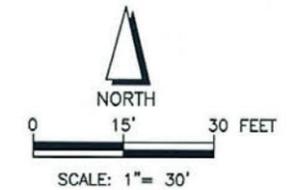


Exterior View of Building



**LEGEND:**

- Sanitary Sewer
- Water Line
- Electrical Line
- Storm Sewer
- PCB A2 Investigation Boundaries
- Floor Drain
- Asphalt Berm
- Manhole
- Transformer
- Fire Hydrant
- Water Valve
- Approximate Soil Sample Location (NFEC SW SDIEGO, 1995) (Sample Depth: N/A; Analytes: Pesticides, Herbicides, PCBs, VOCs and TPH)
- Approximate Phase I RI Soil Gas Location (Bechtel, 1997) (Sample Depth: 30 ft bgs; Analytes: VOCs and TPH)
- Approximate Phase II RI CPT Adjacent to Soil Gas Sample Location, Symbol Implies Nearby 24SG1 Soil Gas Sample Location (Bechtel, 1997) (Sample Depth: 30 ft bgs to Groundwater; Lithology Only)
- SVE Wells (Earth Tech, 2002) (Total Depth: 105 ft bgs; Analytes: VOCs)
- Soil Sample Location (Earth Tech, 2005) (Sample Depth: 3 ft bgs; Analytes: TPH, VOCs, and Metals)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 326</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	Figure 2

**Appendix A**  
**Validated Laboratory Analytical Data**

**Validated Analytical Data for PRL 326**

		EPA ID:	LJ455	LJ451	LJ452	LJ453	LJ454
		Location ID:	PRL326-HA1	PRL326-HA2	PRL326-HA3	PRL326-HA4	PRL326-HA5
		Sample Type:	SS	SS	SS	SS	SS
		Sample Depth:	3	3	3	3	3
		Sample Date:	29-Apr-05	29-Apr-05	29-Apr-05	29-Apr-05	29-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>					
<b>Volatile Organic Compounds</b>							
Tetrachloroethene	ug/kg	8260B	7.7 U	5.2 U	0.7 J	5.7 U	4.6 U
Toluene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	0.8 J
1,1,1-Trichloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,1,2-Trichloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Trichloroethene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Trichlorofluoromethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Vinyl chloride	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Total xylenes	ug/kg	8260B	23 U	16 U	15 U	17 U	0.8 J
tertiary-Butyl alcohol (TBA)	ug/kg	8260B	31 UJ	21 UJ	20 UJ	23 UJ	18 UJ
Diisopropyl Ether	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Ethyl-tert-butyl ether (ETBE)	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
tert-Amyl methyl ether (TAME)	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Acetone	ug/kg	8260B	150 U	100 U	98 U	110 U	92 U
Benzene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Bromodichloromethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Bromoform	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Bromomethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
2-Butanone (MEK)	ug/kg	8260B	150 UJ	100 UJ	98 UJ	110 UJ	92 UJ
Carbon Disulfide	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Carbon Tetrachloride	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Chlorobenzene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Chlorodibromomethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Chloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Chloroform	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Chloromethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Dichlorodifluoromethane (F12)	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,1-Dichloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,2-Dichloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,1-Dichloroethene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
cis-1,2-Dichloroethene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
trans-1,2-Dichloroethene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,2-Dichloropropane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
cis-1,3-Dichloropropene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
trans-1,3-Dichloropropene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,2-Dichlorotetrafluoroethane	ug/kg	8260B	7.7 UJ	5.2 UJ	4.9 UJ	5.7 UJ	4.6 UJ
Ethylbenzene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
2-Hexanone	ug/kg	8260B	77 U	52 U	49 U	57 U	46 U
Methylene Chloride	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
4-Methyl-2-Pentanone	ug/kg	8260B	77 U	52 U	49 U	57 U	46 U
Methyl tert-butyl ether	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
Styrene	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,1,1,2-Tetrachloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
1,1,2,2-Tetrachloroethane	ug/kg	8260B	7.7 U	5.2 U	4.9 U	5.7 U	4.6 U
<b>Total Petroleum Hydrocarbons</b>							
Gasoline	mg/kg	8015B GRO	15 U	11 U	9.5 U	11 U	9.2 U
PHC as Diesel Fuel	mg/kg	8015B DRO	17 U	12 U	12 U	12 U	7 J
Motor Oil	mg/kg	8015B DRO	1 J	2 J	1 J	12 U	23
<b>Metals</b>							
Cadmium	mg/kg	6010B	1.5 J	1.2 J	0.98 J	0.55 J	0.58 J
Chromium	mg/kg	6010B	20.7	17	14.3	11	11.9
Cobalt	mg/kg	6010B	9.5	8.3	7.2	5.7	29.4
Lead	mg/kg	6010B	6.3	6.6	4.7	3.4	5.9
Mercury	mg/kg	7471A	0.13	0.071	0.077	0.075	0.065

		EPA ID:	LJ455	LJ451	LJ452	LJ453	LJ454
		Location ID:	PRL326-HA1	PRL326-HA2	PRL326-HA3	PRL326-HA4	PRL326-HA5
		Sample Type:	SS	SS	SS	SS	SS
		Sample Depth:	3	3	3	3	3
		Sample Date:	29-Apr-05	29-Apr-05	29-Apr-05	29-Apr-05	29-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>					
<b>Others</b>							
Moisture	%	ASTM D 2216	40.8	18.1	16.1	14.7	11.5

Notes:

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

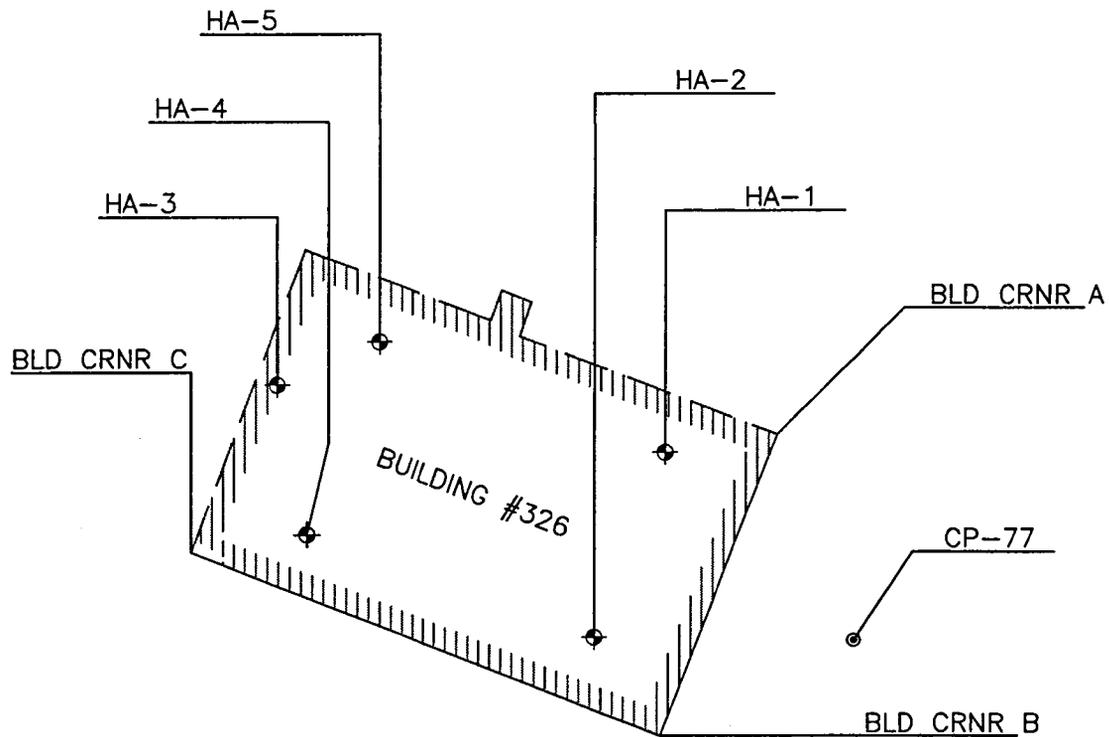
J = indicates an estimated value

UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

ASTM = American Society of Testing and Materials

SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #326 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2187899.52	6110281.88	
BLD CRNR B	2187832.34	6110255.76	
BLD CRNR C	2187873.42	6110150.35	
CP 77	2187853.74	6110298.88	288.02
BLD 326-HA 1	2187895.52	6110256.77	288.94
BLD 326-HA 2	2187854.40	6110241.02	289.01
BLD 326-HA 3	2187877.31	6110176.36	288.95
BLD 326-HA 4	2187910.68	6110169.77	288.83
BLD 326-HA 5	2187920.30	6110192.50	288.81



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #326

SCALE: 1"=40'      DATE: 06-06-05  
 BY: JCL      JOB NO.: 04-1058-2227.000-535

**Attachment 7**  
**Summary Report**  
**PRL 369**



**Summary Report for PRL 369,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	2
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Result Evaluation and Risk Screening	2
5. Conclusions and Recommendations	3
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 369	7
Table 2: Analytical Results Summary – PRL 369	9
Table 3: Risk Screening – PRL 369	11

## FIGURES

Figure 1: Site Location Map – PRL 369	15
Figure 2: Site Plan – PRL 369	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

APHO	aerial photograph anomaly
BNI	Bechtel National, Inc.
COPC	chemical of potential concern
4,4'-DDD	dichlorodiphenyldichloroethane
4,4'-DDE	dichlorodiphenyldichloroethylene
4,4'-DDT	dichlorodiphenyltrichloroethane
DoN	Department of the Navy
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
HA	hand auger
HI	hazard index
IRP	Installation Restoration Program
LOC	location of concern
MCAS	Marine Corps Air Station
NFA	no further action
NFEC SW SDIEGO	Southwest Division, Naval Facilities Engineering Command
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RWQCB	Regional Water Quality Control Board
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 369 is associated with Building 369, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Shop Stores in the 1954 list and Warehouse in the 1958 list. The facility description was Servmart in the 1973 and 1997 lists, and this is the last known description. Figure 2 shows the plan of Building 369 and the surrounding area.

Six locations of concern (LOCs) were associated with this site. Aerial Photograph Anomaly (APHO) 121 was liquid identified on a 1984 photograph near Building 369, within the boundaries of Installation Restoration Program (IRP) Site 24. A former wash rack (Solid Waste Management Unit [SWMU] 110) is located in this area. This wash rack was investigated as part of the Resource Conservation and Recovery Act Facility Assessment program. A storm drain inlet located in this area is being evaluated as PRL 369. The appearance of flowing liquid may be due to vehicle washing activities at SWMU 110 or PRL 369. Due to the proximity of the APHO to SWMU 110 and the PRL, no further action for APHO 121 was recommended because the investigations for the other LOCs encompass this area. The Regional Water Quality Control Board (RWQCB) has concurred with this recommendation in a letter dated 14 August 2003. The RWQCB and the Department of Toxic Substances Control (DTSC) concurred with the Department of the Navy's (DoN) recommendation for no further action (NFA) for SMWU 110 in letters dated 6 November 2000 and 4 October 2004, respectively.

APHO 7 consisted of stains and wet soil. No evidence of staining or a release was identified during the 2002 visual site inspection (VSI) conducted in support of the Environmental Baseline Survey (EBS) (NFECWS SDIEGO 2003). The DTSC, the RWQCB, and the United States Environmental Protection Agency (EPA) concurred with the DoN's recommendation for NFA for APHO 7 in letters dated 20 August 1999, 18 October 2000, and 6 October 1999, respectively. IRP 11 was a transformer storage area located northeast of Building 369. Remediation of this site is in progress. PCB T54 was a transformer containing polychlorinated biphenyls (PCBs) that was replaced. PCB T54 was assigned an Environmental Condition of Property category of 1 following the EBS (NFECWS SDIEGO 2003) and NFA was recommended. The DTSC and the EPA concurred with the EBS in a letter dated 25 September 2003. UST 369 was a 4,000-gallon diesel underground storage tank (UST) that was removed in 1993. The site was closed by the Orange County Health Care Agency in a letter dated 9 December 1996.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and VSIs conducted in 2002 in support of the 2003 EBS (NFECWS SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- An active wash area near the south corner of the building was identified during the 2002 VSI conducted in support of this EBS (NFECWS SDIEGO 2003). The wash area was used by maintenance crews to empty and wash out street sweeping equipment. The wash water flows directly into a storm drain. Pesticide containers may also have been washed in this area (NFECWS SDIEGO 2003). The wash area has not been evaluated for potential releases. Further investigation was recommended to assess whether releases of petroleum hydrocarbons and pesticides have occurred to the environment via the storm drain and/or pavement.

- Stained concrete floor was observed inside the building. However, the floor did not appear damaged and the staining was assessed not to pose a risk for releases of hazardous substances or pollutants to the environment. No further investigation was recommended.

A sampling program was proposed to assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

### 3. Sampling and Analysis Summary

Sampling was conducted for PRL 369 in April 2005. The sample location is shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

One soil sample was collected at location HA1. The sample was collected 1 foot below the bottom of the drain using hand auger (HA) equipment and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total petroleum hydrocarbons (TPH) associated with vehicle washing activities, and pesticides. The results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

### 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

#### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 369 along with the United States EPA Region 9 or California-Modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report. In addition, the following was noted:

- Methylene chloride was reported in field and laboratory quality control samples, and the sample results qualified accordingly.
- Gamma-Chlordane was assumed to be present but the qualitative identification did not fully match the method requirements and it was flagged as presumed positive presence. The presence of high concentrations of dichlorodiphenyldichloroethane (4,4'-DDD) may interfere with the ability to separate this analyte.

#### 4.2 RESULT EVALUATION AND RISK SCREENING

TPH was detected in the soil sample from location HA1. The major contributors to the TPH detection were from the groups of TPH associated with diesel and motor oil. However, the concentration of TPH at location HA1 is not indicative of a significant release. Furthermore, the detection is assessed to be representative of the maximum concentration in soil as the sample was collected adjacent to the nearest sources of release, i.e., the drain. No PRGs exist for TPH or its subcategories (i.e., TPH<sub>g</sub>, TPH<sub>d</sub>, and TPH<sub>m</sub>).

SVOCs were not detected above laboratory reporting limits, and none of the detected VOCs (acetone and 2-butanone) exceeded their respective residential PRGs. None of the detected pesticides (dichlorodiphenyldichloroethane [4,4'-DDD], dichlorodiphenyldichloroethylene [4,4'-DDE],

dichlorodiphenyltrichloroethane [4,4'-DDT], alpha chlordane, and gamma chlordane) exceeded their respective residential PRGs (EPA 2004), although three compounds (alpha chlordane, gamma chlordane, and 4,4'-DDD) exceeded the former MCAS El Toro background values (BNI 1996).

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 369. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 369 is 2.6E-07, which is below the EPA point of departure risk level of 1E-06. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as a hazard index (HI) of 1.0E-03, which is below the target HI of 1.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 369 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data indicate that a significant release of hazardous substances or pollutants has not occurred at PRL 369. The concentrations of TPH in the soil sample collected near the drain do not indicate that there has been a significant release of hydrocarbons to the soil. The detected concentrations of all chemicals were less than their respective residential PRGs, and are not indicative of a release. The cancer risk at PRL 369 is less than the EPA point of departure value of 1E-06, and the noncancer risk is less than the target HI of 1. Based on these observations and results, no further investigation is recommended for PRL 369.

## 6. References

- Bechtel National, Inc. (BNI). 1995. *Final Workplan Phase II Remedial Investigation/Feasibility Study, MCAS El Toro, CA*. July.
- . 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.
- . 1997. *Draft Final Phase II Remedial Investigation Report, OU 2A-Site 24, MCAS El Toro, CA, Vol. I*. March.
- Marine Corps Air Station (MCAS) El Toro California. 1952. Public Works Buildings Utilities, Storm Drains. May. Y & D Drawing No. 549075.
- . 1952. Public Works Buildings Utilities, General Plan. May. Y & D Drawing No. 549073.
- . 1952. Public Works Buildings Shop Stores Building, Floor Plan – Door & Window Schedule, Finish Schedule. May. Y & D Drawing No. 549091.
- Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.
- . 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

Jacobs Engineering Group, Inc. (JEG). 1993. *MCAS El Toro: Installation Restoration Program, Phase I Remedial Investigation, Draft Technical Memorandum.*

OHM/IT/Shaw. 1999. *Analytical and Location Survey Data Package, IRP Sites 8, 11, and 12.* Irvine, CA. May.

Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro, California, Installation Restoration Program Final RCRA Facility Assessment Report, Vol. IV, Survey of Air Emission Sources.* July.

\_\_\_\_\_. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California.* San Diego, CA. September.

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 369**

Analytical Group and Method <sup>a</sup>	Sample Location	HA1
	EPA ID	LJ395
	Sample Depth (feet bgs)	1
	Sampling Technique	HA
TPH <sup>b</sup> 8015B		X
VOCs 8260B		X
SVOCs 8270C		X
Pesticides 8081A		X

**Notes:**

— = not analyzed

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.<sup>b</sup> Analytical results for TPH are reported as TPH as gasoline (TPHg) TPH as diesel (TPHd), and TPH as motor oil (TPHm).

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 369**

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL369-HA1
			Sample Depth	1 ft bgs
			EPA ID	LJ395
<b>Total Petroleum Hydrocarbons (mg/kg)</b>				
TPH as Diesel	--	--		64
TPH as Motor Oil	--	--		250
<b>Volatile Organic Compounds (µg/kg)</b>				
Acetone	--	1.4E+07		14 J
2-Butanone	--	2.2E+07		4 J
<b>Pesticides (µg/kg)</b>				
Alpha-Chlordane	2.24	1.6E+03		<u>4 J</u>
Gamma-Chlordane	2.7	1.6E+03		<u>20 NJ</u>
4,4'-DDD	36.1	2.4E+03		<u>470</u>
4,4'-DDE	145	1.7E+03		84
4,4'-DDT	236	1.7E+03		13 J

**Notes**

Concentrations with *italic underline* indicate values greater than the MCAS El Toro background, but less than the residential soil PRGs

-- = value does not exist

NA= not analyzed

bgs = below ground surface

J = indicates an estimated value

NJ = presumptive evidence of the identification of the analyte

µg/kg= microgram per kilogram

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 369**

COPC	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Volatile Organic Compounds (µg/kg)</b>								
Acetone	--	14	--	1.4E+07	--	--	9.9E-07	0.1%
2-Butanone	--	4	--	2.2E+07	--	--	1.8E-07	0.0%
<b>Pesticides (µg/kg)</b>								
Alpha-Chlordane	2.24	4	1.6E+03	3.5E+04	2.5E-09	0.9%	1.1E-04	10.9%
Gamma-Chlordane	2.7	20	1.6E+03	3.5E+04	1.2E-08	4.7%	5.7E-04	54.5%
4,4'-DDD	36.1	470	2.4E+03	--	1.9E-07	73.0%	--	--
4,4'-DDE	145	84	1.7E+03	--	4.9E-08	18.5%	--	--
4,4'-DDT	236	13	1.7E+03	3.6E+04	7.6E-09	2.9%	3.6E-04	34.5%
<b>Cumulative Maximum Risk</b>					<b>2.6E-07</b>		<b>1.0E-03</b>	

**Notes:**

-- = value does not exist

µg/kg= microgram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996<sup>b</sup> U.S. EPA Region 9 PRGs (2004)<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)<sup>d</sup> With respect to cumulative excess cancer risk or hazard index<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

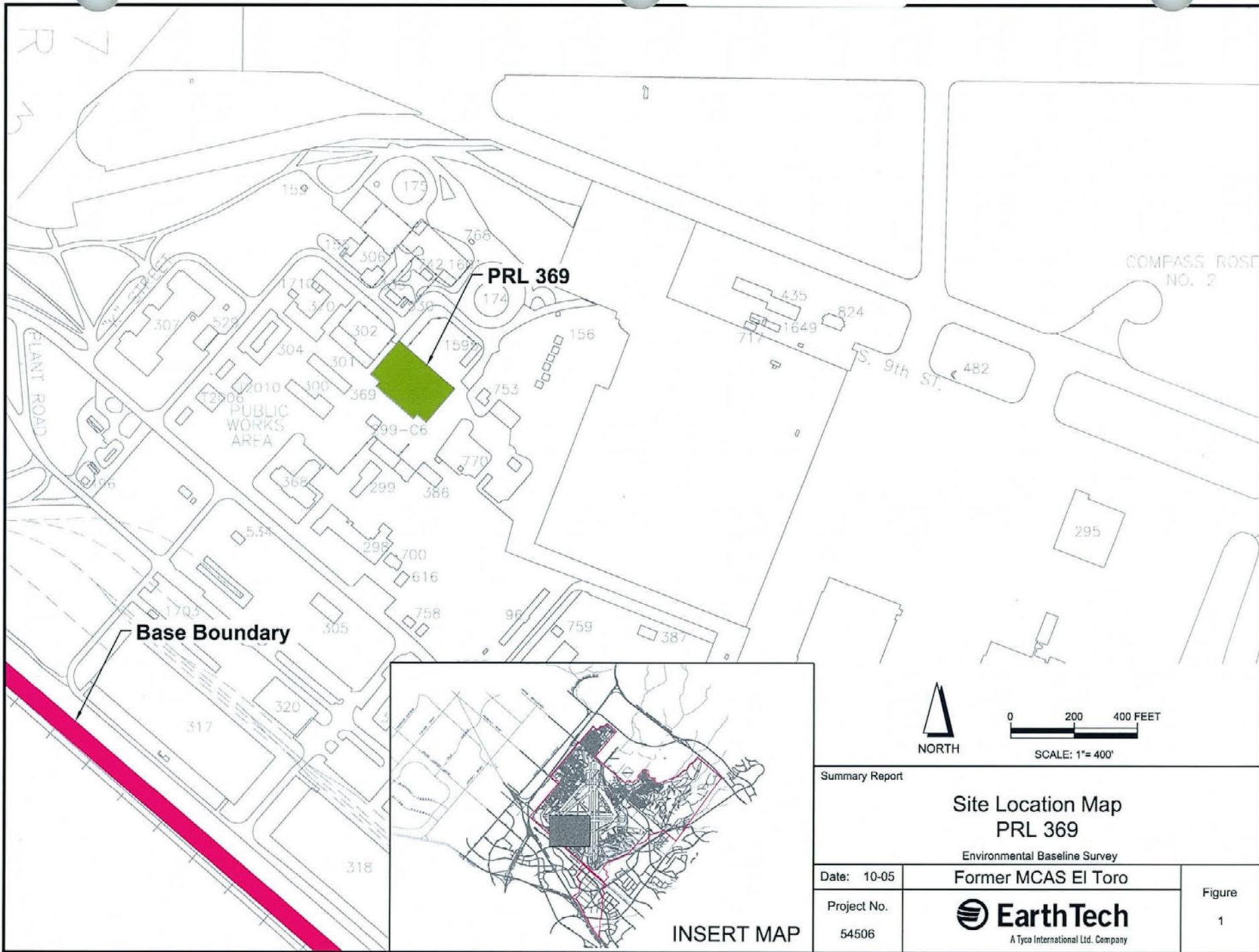
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 369

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



15

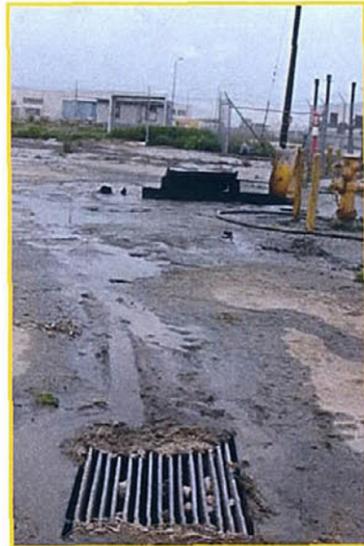
Summary Report		<b>Site Location Map</b> <b>PRL 369</b> Environmental Baseline Survey	
Date: 10-05			
Project No.		 A Tyco International Ltd. Company	
54506			

PAGE NO. 16

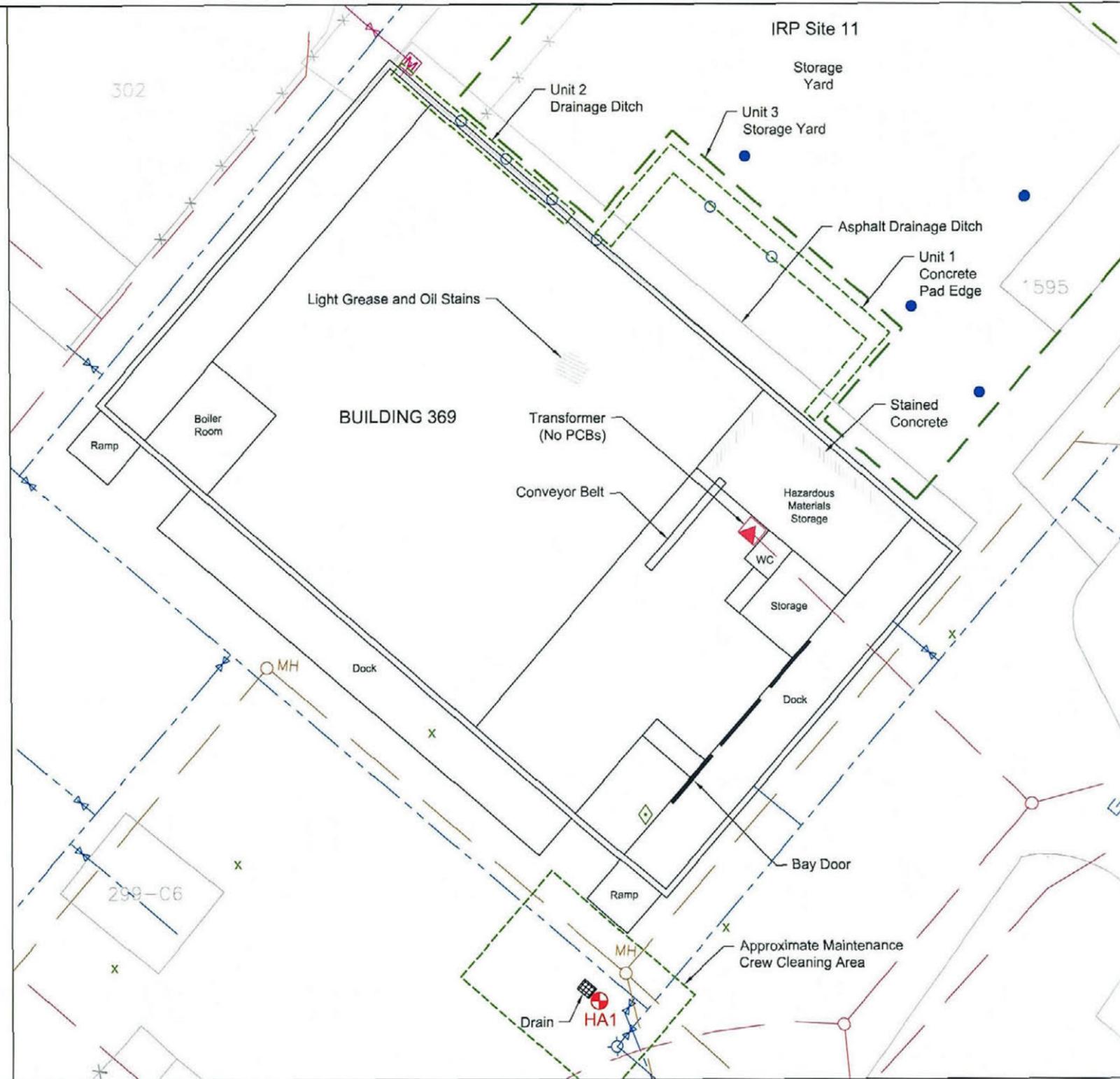
THIS PAGE IS INTENTIONALLY LEFT BLANK



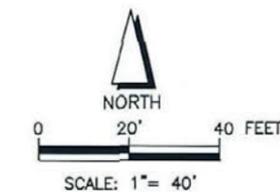
Maintenance Crew Street Sweeping  
Cleaning Area



Drain Located Near Southern Corner of  
Building 369 (Looking Southeast)



- LEGEND:**
- Sanitary Sewer
  - Water Line
  - Natural Gas Line
  - Electrical Line
  - Manhole
  - Restroom
  - Transformer
  - Fire Hydrant
  - Water Valve
  - Gas Meter
  - Approximate Phase I RI Surface and Near Surface Soil Sample Location (Bechtel, 1995)
  - Approximate Proposed Phase II RI Surface Soil Sample Location (Bechtel, 1995)
  - Approximate Phase I RI Soil Gas Location (Bechtel, 1997) (Sample Depth: 30 ft bgs; Analytes: VOCs and TPH)
  - Approximate Phase II RI CPT Adjacent to Soil Gas Sample Location, Symbol Implies Nearby 24SG1 Soil Gas Sample Location (Bechtel, 1997) (Sample Depth: 30 ft bgs to Groundwater; Lithology Only)
  - Soil Sample Location (Earth Tech, 2005) (Sample Depth: 1 ft bgs; Analytes: TPH, VOCs, SVOCs, and Pesticides)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
Site Plan PRL 369		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	
Project No. 54506	 A Tyco International Ltd. Company	Figure 2

File: L:\work\54506\work\EBS\CAD\IPANon-transferable\_PRL369.dwg Time: Oct 18, 2005 - 1:50pm

**Appendix A**  
**Validated Laboratory Analytical Data**

Validated Analytical Data for PRL 369

	EPA ID:	LJ395	
	Location ID:	PRL395-HA1	
	Sample Type:	SS	
	Sample Depth:	1	
	Sample Date:	22-Apr-05	
<b>Total Petroleum Hydrocarbons</b>			
Gasoline	mg/kg	8015B GRO	11 U
PHC as Diesel Fuel	mg/kg	8015B DRO	64
Motor Oil	mg/kg	8015B DRO	250
<b>Volatile Organic Compounds</b>			
Acetone	ug/kg	8260B	14 J
Benzene	ug/kg	8260B	4.9 U
Bromodichloromethane	ug/kg	8260B	4.9 U
Bromoform	ug/kg	8260B	4.9 U
Bromomethane	ug/kg	8260B	4.9 U
2-Butanone (MEK)	ug/kg	8260B	4 J
Carbon Disulfide	ug/kg	8260B	4.9 U
Carbon Tetrachloride	ug/kg	8260B	4.9 U
Chlorobenzene	ug/kg	8260B	4.9 U
Chlorodibromomethane	ug/kg	8260B	4.9 U
Chloroethane	ug/kg	8260B	4.9 U
Chloroform	ug/kg	8260B	4.9 U
Chloromethane	ug/kg	8260B	4.9 U
Dichlorodifluoromethane (F12)	ug/kg	8260B	4.9 U
1,1-Dichloroethane	ug/kg	8260B	4.9 U
1,2-Dichloroethane	ug/kg	8260B	4.9 U
1,1-Dichloroethene	ug/kg	8260B	4.9 U
cis-1,2-Dichloroethene	ug/kg	8260B	4.9 U
trans-1,2-Dichloroethene	ug/kg	8260B	4.9 U
1,2-Dichloropropane	ug/kg	8260B	4.9 U
cis-1,3-Dichloropropene	ug/kg	8260B	4.9 U
trans-1,3-Dichloropropene	ug/kg	8260B	4.9 U
1,2-Dichlorotetrafluoroethane	ug/kg	8260B	4.9 UJ
Ethylbenzene	ug/kg	8260B	4.9 U
2-Hexanone	ug/kg	8260B	4.9 U
Methylene Chloride	ug/kg	8260B	4.9 U
4-Methyl-2-Pentanone	ug/kg	8260B	4.9 U
Methyl tert-butyl ether	ug/kg	8260B	4.9 U
Styrene	ug/kg	8260B	4.9 U
1,1,1,2-Tetrachloroethane	ug/kg	8260B	4.9 U
1,1,2,2-Tetrachloroethane	ug/kg	8260B	4.9 U
Tetrachloroethene	ug/kg	8260B	4.9 U
Toluene	ug/kg	8260B	4.9 U
1,1,1-Trichloroethane	ug/kg	8260B	4.9 U
1,1,2-Trichloroethane	ug/kg	8260B	4.9 U
Trichloroethene	ug/kg	8260B	4.9 U
Trichlorofluoromethane	ug/kg	8260B	4.9 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	8260B	4.9 U
Vinyl chloride	ug/kg	8260B	4.9 U
Total xylenes	ug/kg	8260B	15 U
tertiary-Butyl alcohol (TBA)	ug/kg	8260B	19 UJ
Diisopropyl Ether	ug/kg	8260B	4.9 U
Ethyl-tert-butyl ether (ETBE)	ug/kg	8260B	4.9 U
tert-Amyl methyl ether (TAME)	ug/kg	8260B	4.9 U
<b>Semi-Volatile Organic Compounds</b>			
Bis(2-Chloroethoxy)Methane	ug/kg	8270C	5600 U
Bis(2-Chloroethyl)Ether	ug/kg	8270C	5600 U
2,2'-oxybis(1-chloropropane)	ug/kg	8270C	5600 U
Bis(2-Ethylhexyl)Phthalate	ug/kg	8270C	5600 U
4-Bromophenyl Phenyl Ether	ug/kg	8270C	5600 U
butyl Benzyl phthalate	ug/kg	8270C	5600 U
Carbazole	ug/kg	8270C	5600 U
4-Chloro-3-Methylphenol	ug/kg	8270C	5600 U
4-Chloroaniline	ug/kg	8270C	11000 U
2-Chloronaphthalene	ug/kg	8270C	5600 U
2-Chlorophenol	ug/kg	8270C	5600 U

		EPA ID:	LJ395
		Location ID:	PRL395-HA1
		Sample Type:	SS
		Sample Depth:	1
		Sample Date:	22-Apr-05
4-Chlorophenyl Phenyl Ether	ug/kg	8270C	5600 U
Di-N-Butyl Phthalate	ug/kg	8270C	5600 U
Di-N-Octyl Phthalate	ug/kg	8270C	5600 U
Dibenzofuran	ug/kg	8270C	5600 U
1,2-Dichlorobenzene	ug/kg	8270C	5600 U
1,3-Dichlorobenzene	ug/kg	8270C	5600 U
1,4-Dichlorobenzene	ug/kg	8270C	5600 U
3,3'-Dichlorobenzidine	ug/kg	8270C	7400 U
2,4-Dichlorophenol	ug/kg	8270C	5600 U
Diethyl Phthalate	ug/kg	8270C	5600 U
Dimethyl Phthalate	ug/kg	8270C	5600 U
2,4-Dimethylphenol	ug/kg	8270C	5600 U
4,6-Dinitro-2-Methylphenol	ug/kg	8270C	28000 U
2,4-Dinitrophenol	ug/kg	8270C	28000 U
2,4-Dinitrotoluene	ug/kg	8270C	5600 U
2,6-Dinitrotoluene	ug/kg	8270C	5600 U
Hexachlorobenzene	ug/kg	8270C	5600 U
Hexachlorobutadiene	ug/kg	8270C	5600 U
Hexachlorocyclopentadiene	ug/kg	8270C	28000 UJ
Hexachloroethane	ug/kg	8270C	5600 U
Isophorone	ug/kg	8270C	5600 U
4-Methylphenol	ug/kg	8270C	5600 U
2-Methylphenol	ug/kg	8270C	5600 U
2-Nitroaniline	ug/kg	8270C	28000 U
3-Nitroaniline	ug/kg	8270C	28000 U
4-Nitroaniline	ug/kg	8270C	28000 UJ
Nitrobenzene	ug/kg	8270C	5600 U
2-Nitrophenol	ug/kg	8270C	5600 U
4-Nitrophenol	ug/kg	8270C	28000 U
N-Nitroso-Di-N-Propylamine	ug/kg	8270C	5600 U
N-Nitrosodiphenylamine	ug/kg	8270C	28000 U
Pentachlorophenol	ug/kg	8270C	19000 U
Phenol	ug/kg	8270C	5600 U
1,2,4-Trichlorobenzene	ug/kg	8270C	5600 U
2,4,5-Trichlorophenol	ug/kg	8270C	5600 U
2,4,6-Trichlorophenol	ug/kg	8270C	5600 U
<b>Pesticides</b>			
gamma-Chlordane	ug/kg	8081A	20 NJ
4,4'-DDD	ug/kg	8081A	470
4,4'-DDE	ug/kg	8081A	84
4,4'-DDT	ug/kg	8081A	13 J
Dieldrin	ug/kg	8081A	34 U
Endosulfan I	ug/kg	8081A	34 U
Endosulfan II	ug/kg	8081A	34 U
Endosulfan Sulfate	ug/kg	8081A	56 U
Endrin	ug/kg	8081A	34 UJ
Endrin Aldehyde	ug/kg	8081A	34 U
Endrin Ketone	ug/kg	8081A	34 U
Heptachlor	ug/kg	8081A	19 U
Heptachlor epoxide	ug/kg	8081A	19 U
Methoxychlor	ug/kg	8081A	110 U
Toxaphene	ug/kg	8081A	1100 U
Aldrin	ug/kg	8081A	19 U
beta-BHC	ug/kg	8081A	19 U
Alpha-BHC	ug/kg	8081A	19 U
Delta-BHC	ug/kg	8081A	19 U
gamma-BHC (Lindane)	ug/kg	8081A	19 U
Alpha-Chlordane	ug/kg	8081A	4 J
<b>Others</b>			
Moisture	%	ASTM D 2216	10.7

Notes:

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = indicates an estimated value

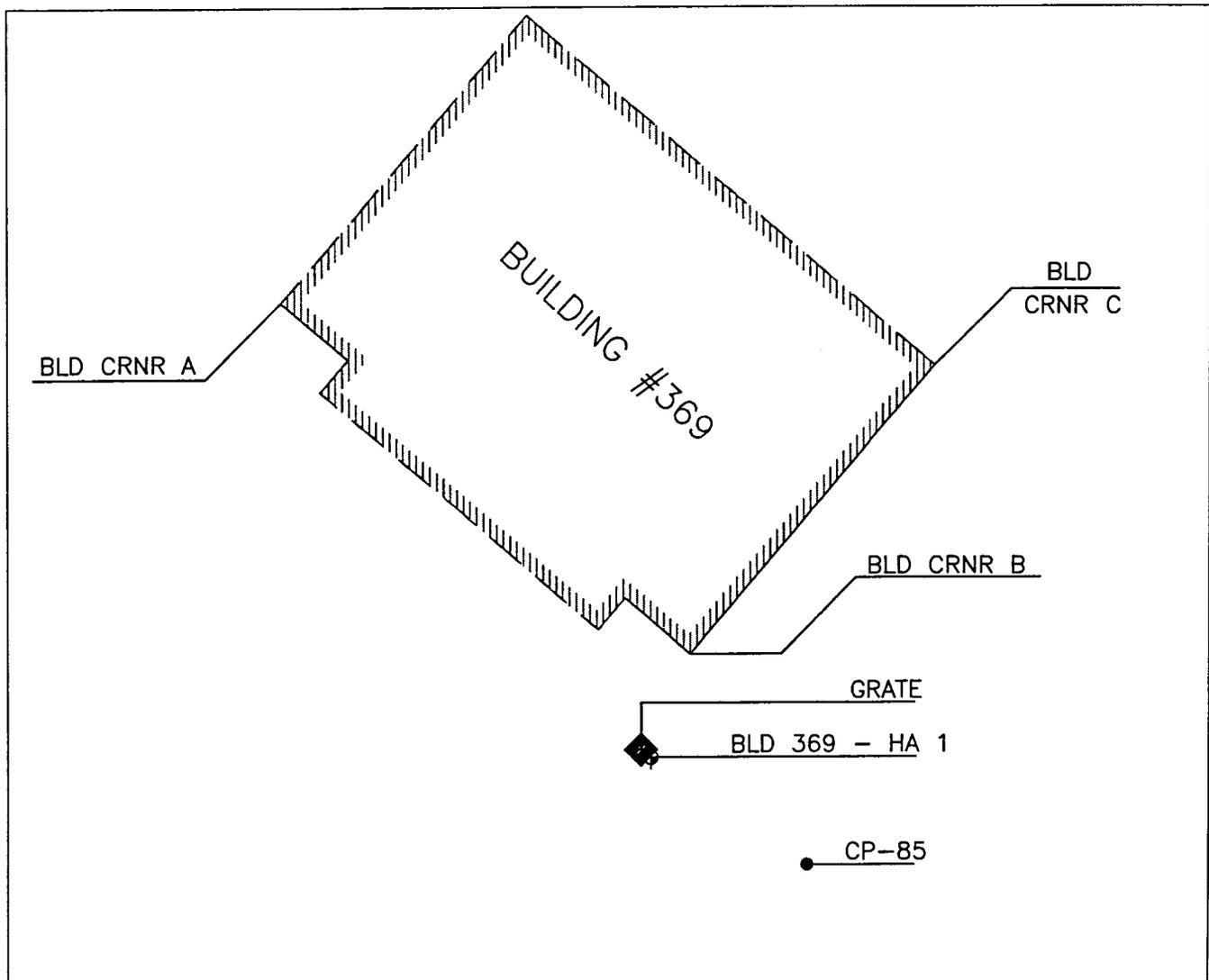
UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

ASTM = American Society of Testing and Materials

NJ = presumptive evidence of the identification of the analyte

SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #369 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2189724.42	6108320.06	
BLD CRNR B	2189593.53	6108472.48	
BLD CRNR C	2189700.59	6108564.13	
CP 85	2189515.25	6108516.16	270.60
BLD 369-HA 1	2189555.16	6108457.63	269.30
BLD 369-GRATE	2189558.09	6108453.96	269.28



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #369

SCALE: 1"=40' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 8**  
**Summary Report**  
**PRL 380**



**Summary Report for PRL 380,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Conclusions and Recommendations	1
4. References	1

## FIGURES

Figure 1: Site Location Map – PRL 380	5
Figure 2: Site Plan – PRL 380	7

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
DoN	Department of the Navy
EBS	environmental baseline survey
LOC	location of concern
MCAS	Marine Corps Air Station
NFECSW SDIEGO	Southwest Division, Naval Facilities Engineering Command
PRL	potential release location
RWQCB	Regional Water Quality Control Board
UST	underground storage tank

## 1. Background

Potential Release Location (PRL) 380 is associated with Building 380, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Emergency Generator Building in the 1954 list and as Generator Building in the 1958 list. The facility description was Standby Generator Plant in the 1973 list and Standby Generator Building in the 1997 list, which is the last known description. Figure 2 shows the plan of Building 380 and the surrounding area.

Two locations of concern (LOCs) were associated with this site. AST 380, a 635-gallon aboveground storage tank (AST), was removed and the site was closed by the Regional Water Quality Control Board (RWQCB) in a letter dated 17 January 2001. UST 380A, a 10,500-gallon diesel underground storage tank (UST), was removed in 1993 and the site was closed by the RWQCB in a letter dated 15 May 1998.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and visual site inspections conducted in 2002 in support of the 2003 Environmental Baseline Survey (EBS) (NFECSSW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- A generator is situated in a recessed containment area in the concrete floor in the center of the building that drains into a deeper open vault and sump at the northwest end of the building. A square metal tank of approximately 500 gallons is located in the vault. Petroleum hydrocarbon stains and liquids were observed surrounding the generator and in the tank vault and vault sump. Previous investigations of former AST 380 and supply piping for UST 380A indicated no evidence of releases of petroleum hydrocarbons in the soil. As a result, no further investigation was recommended. It is recommended that the contents of the tank in the vault and in the sump be characterized and disposed of in accordance with applicable regulations. The vault should be pressure-washed and the walls and base inspected for cracks. These issues are to be added to the Department of the Navy's (DoN) housekeeping list and addressed under DoN guidance.
- Containers with paint, oil, gasoline, and water were observed at various locations at the building site. No indications of releases from these items have been observed. As a result, no further investigation was recommended. The items have been identified and added to the housekeeping list and will be removed under DoN guidance.

## 3. Conclusions and Recommendations

The LOCs associated with this site have been investigated and closed by regulatory agencies. The issues and concerns identified in the 2003 Environmental Baseline Survey have been addressed by previous investigations or do not fall under the scope of this project. Therefore, no further investigation is recommended for PRL 380.

## 4. References

- Bechtel National Inc., (BNI). 1996a. *Final Site Assessment Report Former Underground Storage Tank, Site 380A, MCAS, El Toro, California*. August.
- . 1996b. *Draft Site Assessment Report Former Underground Storage Tank, Site 380A and Site 380B, MCAS, El Toro, California*. February.

Drawing: Marine Corps Air Station, El Toro, California. Electrical Distribution System (Second Increment), Emergency Generator Building, Floor Plan and Sections. Date: June 1952. Y&D Drawing No. 549311.

———. Electrical Distribution System (Second Increment), Emergency Generator Building, Foundations, Grading and Paving. Date: June 1952. Y&D Drawing No. 549312.

———. Electrical Distribution System (Second Increment), Emergency Generator Building, Outside Piping & Tank Details. Date: June 1952. Y&D Drawing No. 549316.

OHM Remediation Services Corp (OHM). 1998. *Technical Memorandum, Record Search and Field Verification of former Underground Storage Tank (UST) 380B, MCAS El Toro, California*. September.

———. 2000. *Tank Closure Report, Above-ground Storage Tank (AST) 380 at MCAS El Toro, CA*. December.

Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A-Site 24 MCAS El Toro, California, Volume I*. March.

———. 1998. *MCAS El Toro, California, Site Assessment Report, Former Underground Storage Tank Site 380A*. March.

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

## Figures

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

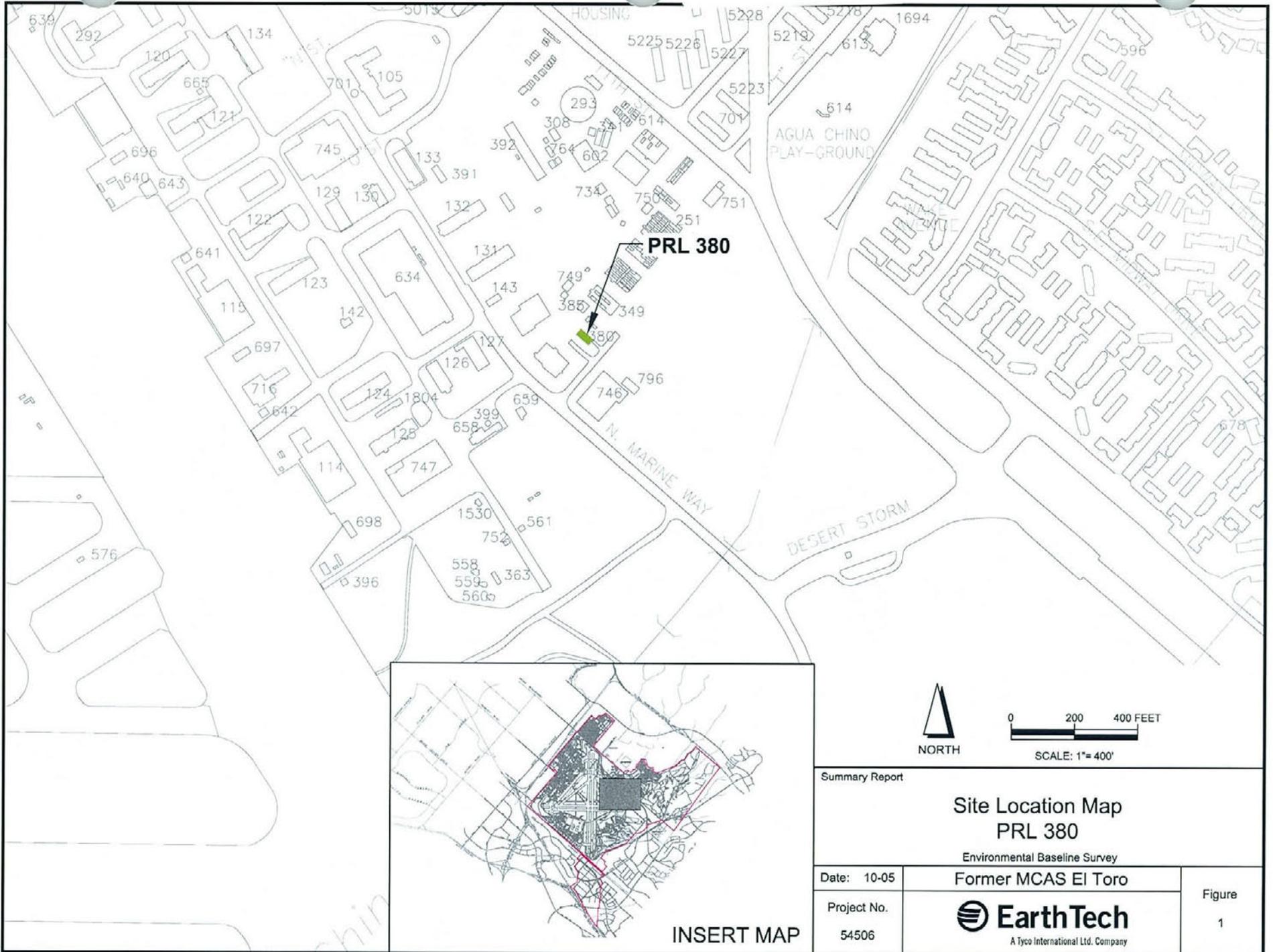
FIGURE 1 – SITE LOCATION MAP  
PRL 380

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)

**SENSITIVE**



**SENSITIVE**

PAGE NO. 6

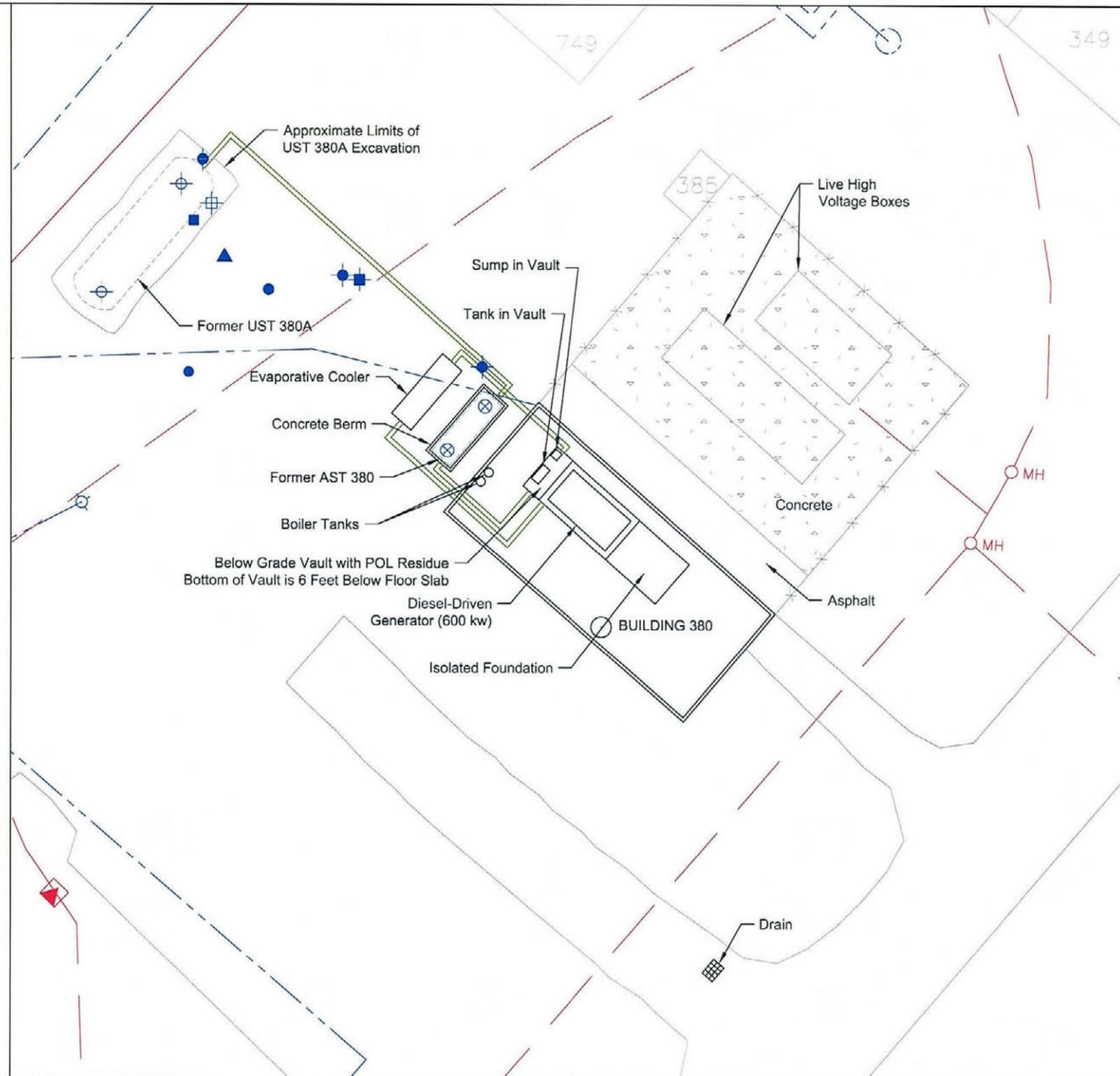
THIS PAGE IS INTENTIONALLY LEFT BLANK



Exterior View of Building 380  
(Facing East)

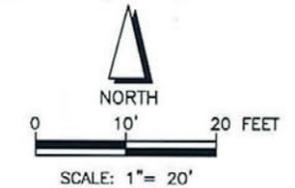


Evaporative Cooler and Day Tank Area  
(Facing Northeast)



**LEGEND:**

- Water Line
- Natural Gas Line
- Electrical Line
- Process Piping
- Manhole
- Transformer
- Fire Hydrant
- Approximate 1993 Soil Sample Location (NFEC SW SDIEGO, 1998) (Sample Depth: 14 ft bgs; Analytes: TPH and BTEX)
- Approximate 1993 Soil Gas Sample Location (NFEC SW SDIEGO, 1998) (Sample Depth: 5 ft bgs; Analytes: TPH and BTEX)
- Approximate 1993 Soil Sample Location (NFEC SW SDIEGO, 1998) (Sample Depth: N/A; Analytes: TPH and BTEX)
- Approximate 1995 Soil Sample Location (NFEC SW SDIEGO, 1998) (Sample Depth: 9.5 to 43 ft bgs; Analytes: TPH and BTEX)
- Approximate 1995 Soil Sample Location (NFEC SW SDIEGO, 1998) (Sample Depth: 5.5 to 15.5 ft bgs; Analytes: TPH and BTEX)
- Approximate Soil Sample Location (NFEC SW SDIEGO, 1997) (Sample Depth: 19 to 55 ft bgs; Analytes: TPH and BTEX)
- Approximate Soil Sample Location (NFEC SW SDIEGO, 1997) (Sample Depth: 10 to 56.5 ft bgs; Analytes: TPH and BTEX)
- Approximate Soil Sample Locations (OHM, 2000) (Sample Depth: 1 ft bgs; Analytes: TPH and VOCs)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 380</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	Figure 2

**Attachment 9**  
**Summary Report**  
**PRL 390**



**Summary Report for PRL 390,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:  
**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:  
**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:  
**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	1
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	3
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 390	7
Table 2: Analytical Results Summary – PRL 390	9
Table 3: Risk Screening – PRL 390	11

## FIGURES

Figure 1: Site Location Map – PRL 390	15
Figure 2: Site Plan – PRL 390	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

AST	aboveground storage tank
bgs	below ground surface
BNI	Bechtel National, Inc.
COPC	chemical of potential concern
DTSC	Department of Toxic Substances Control
DoN	Department of the Navy
EPA	Environmental Protection Agency
HA	hand auger
HI	hazard index
MCAS	Marine Corps Air Station
NFA	no further action
NFECSW SDIEGO	Southwest Division, Naval Facilities Engineering Command
PRG	preliminary remediation goal
PRL	potential release location
RFA	Resource Conservation and Recovery Act Facility Assessment
TAA	temporary accumulation area
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 390 is associated with Building 390, located in the southeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Maintenance Shop in the 1958 list and as Auto Vehicle Maintenance Shop in the 1973 list. The facility description was Golf Cart Shop in the 1997 list, which is its current use. Figure 2 shows the plan of Building 390 and the surrounding area.

Eight locations of concern are associated with this site. ASTs 390A and 390B are active 500-gallon gasoline and diesel aboveground storage tanks (ASTs), respectively. The Regional Water Quality Control Board concurred with the Department of the Navy's (DoN) recommendation for no further action (NFA) in a letter dated 12 December 2002. TAAs 390A and 390B were less-than-90-day temporary accumulation areas (TAAs) for which the Department of Toxic Substances Control (DTSC) concurred with the DoN's recommendation for NFA status in a letter dated 10 June 1999. RFA 120 was a vehicle wash rack that was investigated under the Resource Conservation and Recovery Act Facility Assessment (RFA) (NFECSW SDIEGO 1993) and for which the DTSC concurred with the DoN's recommendation for NFA in a letter dated 23 July 1996. RFA 262 was a fuel storage area that was closed by the DTSC in a letter dated 23 July 1996. UST 390A was a 550-gallon, diesel underground storage tank (UST) and UST 390B was a 2,000-gallon, diesel UST. Both tanks were removed in 1993 and further assessment was in progress under the UST program at the time of writing this report.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and visual site inspections (VSIs) conducted in 2002 in support of the 2003 EBS (NFECSW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- Reported activities undertaken, and equipment and substances used at the facility, including paint spray booth, vehicle service bays, a lift area with floor drains, and sumps, may have resulted in releases of wastes to the ground or sewer. Further investigation was recommended.
- Etched concrete flooring was observed in the former Battery Shop surrounding a floor drain, indicating a potential release of hazardous substances to the environment via the sewer system. Further investigation was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

## 3. Sampling and Analysis Summary

Sampling was conducted for PRL 390 in April 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

One soil sample was collected at location HA1, near the floor drain in the Lubrication Shop to assess the soil for releases of petroleum hydrocarbons. The sample was collected 3 feet below ground surface (bgs) using hand auger (HA) equipment and analyzed for total petroleum hydrocarbons (TPH). The results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

One soil sample was collected at location HA2, near the floor drain in the former Paint Shop to assess the soil for releases of paint-related substances. The sample was collected 3 feet bgs using HA equipment and analyzed for volatile organic compounds (VOCs), TPH, cadmium, chromium, cobalt, lead, and mercury.

One soil sample was collected at location HA3, near the floor drain in the Battery Shop to assess the soil for releases of battery-related substances. The sample was collected 3 feet bgs using HA equipment and analyzed for cadmium, lead, nickel, and pH.

## 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 390 along with the United States Environmental Protection Agency (EPA) Region 9 or California-modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report. In addition, it was noted that methylene chloride was reported in field and laboratory quality control samples, and the sample results qualified accordingly.

### 4.2 RESULTS EVALUATION AND RISK SCREENING

The pH of the soil from location HA3 was 5.21, indicating a potential release of an acidic nature. However, the concentrations of metals of concern were below their respective residential PRGs and MCAS El Toro background values.

TPH was detected in the soil samples from locations HA1 and HA2. The contributor to the TPH detections was from the group of TPH associated with motor oil. However, the concentrations of TPH at locations HA1 and HA2 are not indicative of a significant release. Furthermore, the detections are assessed to be representative of the maximum concentrations in soil as the samples were collected adjacent to the nearest sources of release, i.e., the floor drains. No PRGs exist for TPH or its subcategories (i.e.,  $TPH_g$ ,  $TPH_d$ , and  $TPH_m$ ).

VOCs were not detected above the laboratory reporting limits. None of the metals (cadmium, chromium, cobalt, lead, mercury, and nickel) exceeded their respective residential PRGs or MCAS El Toro background values (BNI 1996).

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 390. The methodology for risk screening is presented in Section 3.3 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 390 is  $3.8E-08$ , which is below the EPA point of departure risk level of  $1E-06$ . The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as a hazard index (HI) of  $6.4E-02$ , which is below the target HI of 1.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 390 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data do not indicate that a significant release of hazardous substances or pollutants has occurred at PRL 390. The concentrations of TPH in the soil samples collected near the floor drains do not indicate that there has been a significant release of hydrocarbons to the soil. The detected concentrations of all chemicals were less than their residential PRGs and MCAS El Toro background values, and are not indicative of a release. The cancer risk at PRL 390 is less than the EPA point of departure value of 1E-06, and the noncancer risk is less than the target HI of 1. Based on these observations and analytical results, no further investigation is recommended for PRL 390.

## 6. References

Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.

Drawing: Grid Map Location "P-13", Building 390, Vehicle Maintenance. 1971. July (MAG-13).

Drawing: U.S. Marine Corps Air Station, El Toro California, Facilities Management Department. Repairs to Buildings 390, 370 and 317, Floor Plan Building 390. NAVFAC Drawing No: 6254228. 1990. July.

Drawing Set: Industrial Waste Collection Improvements (Phase II). Drawing Number: B-4362. 1984. July.

Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

———. 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro, California, Installation Restoration Program Final RCRA Facility Assessment Report, Vol. IV., Survey of Air Emission Sources*. July.

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 390**

Analytical Group and Method <sup>a</sup>	Sample Location	HA1	HA2	HA3
	EPA ID	LJ404	LJ405	LJ406
	Sample Depth (feet bgs)	3	3	3
	Sampling Technique	HA	HA	HA
VOCs 8260B		—	X	—
TPH <sup>b</sup> 8015B		X	X	—
Cadmium 6010B		—	X	X
Chromium 6010B		—	X	—
Cobalt 6010B		—	X	—
Lead 6010B		—	X	X
Mercury 7470A		—	X	—
Nickel 6010B		—	—	X
pH 9045C		—	—	X

**Notes:**

— = not analyzed

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.<sup>b</sup> Analytical results for TPH are reported as TPH as gasoline (TPHg) TPH as diesel (TPHd), and TPH as motor oil (TPHm).

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 390**

Analyte	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL390-HA1	PRL390-HA2	PRL390-HA3
			Sample Depth	3 feet bgs	3 feet bgs	3 feet bgs
			EPA ID	LJ404	LJ405	LJ406
<b>Total Petroleum Hydrocarbons (mg/kg)</b>						
TPH as Motor Oil	--	--		2 J	3 J	NA
<b>Metals (mg/kg)</b>						
Cadmium	2.35	37		NA	0.25 J	1.1
Chromium	26.9	211		NA	6.9	NA
Cobalt	6.98	903		NA	3.7 J	NA
Lead <sup>c</sup>	15.1	150		NA	3 J	3.3 J
Mercury	0.22	23		NA	0.077	NA
Nickel	15.3	1,564		NA	NA	9.2 J
<b>General Chemistry</b>						
pH	--	--		NA	NA	5.21

**Notes**

-- = value does not exist

NA= not analyzed

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

J = indicates an estimated value

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)<sup>c</sup> Analytical results for lead were compared to Cal-modified PRG (2004) because it is significantly more protective than the corresponding EPA Region 9 PRG

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 390**

COPC	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Metals (mg/kg)</b>								
Cadmium	2.35	1.1	1.4E+03	3.7E+01	7.8E-10	2.1%	3.0E-02	46.7%
Chromium	26.9	6.9	2.1E+02	--	3.3E-08	87.0%	--	--
Cobalt	6.98	3.7	9.0E+02	1.4E+03	4.1E-09	10.9%	2.7E-03	4.2%
Lead <sup>f</sup>	15.1	3.3	--	1.5E+02	--	--	2.2E-02	34.6%
Mercury	0.22	0.077	--	2.3E+01	--	--	3.3E-03	5.2%
Nickel	15.3	9.2	--	1.6E+03	--	--	5.9E-03	9.3%
<b>Cumulative Maximum Risk</b>					<b>3.8E-08</b>		<b>6.4E-02</b>	

**Notes:**

-- = value does not exist

mg/kg = milligram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> = Cal-modified Carcinogenic PRG (2004) was used for lead for excess cancer risk calculation because it is significantly more protective than the corresponding EPA Region 9 PRG

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

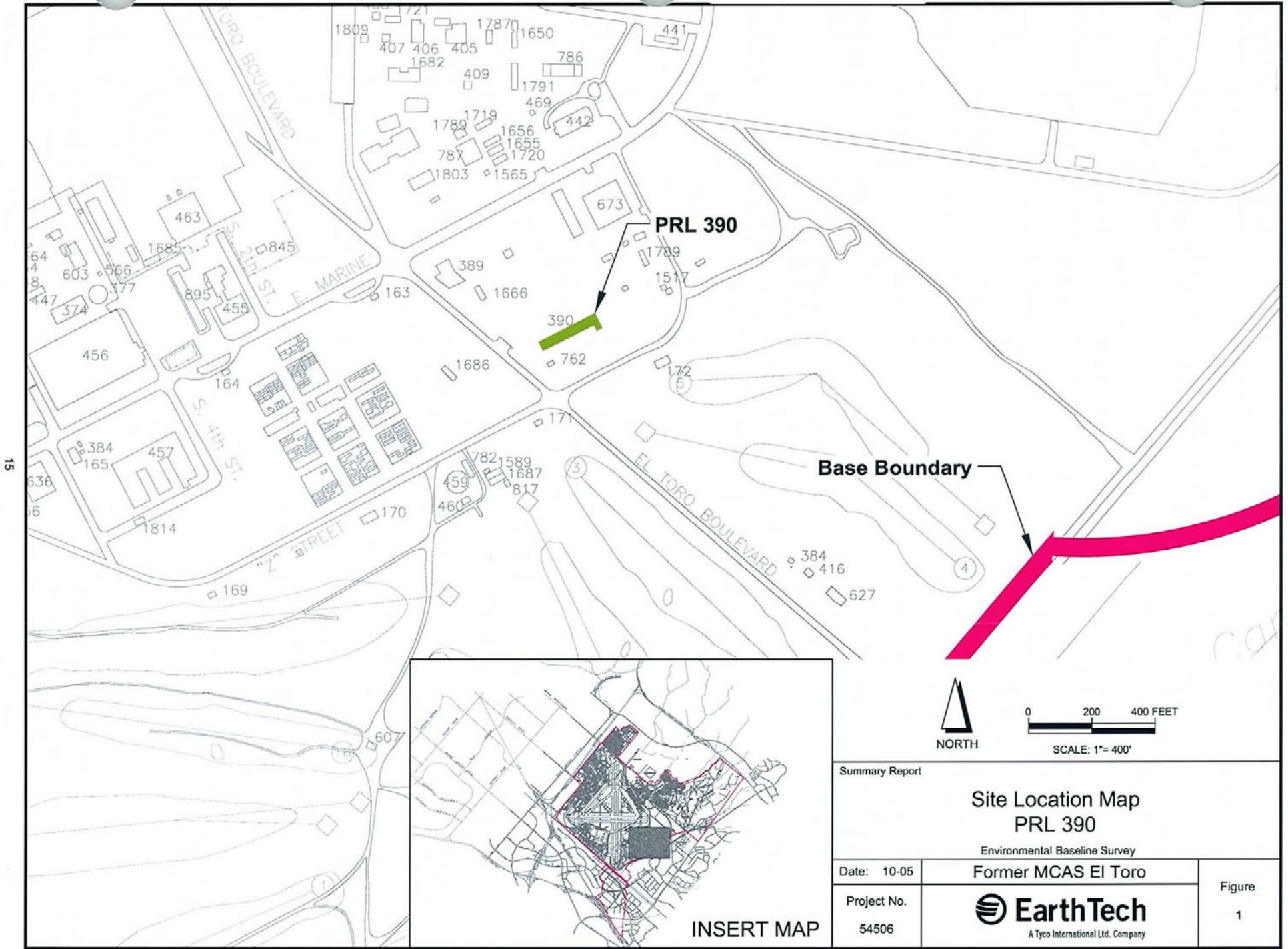
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 390

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK



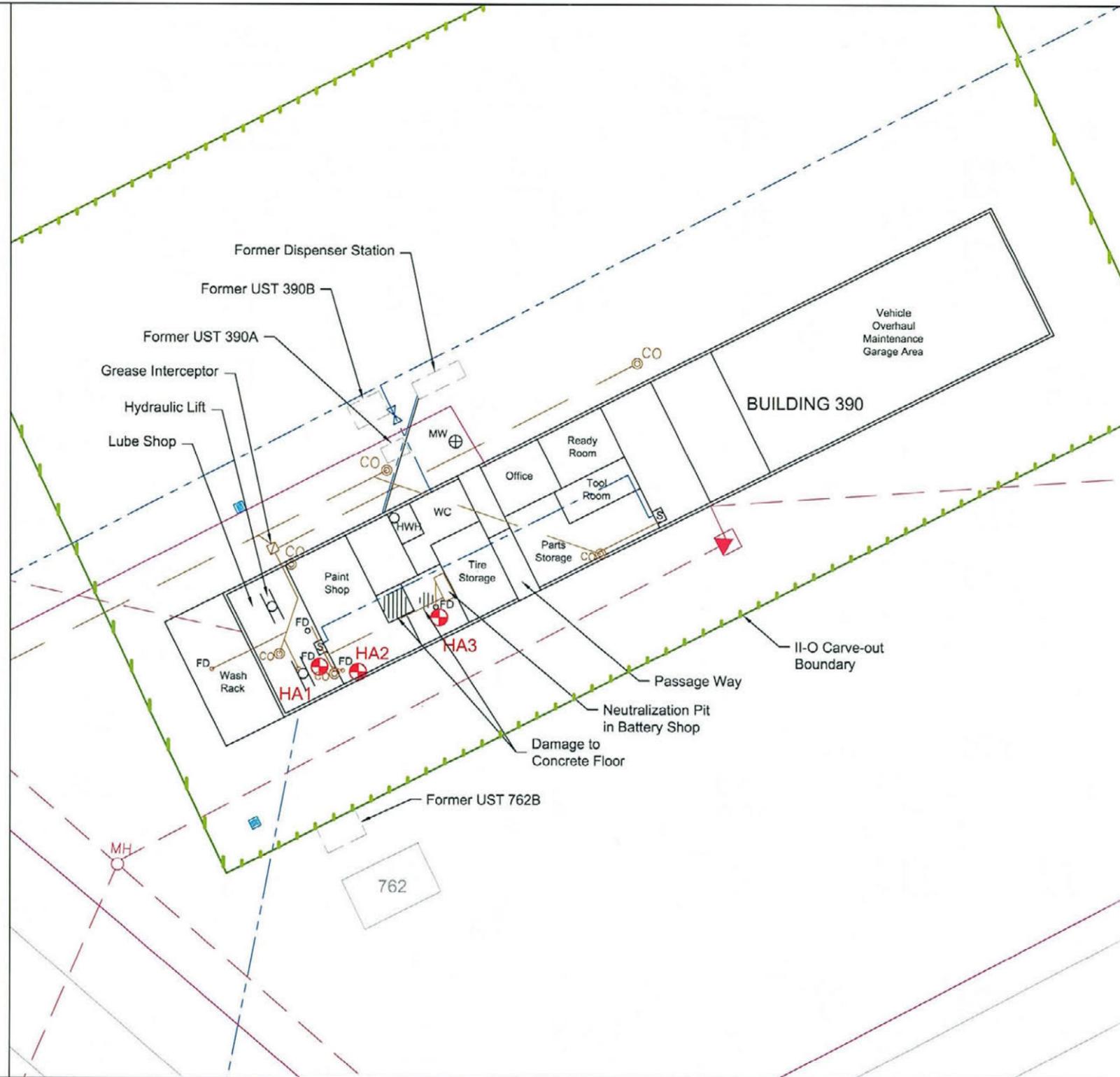
West View of Building 390



Hydraulic Lift in Lube Shop  
(Facing Southeast)

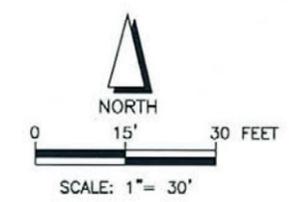


Damaged Concrete Around Floor Drain  
in Former Battery Shop



**LEGEND:**

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Carve-out Boundary
- HA3 Soil Sample Location (Earth Tech, 2005)  
(Sample Depth: 3 ft bgs; Analytes: TPH, VOCs, Metals, and pH)
- CO Clean Out
- MH Manhole
- Storm Drain
- Transformer
- Water Valve
- Floor Drain
- Restroom
- Hot Water Heater
- Sink
- Monitoring Well



Note: Features and interior layout are approximate and may not be to scale

Summary Report		Site Plan PRL 390 Environmental Baseline Survey	
Date: 10-05	Former MCAS El Toro		Figure
Project No. 54506	EarthTech A Tyco International Ltd. Company		2

File: L:\work\54506\work\EBS\CAD\PA\Non-transferable\_PRLs\SummaryReports\Group III\Final\_SR\_PRL\_390.dwg Time: Oct 18, 2005 - 2:16pm

**Appendix A**  
**Validated Laboratory Analytical Data**

Validated Analytical Data for PRL 390

		EPA ID:	LJ404	LJ405	LJ406
		Location ID:	PRL390-HA1	PRL390-HA2	PRL390-HA3
		Sample Type:	SS	SS	SS
		Sample Depth:	3	3	3
		Sample Date:	26-Apr-05	26-Apr-05	26-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>			
<b>Volatile Organic Compounds</b>					
Acetone	ug/kg	8260B	NA	87 U	NA
Benzene	ug/kg	8260B	NA	4.4 U	NA
Bromodichloromethane	ug/kg	8260B	NA	4.4 U	NA
Bromoform	ug/kg	8260B	NA	4.4 U	NA
Bromomethane	ug/kg	8260B	NA	4.4 U	NA
2-Butanone (MEK)	ug/kg	8260B	NA	87 UJ	NA
Carbon Disulfide	ug/kg	8260B	NA	4.4 U	NA
Carbon Tetrachloride	ug/kg	8260B	NA	4.4 U	NA
Chlorobenzene	ug/kg	8260B	NA	4.4 U	NA
Chlorodibromomethane	ug/kg	8260B	NA	4.4 U	NA
Chloroethane	ug/kg	8260B	NA	4.4 U	NA
Chloroform	ug/kg	8260B	NA	4.4 U	NA
Chloromethane	ug/kg	8260B	NA	4.4 U	NA
Dichlorodifluoromethane (F12)	ug/kg	8260B	NA	4.4 U	NA
1,1-Dichloroethane	ug/kg	8260B	NA	4.4 U	NA
1,2-Dichloroethane	ug/kg	8260B	NA	4.4 U	NA
1,1-Dichloroethene	ug/kg	8260B	NA	4.4 U	NA
cis-1,2-Dichloroethene	ug/kg	8260B	NA	4.4 U	NA
trans-1,2-Dichloroethene	ug/kg	8260B	NA	4.4 U	NA
1,2-Dichloropropane	ug/kg	8260B	NA	4.4 U	NA
cis-1,3-Dichloropropene	ug/kg	8260B	NA	4.4 U	NA
trans-1,3-Dichloropropene	ug/kg	8260B	NA	4.4 U	NA
1,2-Dichlorotetrafluoroethane	ug/kg	8260B	NA	4.4 UJ	NA
Ethylbenzene	ug/kg	8260B	NA	4.4 U	NA
2-Hexanone	ug/kg	8260B	NA	44 U	NA
Methylene Chloride	ug/kg	8260B	NA	4.4 U	NA
4-Methyl-2-Pentanone	ug/kg	8260B	NA	44 U	NA
Methyl tert-butyl ether	ug/kg	8260B	NA	4.4 U	NA
Styrene	ug/kg	8260B	NA	4.4 U	NA
1,1,1,2-Tetrachloroethane	ug/kg	8260B	NA	4.4 U	NA
1,1,2,2-Tetrachloroethane	ug/kg	8260B	NA	4.4 U	NA
Tetrachloroethene	ug/kg	8260B	NA	4.4 U	NA
Toluene	ug/kg	8260B	NA	4.4 U	NA
1,1,1-Trichloroethane	ug/kg	8260B	NA	4.4 U	NA
1,1,2-Trichloroethane	ug/kg	8260B	NA	4.4 U	NA
Trichloroethene	ug/kg	8260B	NA	4.4 U	NA
Trichlorofluoromethane	ug/kg	8260B	NA	4.4 U	NA
1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	8260B	NA	4.4 U	NA
Vinyl chloride	ug/kg	8260B	NA	4.4 U	NA
Total xylenes	ug/kg	8260B	NA	13 U	NA
tertiary-Butyl alcohol (TBA)	ug/kg	8260B	NA	17 UJ	NA
Diisopropyl Ether	ug/kg	8260B	NA	4.4 U	NA
Ethyl-tert-butyl ether (ETBE)	ug/kg	8260B	NA	4.4 U	NA
tert-Amyl methyl ether (TAME)	ug/kg	8260B	NA	4.4 U	NA
<b>Total Petroleum Hydrocarbons</b>					
Gasoline	mg/kg	8015B GRO	10 U	9.3 U	NA
PHC as Diesel Fuel	mg/kg	8015B DRO	11 U	11 U	NA
Motor Oil	mg/kg	8015B DRO	2 J	3 J	NA
<b>Metals</b>					
Cadmium	mg/kg	6010B	NA	0.25 J	1.1
Chromium	mg/kg	6010B	NA	6.9	NA
Cobalt	mg/kg	6010B	NA	3.7 J	NA
Lead	mg/kg	6010B	NA	3 J	3.3 J
Mercury	mg/kg	7471A	NA	0.077	NA
Nickel	mg/kg	6010B	NA	NA	9.2 J

		EPA ID:	LJ404	LJ405	LJ406
		Location ID:	PRL390-HA1	PRL390-HA2	PRL390-HA3
		Sample Type:	SS	SS	SS
		Sample Depth:	3	3	3
		Sample Date:	26-Apr-05	26-Apr-05	26-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>			
<b>Others</b>					
Moisture	%	ASTM D 2216	13	8.4	7
pH	pH	9040	NA	NA	5.21

Notes:

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = indicates an estimated value

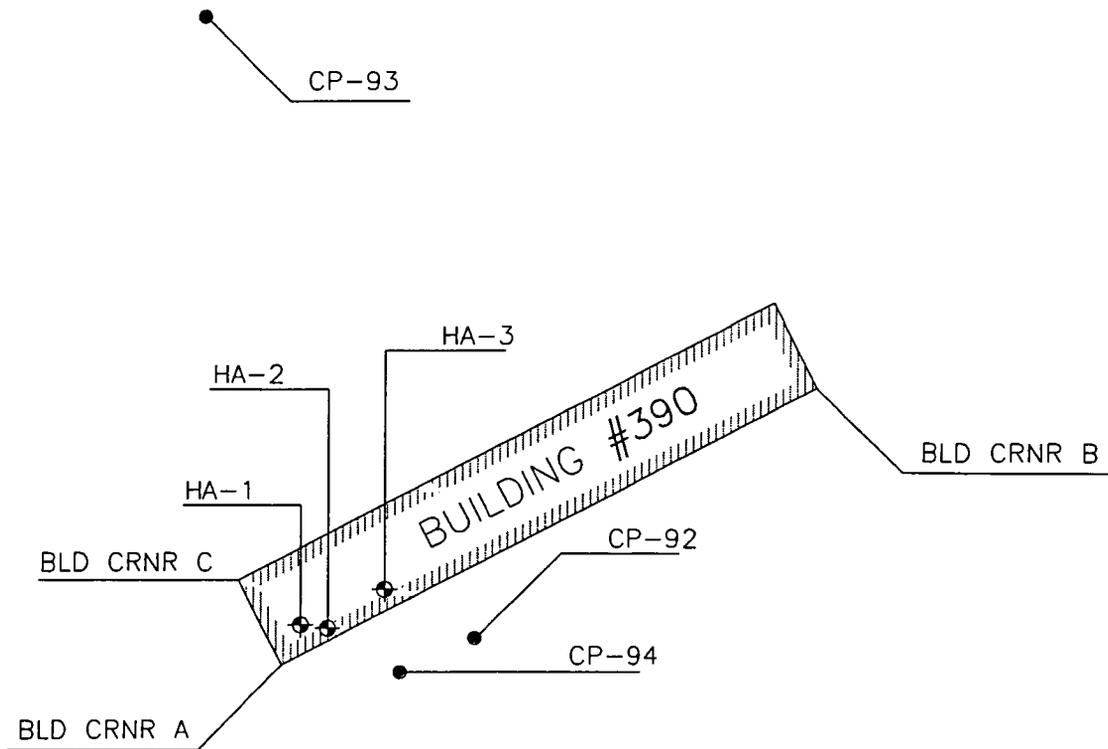
UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

ASTM = American Society of Testing and Materials

NA= not analyzed

SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #390 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2188668.17	6115509.57	
BLD CRNR B	2188760.74	6115689.06	
BLD CRNR C	2188789.19	6115674.39	
CP 92	2188677.12	6115574.62	383.07
CP 93	2188884.98	6115483.67	381.15
CP 94	2188665.65	6115549.82	382.74
BLD 390-HA 1	2188681.62	6115515.87	383.28
BLD 390-HA 2	2188680.43	6115524.97	383.25
BLD 390-HA 3	2188693.39	6115544.19	383.45



**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310) 327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #390

SCALE: 1"=60' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 10**  
**Summary Report**  
**PRL 605**



**Summary Report for PRL 605,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	2
3. Sampling and Analysis Summary	2
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	2
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 605	7
Table 2: Analytical Results Summary – PRL 605	9
Table 3: Risk Screening – PRL 605	11

## FIGURES

Figure 1: Site Location Map – PRL 605	15
Figure 2: Site Plan – PRL 605	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

AOC	area of concern
bgs	below ground surface
COPC	chemical of potential concern
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
HA	hand auger
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
mg/kg	milligram per kilogram
NFA	no further action
NFECSSW SDIEGO	Southwest Division Naval Facilities Engineering Command
OCHCA	Orange County Health Care Agency
OWS	oil-water separator
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RFA	Resource Conservation and Recovery Act Facility Assessment
RWQCB	Regional Water Quality Control Board
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAA	temporary accumulation area
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 605 is associated with Building 605, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was constructed in 1965, and identified as a Maintenance Hanger in 1973, which is the last known description. Figure 2 shows the plan of Building 605 and the surrounding area.

Eight locations of concern (LOCs) were associated with this site. OWS 605C (Solid Waste Management Unit [SWMU]/Area of Concern [AOC] 151) was an oil-water separator (OWS) that was removed, and the site was closed by the Orange County Health Care Agency (OCHCA) in a letter dated 9 December 1999. PCB T81 was a transformer containing polychlorinated biphenyls (PCBs) that was replaced. PCB T81 was assigned an Environmental Condition of Property category of 1 following the Environmental Baseline Survey (NFESCW SDIEGO 2003) and no further action (NFA) was recommended. The California Department of Toxic Substances Control (DTSC) and the Environmental Protection Agency (EPA) concurred with the EBS in a letter dated 25 September 2003. RFA 14 was a drop tank fuel storage area identified during the Resource Conservation and Recovery Act Facility Assessment (RFA). The Regional Water Quality Control Board (RWQCB) concurred with the Department of the Navy's recommendation for NFA in a letter dated 31 March 2000. RFA 150 was an aircraft wash area that was recommended for NFA; the Base Realignment and Closure Cleanup Team concurred through acceptance of the 1995 EBS. RFA 267 was recommended for NFA; the California DTSC concurred through acceptance of the RFA. TAA 605 (SWMU/AOC149) was a less-than-90-day temporary accumulation area (TAA) that is no longer active, and NFA has been recommended. Underground storage tank (UST) 605A was removed; the site was closed by the RWQCB, Santa Ana Region in a letter dated 9 December 1999. UST 605B was removed; the site was closed by OCHCA in a letter dated 9 December 1999.

Previous investigations were conducted to address the LOCs for this site. However, those investigations do not coincide with or affect the scope of the investigations for PRL 605.

Based on the review of available documentation, including similar activities of other Department of Defense installations, and a visual site inspection (VSI), it was assessed that a potential existed for releases of hazardous substances to the environment via the expansion joints between the floor slabs of the hangar and the aircraft washing area located northwest of the hangar. This assessment was based on past airplane maintenance and washing activities at the hangar, hazardous substances used in the hangar such as fuel, oil, lubricants and solvents, and odors of hydrocarbons observed along the northeast wall of the hangar and staining along the berm for the wash area. In concurrence with the regulatory agencies, soil sampling was conducted for PRL 605 in 2003 (NFESCW SDIEGO 2003). Soil samples were collected from two locations, HA1 at a depth of 1.5 feet below ground surface (bgs), and HA2 at a depth of 2.0 feet bgs. Soil samples from both locations were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and metals. The results for TPH were reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

The analytical results showed that one analyte, arsenic, exceeded its residential preliminary remediation goal (PRG) and background concentration. Arsenic was detected at a maximum concentration of 29.8 milligram per kilogram (mg/kg) (7.0 mg/kg in the duplicate sample) in the soil sample from location HA2. TPH<sub>m</sub>, TPH<sub>d</sub>, and TPH<sub>g</sub> were detected at maximum concentrations of 11 mg/kg (estimated) (HA2), 47 mg/kg (HA1), and 0.03 mg/kg (estimated) (HA1), respectively. However, these concentrations are not indicative of a significant release and no further action was recommended for TPH. SVOCs were not detected above laboratory reporting limits, and none of the VOCs exceeded their respective residential PRGs. The analytical results for these samples are presented in Table 2 and the EBS (NFESCW SDIEGO 2003).

## 2. Issues and Concerns

In letters dated 11 April 2003, EPA and DTSC recommended further investigation of the elevated concentration of arsenic in the vicinity of location HA2.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

## 3. Sampling and Analysis Summary

Sampling was conducted for PRL 605 in May 2005. The sample location is shown on Figure 2 and a summary of sampling and analyses is provided in Table 1.

One soil sample was collected at location HA3 adjacent to HA2. The soil sample was collected at a depth of 1.5 feet below the bottom of the floor slab by hand auger (HA) and analyzed for arsenic.

## 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 605 along with the United States EPA Region 9 or California-modified residential PRGs are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

### 4.2 RESULTS EVALUATION AND RISK SCREENING

Arsenic was detected at a concentration of 2.9 mg/kg at location HA3, which is less than the former MCAS El Toro background value of 6.86 mg/kg. This result indicates that the arsenic contamination detected at location HA2 in 2003 is not indicative of a significant release.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 605. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative (including results from the 2003 and 2005 investigations) maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 605 is  $4.8E-04$ , which is comparable to the background risk of  $1.1E-04$ . The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as hazard index (HI) of 3.1, which is comparable to the background HI of 2.6. The maximum exposure point concentration for arsenic (29.8 mg/kg) reported in the surface soil sample at location HA2 during the 2003 investigation accounts for nearly 45 percent of the noncancer hazard index and 100 percent of the cancer risk.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 605 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling activities were conducted for this assessment. One soil sample collected in 2003 contained arsenic contamination in excess of the background. A subsequent sample was collected in 2005 to confirm this result and delineate the extent of the potential soil contamination.

The detected arsenic concentration in the subsequent sample at location HA3 was 2.9 mg/kg, which is less than the former MCAS El Toro background value of 6.86 mg/kg. The resulting cumulative cancer risk at PRL 605 is comparable to the station background risk range, and the noncancer risk is comparable to the background risk range. Therefore, no further investigation is recommended for PRL 605.

## 6. References

Aerial survey, OHM/SWDIV, 1997.

Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.

Borehole Location Survey, Calvada. 2003.

Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

———. 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

Shaw Environmental, Inc. 2003. *Closure Report, Former Temporary Accumulation Area 605, Former Marine Corps Air Station El Toro, California*. November.

Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *Marine Corps Air Station El Toro, California, Installation Restoration Program, Final Resource Conservation Recovery Act (RCRA), Facility Assessment Report, Volume I*. San Diego, CA. July

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 605**

Analytical Group and Method <sup>a</sup>	Sample Location	HA3
	EPA ID	LJ557
	Sample Depth (feet bgs)	1.5
	Sampling Technique	HA
Arsenic 6010B		X

**Notes:**

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 605**

Analyte	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL605-HA1	PRL605-HA2	PRL605-HA2	PRL605-HA3
			Sample Depth	0.5-1.5 feet bgs	1-2 feet bgs	1-2 feet bgs (dup)	1.5 feet bgs
			EPA ID	LJ112	LJ111	LJ114	LJ557
<b>Total Petroleum Hydrocarbons (mg/kg)</b>							
TPH as Gasoline	--	--		12 U	5 J	11 J	NA
TPH as Diesel	--	--		47	11 U	12 U	NA
TPH as Motor Oil	--	--		0.03 J	10 U	9.2 U	NA
<b>Volatile Organic Compounds (µg/kg)</b>							
Acetone	--	1.4E+07		46 J	91 U	97 U	NA
Methylene Chloride	--	9.1E+03		1 J	4.5 U	4.8 U	NA
<b>Metals (mg/kg)</b>							
Aluminum	14,800	7.6E+04		12,600	8,920	10,400	NA
Arsenic <sup>c</sup>	6.86	6.2E-02		3.6	<b>29.8</b>	<b>7.0</b>	2.9
Barium	173	5.4E+03		158	78.9	136	NA
Cadmium	2.35	3.7E+01		0.16 UJ	0.3 UJ	0.35	NA
Calcium	46,000	--		3,450	3,390	7,530	NA
Chromium	26.90	2.1E+02		12.2	24.2	12.1	NA
Cobalt	6.98	9.0E+02		<b>8.2</b>	<b>30.7</b>	<b>9.6</b>	NA
Copper	6.41	3.1E+03		<b>6.8</b>	<b>12.6</b>	<b>6.7</b>	NA
Iron	18,400	2.3E+04		17,700 J	15,400 J	14,800 J	NA
Lead <sup>c</sup>	15.1	1.5E+02		3.2	8.9	5.6	NA
Magnesium	8,370	--		6,630 J	4,950 J	5,680 J	NA
Manganese	291	1.8E+03		221 J	208 J	223 J	NA
Mercury	0.22	2.3E+01		0.026	0.014	0.025	NA
Nickel	15.3	1.6E+03		6.7	11.6	7.7	NA
Potassium	4,890	--		4,650 J	3,120 J	3,110 J	NA
Vanadium	71.8	7.8E+01		38.6	33.4	32.6	NA
Zinc	77.9	2.3E+04		52.6	42.4	43.4	NA

**Notes**

Concentrations in **bold** indicate values greater than the residential soil PRGs and the MCAS EI Toro background values

Concentrations with *italic underline* indicate values greater than the MCAS EI Toro background, but less than the residential soil PRGs

-- = value does not exist

NA= not analyzed

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

UJ= indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for arsenic and lead were compared to Cal-modified PRGs (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

Location HA3 was sampled during this investigation (2005), and all other locations were sampled during the 2003 investigation

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 605**

COPC	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC				Risk Corresponding to Background			
					Carcinogenic		Noncarcinogenic		Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>	Excess Cancer Risk <sup>f</sup>	Percent Contribution to Cancer Risk <sup>g</sup>	HI <sup>h</sup>	Percent Contribution to Noncancer Risk <sup>g</sup>
<b>Volatile Organic Compounds (µg/kg)</b>												
Acetone	--	46	--	1.4E+07	--	--	3.3E-06	0.0%	--	--	--	--
Methylene Chloride	--	1	9.1E+03	2.0E+06	1.1E-10	0.0%	5.1E-07	0.0%	--	--	--	--
<b>Metals (mg/kg)</b>												
Aluminum	14,800	12,600	--	7.6E+04	--	--	1.7E-01	5.4%	--	--	1.9E-01	7.5%
Arsenic <sup>i</sup>	6.86	29.8	6.2E-02	2.2E+01	4.8E-04	100.0%	1.4E+00	45.1%	1.1E-04	99.9%	3.2E-01	12.2%
Barium	173	158	--	5.4E+03	--	--	2.9E-02	1.0%	--	--	3.2E-02	1.2%
Cadmium	2.35	0.35	1.4E+03	3.7E+01	2.5E-10	--	9.5E-03	0.3%	1.7E-09	0.0%	6.3E-02	2.4%
Calcium	46,000	7,530	--	--	--	--	--	--	--	--	--	--
Chromium	26.9	24.2	2.1E+02	--	1.1E-07	0.0%	--	--	1.3E-07	0.1%	--	--
Cobalt	6.98	30.7	9.0E+02	1.4E+03	3.4E-08	0.0%	2.2E-02	0.7%	7.7E-09	0.0%	5.1E-03	0.2%
Copper	6.41	12.6	--	3.1E+03	--	--	4.0E-03	0.1%	--	--	2.0E-03	0.1%
Iron	18,400	17,700	--	2.3E+04	--	--	7.5E-01	24.7%	--	--	7.8E-01	30.1%
Lead <sup>i</sup>	15.1	8.9	--	1.5E+02	--	--	5.9E-02	1.9%	--	--	1.0E-01	3.9%
Magnesium	8,370	6,630	--	--	--	--	--	--	--	--	--	--
Manganese	291	223	--	1.8E+03	--	--	1.3E-01	4.1%	--	--	1.7E-01	6.3%
Mercury	0.22	0.026	--	2.3E+01	--	--	1.1E-03	0.0%	--	--	9.4E-03	0.4%
Nickel	15.3	11.6	--	1.6E+03	--	--	7.4E-03	0.2%	--	--	9.8E-03	0.4%
Potassium	4,890	4,650	--	--	--	--	--	--	--	--	--	--
Vanadium	71.8	38.6	--	7.8E+01	--	--	4.9E-01	16.2%	--	--	9.2E-01	35.2%
Zinc	77.9	52.6	--	2.3E+04	--	--	2.2E-03	0.1%	--	--	3.3E-03	0.1%
<b>Cumulative Maximum Risk</b>					<b>4.8E-04</b>		<b>3.1E+00</b>		<b>1.1E-04</b>		<b>2.6E+00</b>	

**Notes:**

-- = value does not exist

µg/kg= microgram per kilogram

mg/kg =milligram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Excess cancer risk = 1E-06 x (MCAS El Toro Background Concentration/Carcinogenic PRG)

<sup>g</sup> With respect to cumulative excess cancer risk or hazard index

<sup>h</sup> HI = MCAS El Toro Background Concentration / Noncarcinogenic PRG

<sup>i</sup> Cal-modified Carcinogenic PRGs (2004) were used for arsenic and lead for excess cancer risk calculations because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

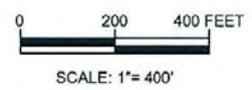
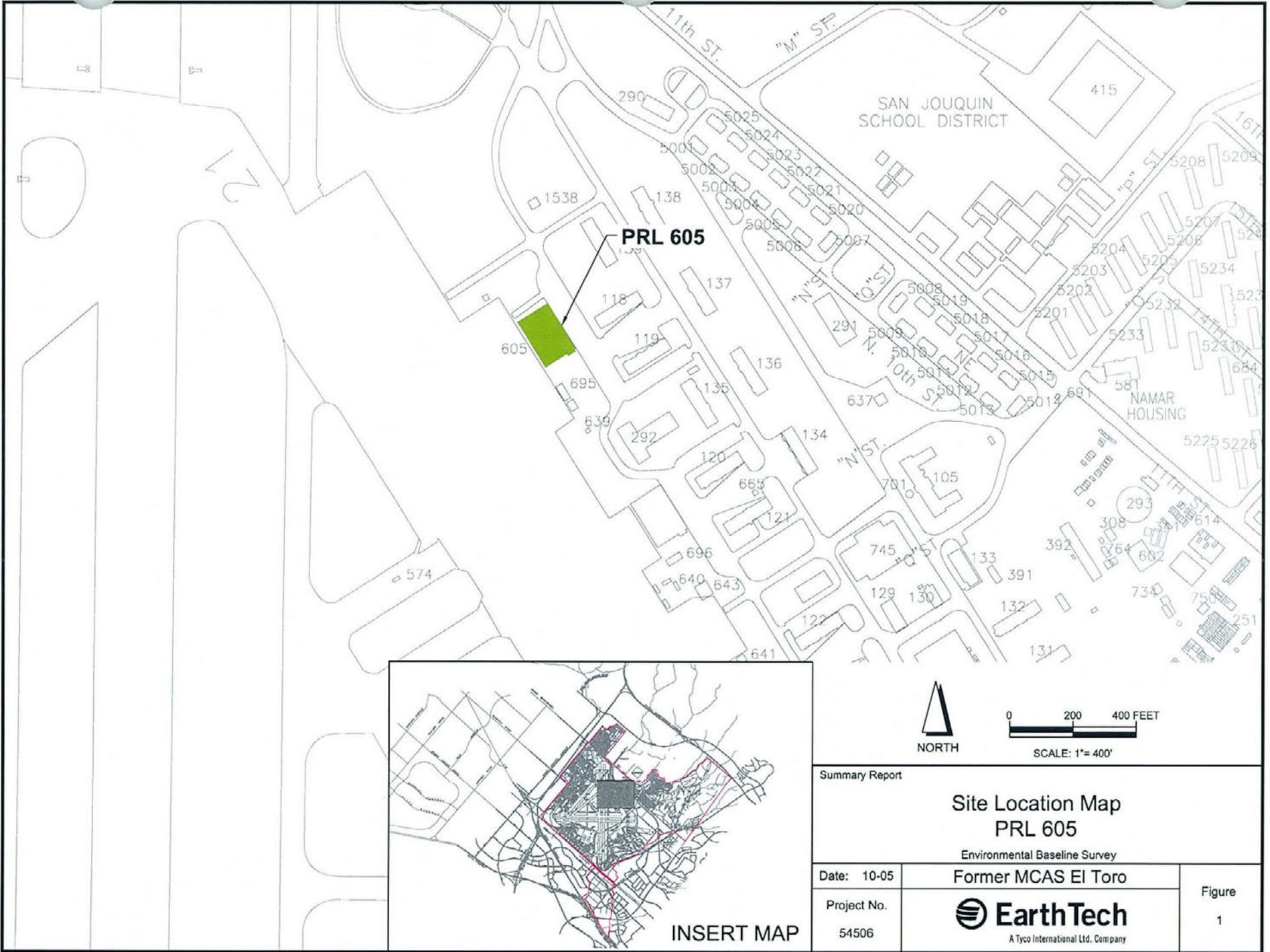
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 605

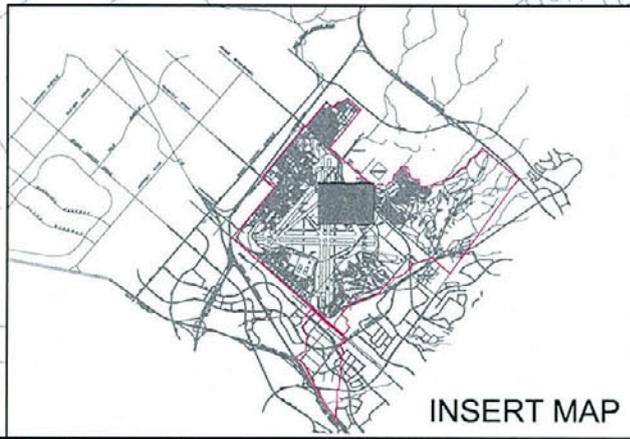
FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



Summary Report		
<b>Site Location Map</b> <b>PRL 605</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS EI Toro	
Project No. 54506		Figure 1



INSERT MAP

PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 2 – SITE PLAN  
PRL 605

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

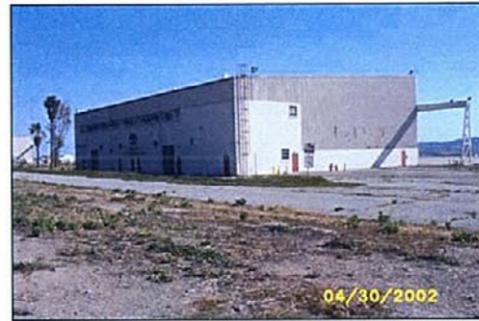
TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



Front of Building (Facing East)



Wash Area with Asphalt Berm:  
Location of Soil Sample Borehole HA1  
(Facing North)

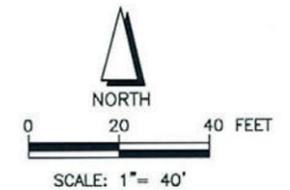


Northeast Corner of Hanger  
(Facing South)



LEGEND:

- Edge of Road
- Sewer Line
- MH
- Sewer Line Manhole
- Sink
- Catch Basin
- Carve-out Boundary
- Approximate 1993 Sample Location (NFEC SW SDIEGO, 1993) (Analytes: TPH, VOCs, SVOCs, Pesticides, PCBs, and Metals)
- Approximate 2000 Sample Location (Shaw, 2003) (Analytes: TPH, VOCs, SVOCs, Pesticides, and Metals)
- HA2 2003 Sample Location (NFEC SW SDIEGO, 2003) (Sample Depth: 0.5 to 2 feet bgs; Analytes: TPH, VOCs, SVOCs, and Metals)
- HA3 Soil Sample Location (Earth Tech, 2005) (Sample Depth: 1.5 feet bgs; Analytes: Arsenic)



Note: Features and interior layout are approximate and may not be to scale

Summary Report

Site Plan  
PRL 605

Environmental Baseline Survey

Date:	10-05	Former MCAS EI Toro	Figure 2
Project No.	54506	EarthTech A Tyco International Ltd. Company	

**Appendix A**  
**Validated Laboratory Analytical Data**

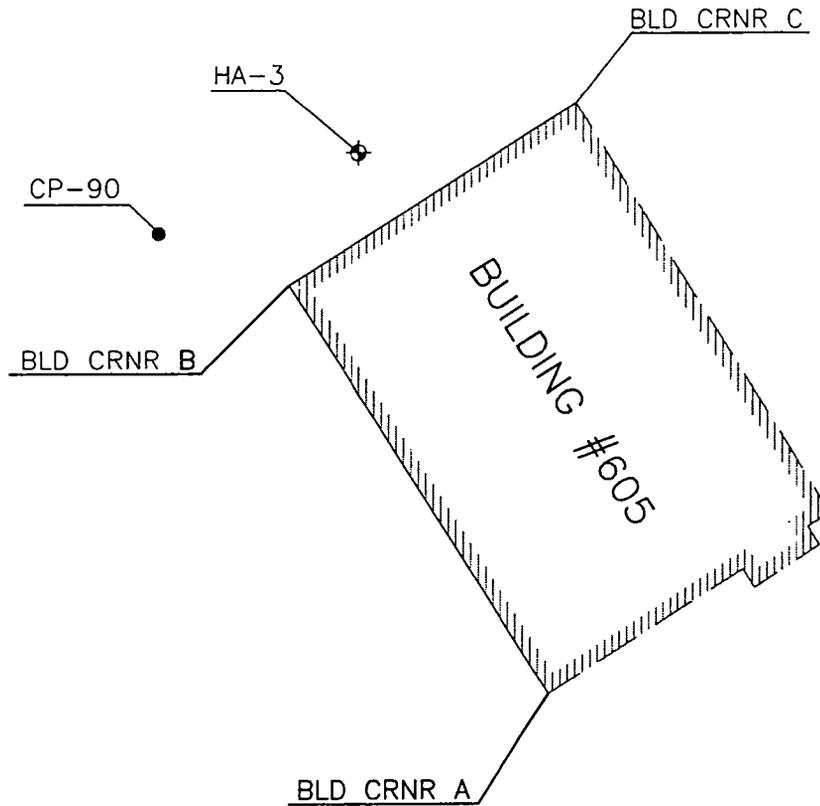
**Validated Analytical Data for PRL 605**

		EPA ID:	LJ557
		Location ID:	PRL605-HA3
		Sample Type:	SS
		Sample Depth:	1.5
		Sample Date:	31-May-05
Parameter	Units	Analytical Method <sup>1</sup>	
<b>Metals</b>			
Arsenic	mg/kg	6010B	2.9
<b>Others</b>			
Moisture	%	ASTM D 2216	16

Notes:

- <sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.
- ASTM = American Society of Testing and Materials
- SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #605 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2194146.47	6113398.66	
BLD CRNR B	2194283.34	6113311.67	
BLD CRNR C	2194344.38	6113407.61	
CP 90	2194300.87	6113267.81	385.74
BLD 605-HA 3	2194327.81	6113334.71	385.91



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #605

SCALE:	1"=60'	DATE:	06-06-05
BY:	JCL	JOB NO.:	04-1058-2227.000-535

**Attachment 11**  
**Summary Report**  
**PRL 606**



**Summary Report for PRL 606,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	2
3. Sampling and Analysis Summary	2
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	2
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 606	7
Table 2: Analytical Results Summary – PRL 606	9
Table 3: Risk Screening – PRL 606	11

## FIGURES

Figure 1: Site Location Map – PRL 606	15
Figure 2: Site Plan – PRL 606	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

AOC	area of concern
bgs	below ground surface
COPC	chemical of potential concern
DoN	Department of the Navy
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
EPC	exposure point concentration
HA	hand auger
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
mg/kg	milligram per kilogram
NFA	no further action
NFECWSW SDIEGO	Southwest Division, Naval Facilities Engineering Command
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAA	temporary accumulation area
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 606 is associated with Building 606, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was constructed in 1956 and was identified as a Maintenance Hanger in 1973, which is the last known description. Figure 2 shows the plan of Building 606 and the surrounding area.

Four locations of concern (LOCs) were associated with this site. PCB T82 was a transformer containing polychlorinated biphenyls (PCBs) that was replaced. PCB T82 was assigned an Environmental Condition of Property category of 1 following the Environmental Baseline Survey (EBS) (NFECWS SDIEGO 2003) and no further action (NFA) was recommended. The Department of Toxic Substances Control (DTSC) and the Environmental Protection Agency (EPA) concurred with the EBS in a letter dated 25 September 2003. RFA 152, identified during the Resource Conservation and Recovery Act Facility Assessment (NFECWS SDIEGO 1993) (also known as Solid Waste Management Unit [SWMU]/Area of Concern [AOC] 152) was an aircraft wash area for which the Base Realignment and Closure Cleanup Team concurred with the Department of the Navy's (DoN's) recommendation for NFA through acceptance of the 1995 EBS. Located southwest of Building 606, outside the area shown on Figure 2, TAA 606 (SWMU/AOC 255) was a less-than-90-day temporary accumulation area (TAA) that is no longer active. The DTSC concurred with the DoN's recommendation for NFA (Shaw Environmental, Inc. 2003) for TAA 606 in a letter dated 16 September 2004. UST 606A was a 500-gallon diesel underground storage tank (UST) that was removed and the site was closed by the Regional Water Quality Control Board in a letter dated 1 November 1997.

Previous investigations were conducted to address the LOCs for this site. However, those investigations do not coincide with or affect the scope of the investigations for PRL 606.

Based on the review of available documentation, including similar activities of other Department of Defense installations, and a visual site inspection (VSI), it was assessed that a potential existed for releases of hazardous substances to the environment via the expansion joints between the floor slabs of the hangar and the drainage ditch along the southeast side of the hangar. This assessment was based on past airplane maintenance and washing activities at the hangar, hazardous substances used in the hangar such as fuel, oil, lubricants and solvents, and evidence of staining inside the hangar. In concurrence with regulatory agencies, soil sampling was conducted for PRL 606 in 2003 (NFECWS SDIEGO 2003). Soil samples were collected at locations HA1 and HA2 at depths of 1.5 feet below ground surface (bgs), and 2.0 feet bgs, respectively. Soil samples from both locations were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and metals. The results for TPH were reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>). Arsenic was detected at concentrations of 6.9 and 11.1 milligram per kilogram (mg/kg) in the soil samples collected at locations HA1 and HA2, respectively. The 2004 residential preliminary remediation goal (PRG) and background concentration for arsenic are 0.06 and 6.86 mg/kg, respectively.

VOCs and SVOCs were not detected above laboratory reporting limits. TPH as TPH<sub>m</sub> and as TPH<sub>d</sub> were detected at maximum concentrations of 18 mg/kg and 7 mg/kg (estimated values), respectively, at HA1. However, these concentrations are not indicative of a significant release and no further action was recommended for TPH. The analytical results for these samples are presented in Table 2 and the EBS (NFECWS SDIEGO 2003).

## 2. Issues and Concerns

In a letter dated 11 April 2003, DTSC recommended additional assessment to determine the extent of arsenic in the vicinity of location HA2.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

## 3. Sampling and Analysis Summary

Sampling was conducted for PRL 606 in May 2005. The sample location is shown on Figure 2 and a summary of sampling and analyses is provided in Table 1.

One soil sample was collected at location HA3 adjacent to HA2. The soil sample was collected at a depth of 1.5 feet below the bottom of the floor slab by hand auger (HA) and analyzed for arsenic.

## 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 606 along with the United States EPA Region 9 or California-modified residential PRGs are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

### 4.2 RESULTS EVALUATION AND RISK SCREENING

Arsenic was detected at a concentration of 3.6 mg/kg at location HA3 which is less than the former MCAS El Toro background value of 6.86 mg/kg. This result indicates that the arsenic contamination detected at location HA2 in 2003 is not indicative of a significant release.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 606. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative (including results from the 2003 and 2005 investigations) maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL 606 is 1.8E-04, which is comparable to the background risk of 1.1E-04. The maximum exposure point concentration (EPC) for arsenic (11.1 mg/kg) reported during the 2003 investigation in the surface sample at location HA2 accounts for about 99.9 percent of the cancer risk. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as hazard index (HI) of 2.5, which is less than the background HI of 2.6. The maximum EPCs for arsenic (11.1 mg/kg in the surface sample at location HA2), iron (21,500 mg/kg in the surface sample at location HA1), and vanadium (44.7 mg/kg in the surface sample at location HA1) account for about 21 percent, 37 percent, and 23 percent of the noncancer HI, respectively.

## 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 606 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records,

VSI, and soil activities were conducted for this assessment. One soil sample collected in 2003 contained arsenic contamination in excess of the background. A subsequent sample was collected in 2005 to confirm this result. The detected arsenic concentration in the subsequent sample at location HA3 was 3.6 mg/kg, which is less than the former MCAS El Toro background value of 6.86 mg/kg. The resulting cumulative cancer risk at PRL 606 is comparable to the station background risk range, and the noncancer risk is less than the background risk range. Therefore, no further investigation is recommended for PRL 606.

## 6. References

Aerial survey, OHM/SWDIV. 1997.

Borehole Location Survey, Calvada. 2003.

Bechtel National, Inc. (BNI). 1996. *Final Technical Memorandum, Background and Reference Levels, Remedial Investigations, Marine Corps Air Station El Toro, California*. San Diego, CA: NAVFAC EFD SOUTHWEST.

Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

\_\_\_\_\_. 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

Shaw Environmental, Inc. 2003. *Closure Report, Former Temporary Accumulation Area 606, Former Marine Corps Air Station El Toro, California*. May.

Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro Installation Restoration Program Draft Resource Conservation and Recovery Act (RCRA) Facility Assessment Report, Volume IV, Survey of Air Emission Sources*. July.

\_\_\_\_\_. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 606**

Analytical Group and Method <sup>a</sup>	Sample Location	HA3
	EPA ID	LJ558
	Sample Depth (feet bgs)	1.5
	Sampling Technique	HA
Arsenic 6010B		X

**Notes:**

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 606**

Analyte	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL606-HA1	PRL606-HA2	PRL606-HA3
			Sample Depth	0.5-1.5 feet bgs	1-2 feet bgs	1.5 feet bgs
			EPA ID	LJ115	LJ116	LJ558
<b>Total Petroleum Hydrocarbons (TPH) (mg/kg)</b>						
TPH as Diesel	--	--		18	3 J	NA
TPH as Motor Oil	--	--		7 J	6 J	NA
<b>Metals (mg/kg)</b>						
Aluminum	14,800	7.6E+04		<u>17,100</u>	9,500	NA
Arsenic <sup>c</sup>	6.86	6.2E-02		<b>6.9</b>	<b>11.1</b>	3.6
Barium	173	5.4E+03		143	149	NA
Cadmium	2.35	3.7E+01		0.6	0.5	NA
Calcium	46,000	--		9,090	6,700	NA
Chromium	26.9	2.1E+02		15.1	23.2	NA
Cobalt	6.98	9.0E+02		<u>9.0</u>	<u>7.8</u>	NA
Copper	6.41	3.1E+03		<u>8.5</u>	<u>7.1</u>	NA
Iron	18,400	2.3E+04		<u>21,500 J</u>	13,500 J	NA
Lead <sup>c</sup>	15.1	1.5E+02		5.5	3.4	NA
Magnesium	8,370	--		<u>8,960 J</u>	5,270 J	NA
Manganese	291	1.8E+03		289 J	224 J	NA
Mercury	0.22	2.3E+01		0.017	0.02	NA
Nickel	15.3	1.6E+03		9	12.7	NA
Potassium	4,890	--		4,830 J	3,000 J	NA
Vanadium	71.8	7.8E+01		44.7	30.5	NA
Zinc	77.9	2.3E+04		66.3	42.2	NA

**Notes**

Concentrations in **bold** indicate values greater than the residential soil PRGs and the MCAS EI Toro background values

Concentrations with *italic underline* indicate values greater than the MCAS EI Toro background, but less than the residential soil PRGs or for which there are no residential soil PRGs

-- = value does not exist

NA= not analyzed

bgs = below ground surface

J = indicates an estimated value

mg/kg = milligram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for arsenic and lead were compared to Cal-modified PRGs (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

Location HA3 was sampled during this investigation (2005), and all other locations were sampled during the 2003 investigation

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 606**

Chemical of Potential Concern	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC				Risk Corresponding to Background			
					Carcinogenic		Noncarcinogenic		Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	Hi <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>	Excess Cancer Risk <sup>f</sup>	Percent Contribution to Cancer Risk <sup>g</sup>	Hi <sup>h</sup>	Percent Contribution to Noncancer Risk <sup>g</sup>
<b>Metals (mg/kg)</b>												
Aluminum	14,800	17,100	--	7.6E+04	--	--	2.2E-01	9.0%	--	--	1.9E-01	7.5%
Arsenic <sup>i</sup>	6.86	11.1	6.2E-02	2.2E+01	1.8E-04	99.9%	5.1E-01	20.6%	1.1E-04	99.9%	3.2E-01	12.2%
Barium	173	149	--	5.4E+03	--	--	2.8E-02	1.1%	--	--	3.2E-02	1.2%
Cadmium	2.35	0.6	1.4E+03	3.7E+01	4.3E-10	0.0%	1.6E-02	0.7%	1.7E-09	0.0%	6.3E-02	2.4%
Calcium	46,000	9,090	--	--	--	--	--	--	--	--	--	--
Chromium	26.9	23.2	2.1E+02	--	1.1E-07	0.1%	--	--	1.3E-07	0.1%	--	--
Cobalt	6.98	9	9.0E+02	1.4E+03	1.0E-08	0.0%	6.5E-03	0.3%	7.7E-09	0.0%	5.1E-03	0.2%
Copper	6.41	8.5	--	3.1E+03	--	--	2.7E-03	0.1%	--	--	2.0E-03	0.1%
Iron	18,400	21,500	--	2.3E+04	--	--	9.2E-01	36.8%	--	--	7.8E-01	30.1%
Lead <sup>i</sup>	15.1	5.5	--	1.5E+02	--	--	3.7E-02	1.5%	--	--	1.0E-01	3.9%
Magnesium	8,370	8,960	--	--	--	--	--	--	--	--	--	--
Manganese	291	289	--	1.8E+03	--	--	1.6E-01	6.6%	--	--	1.7E-01	6.3%
Mercury	0.22	0.020	--	2.3E+01	--	--	8.5E-04	0.0%	--	--	9.4E-03	0.4%
Nickel	15.3	12.7	--	1.6E+03	--	--	8.1E-03	0.3%	--	--	9.8E-03	0.4%
Potassium	4,890	4,830	--	--	--	--	--	--	--	--	--	--
Vanadium	71.8	44.7	--	7.8E+01	--	--	5.7E-01	22.9%	--	--	9.2E-01	35.2%
Zinc	77.9	66.3	--	2.3E+04	--	--	2.8E-03	0.1%	--	--	3.3E-03	0.1%
<b>Cumulative Maximum Risk</b>					<b>1.8E-04</b>		<b>2.5E+00</b>		<b>1.1E-04</b>		<b>2.6E+00</b>	

Notes:

-- = value does not exist

mg/kg= milligram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Excess cancer risk = 1E-06 x (MCAS El Toro Background Concentration/Carcinogenic PRG)

<sup>g</sup> With respect to cumulative excess cancer risk or hazard index

<sup>h</sup> HI = MCAS El Toro Background Concentration / Noncarcinogenic PRG

<sup>i</sup> = Cal-modified Carcinogenic PRGs (2004) were used for arsenic and lead for excess cancer risk calculations because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURES 1 AND 2

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, COMMAND RECORDS MANAGER, CODE EV33  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY (NBSD BLDG. 3519)  
SAN DIEGO, CA 92132

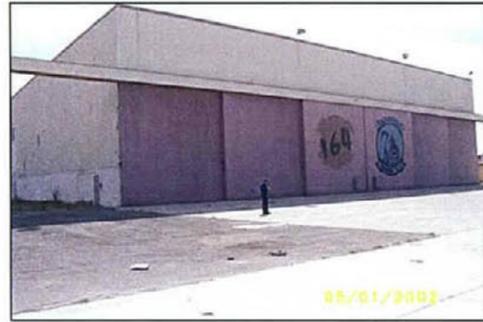
TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE



Building Exterior (Facing Southeast)



Soil Sample Borehole HA1 Adjacent to Storm Drain (Facing West)

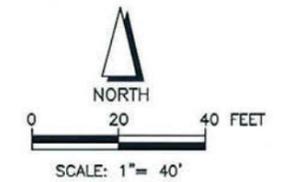


Soil Sample Borehole HA2 in Hanger (Facing Southwest)



LEGEND:

- Edge of Road
- Sewer Line
- <sup>CO</sup> Clean Out
- Storm Drain
- ☐ Storm Drain Catch Basin
- Existing Infrastructure
- /// Carve-out Boundary
- ⊕ HA2 2003 Sample Location (NFEC SW SDIEGO, 2003) (Sample Depth: 0.5 to 2 ft bgs; Analytes: TPH, VOCs, SVOCs, and Metals)
- ⊕ HA3 Soil Sample Location (Earth Tech, 2005) (Sample Depth: 1.5 ft bgs; Analytes: Arsenic)



Note: Features and interior layout are approximate and may not be to scale

Summary Report

Site Plan  
PRL 606

Environmental Baseline Survey

Date: 10-05 Former MCAS El Toro

Project No. 54506  EarthTech  
A Tyco International Ltd. Company

Figure  
2

File: L:\work\54506\work\EB\S\CAD\PA\Non-trans\formable\_PRLs\SummaryReport\Group III\Final\SR\_PRL\_606.dwg Time: Oct 18, 2005 - 2:41pm

SENSITIVE

**Appendix A**  
**Validated Laboratory Analytical Data**

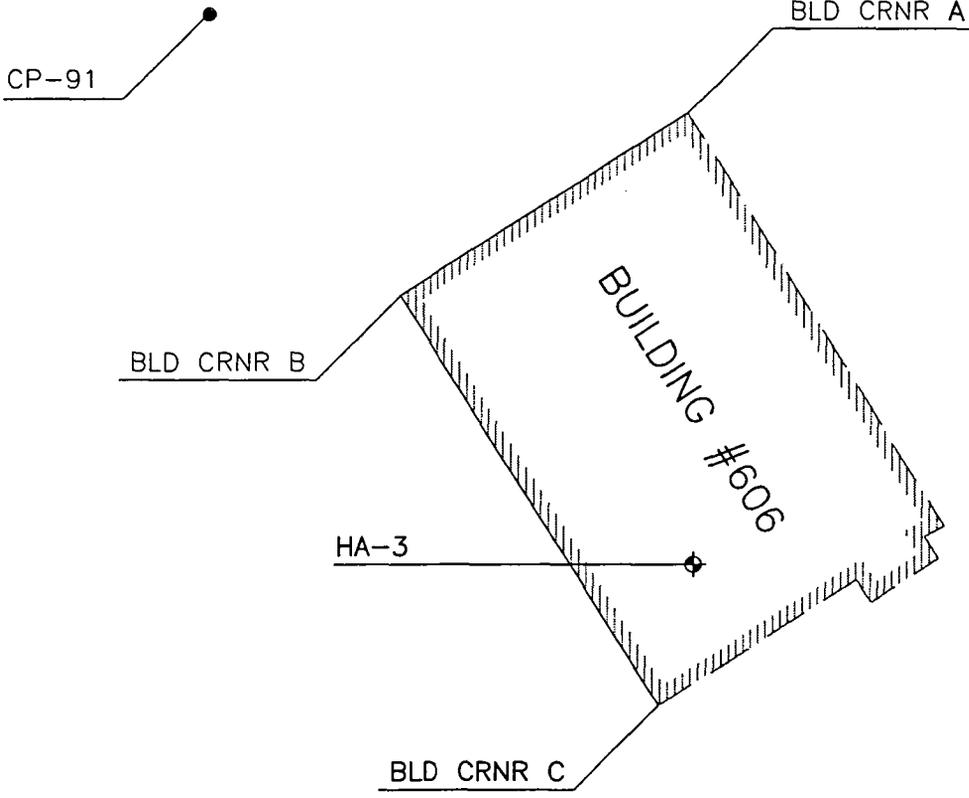
**Validated Analytical Data for PRL 606**

		EPA ID:	LJ557
		Location ID:	PRL605-HA3
		Sample Type:	SS
		Sample Depth:	1.5
		Sample Date:	31-May-05
Parameter	Units	Analytical Method <sup>1</sup>	
<b>Metals</b>			
Arsenic	mg/kg	6010B	3.6
<b>Others</b>			
Moisture	%	ASTM D 2216	7.6

**Notes:**

- <sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.  
ASTM = American Society of Testing and Materials  
SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #606 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2193774.60	6113768.58	
BLD CRNR B	2193713.75	6113672.52	
BLD CRNR C	2193576.49	6113759.69	
CP 91	2193807.69	6113608.17	390.03
BLD 606-HA 3	2193623.63	6113770.86	389.35



**DCA** CIVIL ENGINEERING GROUP

17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #606

SCALE: 1"=60' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 12**  
**Summary Report**  
**PRL 643**



**Summary Report for PRL 643,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:  
**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:  
**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:  
**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Conclusions and Recommendations	1
4. References	1

## FIGURES

Figure 1: Site Location Map – PRL 643	5
Figure 2: Site Plan – PRL 643	7

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

EBS	environmental baseline survey
LOC	location of concern
MCAS	Marine Corps Air Station
NFEC SW SDIEGO	Southwest Division, Naval Facilities Engineering Command
OCHCA	Orange County Health Care Agency
OWS	oil-water separator
PRL	potential release location
SWMU	Solid Waste Management Unit
UST	underground storage tank
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 643 is associated with Building 643, located in the northeast quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Compressed Air Plant in the 1973 list and Fixed ACFT Start System (engine start test facility) in the 1997 list, which is the last known description. Figure 2 shows the plan of Building 643 and the surrounding area.

Two locations of concern (LOCs) were associated with this site. UST 643A (Solid Waste Management Unit [SWMU] 162) was a 185-gallon underground storage tank (UST) for waste oil, and OWS 643B (SWMU 163) was a 100-gallon oil-water separator (OWS). Both were removed and the sites closed by Orange County Health Care Agency (OCHCA) in a letter dated 11 July 1997.

## 2. Issues and Concerns

The following issues and concerns associated with PRL 643 were identified during the records review, previous investigations and visual site inspections (VSIs) conducted in 2002 in support of the 2003 Environmental Baseline Survey (EBS) (NFECSSW SDIEGO 2003), and in 2004 as part of supplemental site reconnaissance:

- During the initial VSI conducted in 2002, the collection system for blow-down liquids from the compressors, in-line air-liquid separators, and holding tanks was assessed to be a potential source for a release of petroleum hydrocarbons to the soil via the underground piping system. However, upon further investigation, a records review indicated that the blow down drain lines were closed as part of the collection system for OWS 643B that was closed by the OCHCA. No floor drains or other potential routes for releases were observed inside Building 643. As a result, no further investigation was recommended.

## 3. Conclusions and Recommendations

The LOCs associated with this site have been investigated and closed by regulatory agencies. The issues and concerns identified in the 2003 Environmental Baseline Survey have been addressed by previous investigations. Therefore, no further investigation is recommended for PRL 643.

## 4. References

Drawing: Area II Provision of Commercial Equipment for Air Start System. April 1969.

OHM Remediation Services Corp (OHM). 1997. *Tank Removal and Site Closure Report, UST 643A and OWS 643B, Marine Corps Air Station El Toro, California*. June.

Southwest Division, Naval Facilities Engineering Command (NFECSSW SDIEGO). 1993. *Marine Corps Air Station El Toro Installation Restoration Program Draft Resource Conservation and Recovery Act (RCRA) Facility Assessment Report Volume I*. July.

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 2

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

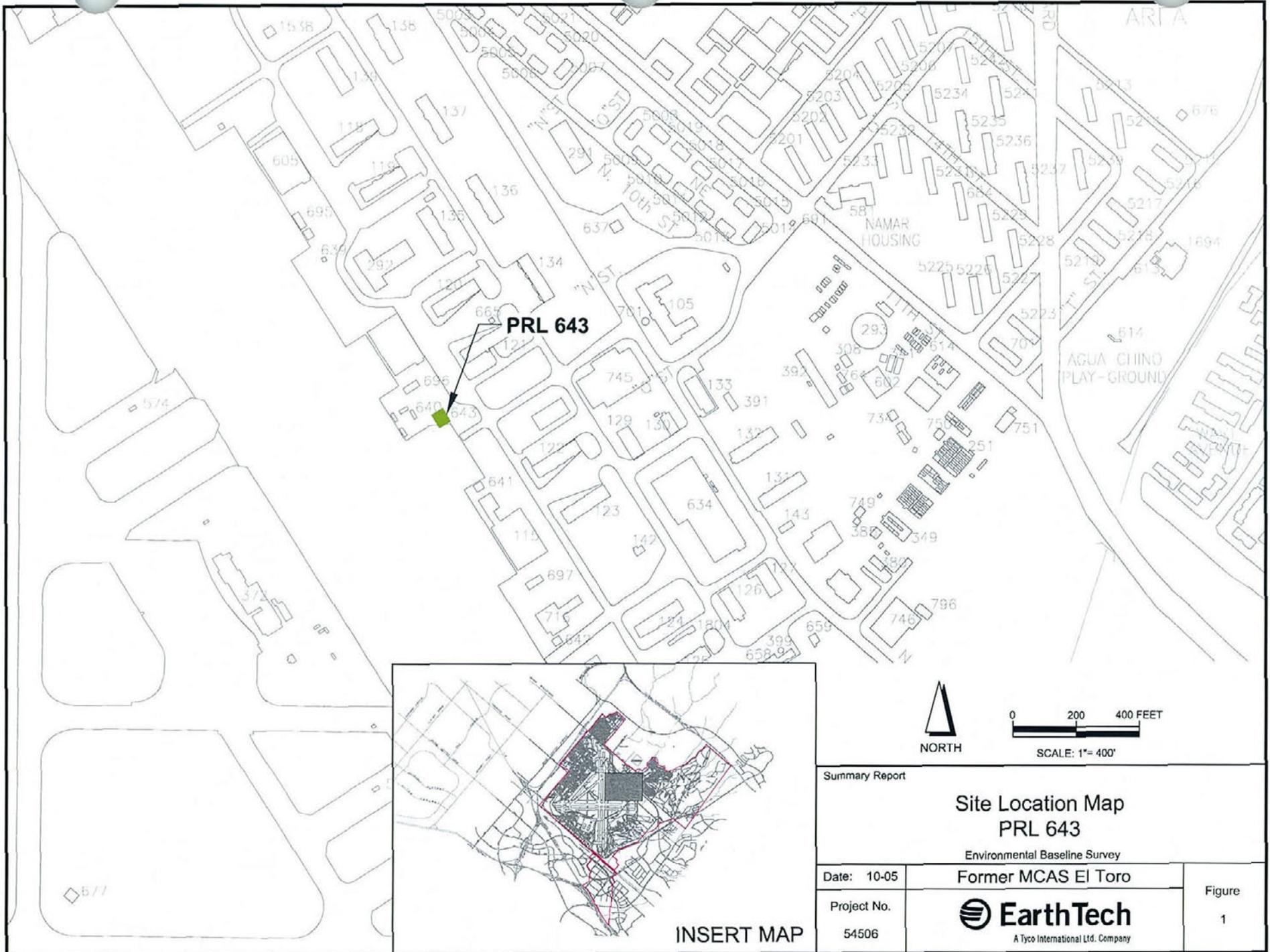
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 643

FOR ADDITIONAL INFORMATION, CONTACT:

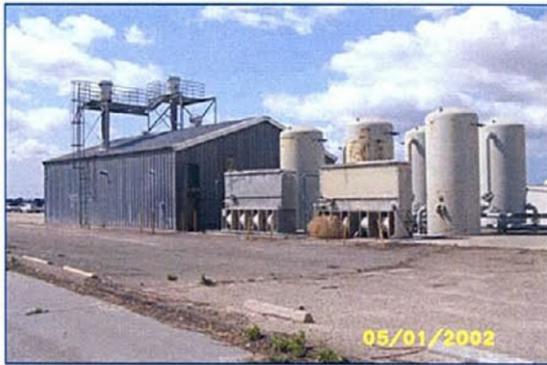
DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)

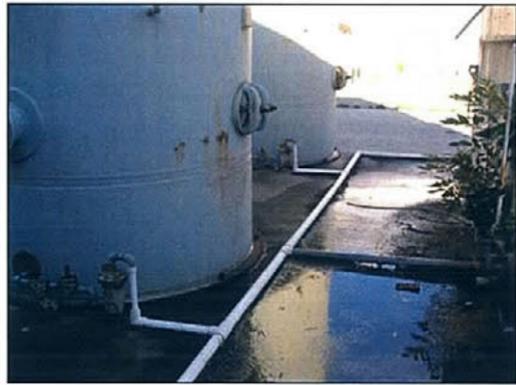


PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK



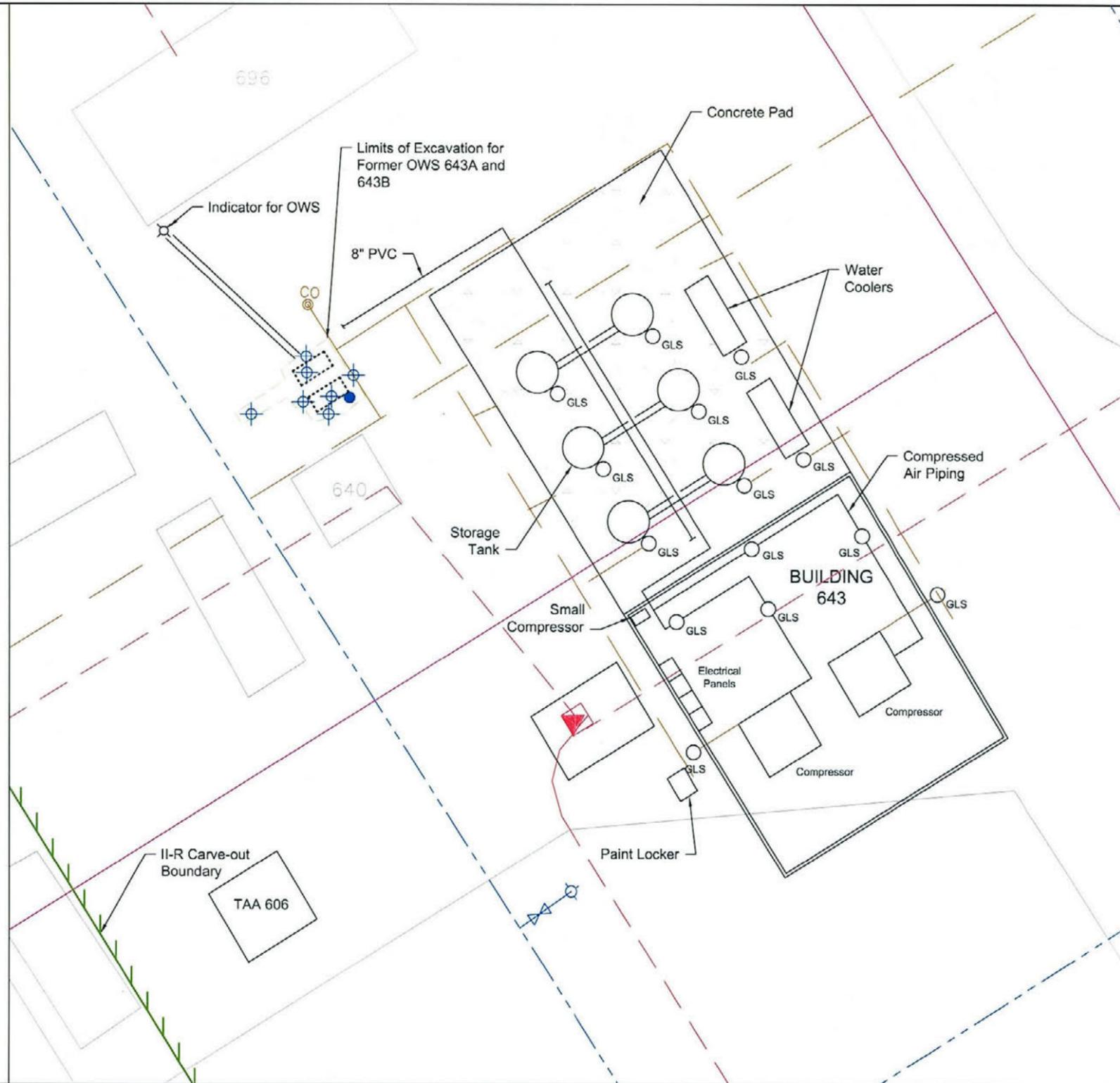
Building 643  
(Facing South)



Compressed Air Storage Tanks with Gas-Liquid Separators Connected to Discharge Piping  
(Facing Northwest)

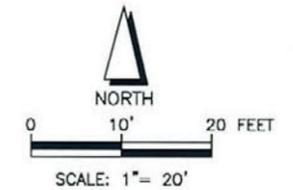


Condensate Piping Extends Below Ground to Discharge to OWS  
(Northeast Side of Building Facing Northwest)



**LEGEND:**

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Storm Sewer
- Carve-out Boundary
- Gas-Liquid Separator
- Oil-Water Separator
- Clean Out
- Transformer (Non-PCB)
- Fire Hydrant
- Water Valve
- Approximate Soil Sample Location (OHM, 1997)  
(Sample Depth: 2.2 to 8.2 ft bgs; Analytes: TPH, TRPH, VOCs, and BTEX)
- Approximate Soil Sample Location (NFEC SW SDIEGO, 1993)  
(Sample Depth: 5 to 25 ft bgs; Analytes: TPH, VOCs, SVOCs, Pesticides, PCBs, and Metals)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 643</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS EI Toro	Figure 2
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	

**Attachment 13**  
**Summary Report**  
**PRL 655**



**Summary Report for PRL 655,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	2
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	2
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL 655	7
Table 2: Analytical Results Summary – PRL 655	9
Table 3: Risk Screening – PRL 655	11

## FIGURES

Figure 1: Site Location Map – PRL 655	15
Figure 2: Site Plan – PRL 655	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

COPC	chemical of potential concern
DTSC	Department of Toxic Substances Control
EBS	environmental baseline survey
EPA	Environmental Protection Agency
HI	hazard index
LOC	location of concern
MCAS	Marine Corps Air Station
NFA	no further action
NFEC SW SDIEGO	Southwest Division, Naval Facilities Engineering Command
OWS	oil/water separator
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
PRL	potential release location
RWQCB	Regional Water Quality Control Board
RFA	Resource Conservation and Recovery Act Facility Assessment
SWMU	solid waste management unit
TPH	total petroleum hydrocarbons
TPH <sub>d</sub>	TPH as diesel
TPH <sub>g</sub>	TPH as gasoline
TPH <sub>m</sub>	TPH as motor oil
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) 655 is associated with Building 655, located in the southwest quadrant of former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). The building was listed as Auto Vehicle Maintenance Shop in the 1973 list and as Field Maintenance Shop in the 1997 list, which is the last known description. Hydraulic lifts, lubrication racks, and a parts cleaning tank were observed during the 2002 visual site inspection (VSI) in support of the 2003 Environmental Baseline Survey (EBS) (NFECWS SDIEGO 2003). Figure 2 shows the plan of Building 655 and the surrounding area.

Eight locations of concern (LOCs) were associated with this site. OWS 655C was a 1,250-gallon oil/water separator (OWS) that was removed and the site closed by the Regional Water Quality Control Board (RWQCB) in a letter dated 20 February 2003. UST 655 was a 2,000 gallon diesel underground storage tank (UST) that was removed and the site closed by the Orange County Health Care Agency in a letter dated 9 December 1996. UST 655B was a 500-gallon UST that was removed in 1998 and closure by regulatory agencies was pending at the time of writing this report. PCB T88 was a transformer containing polychlorinated biphenyls (PCBs) that was replaced. PCB T88 was assigned an Environmental Condition of Property category of 1 following the EBS (NFECWS SDIEGO 2003) and no further action (NFA) was recommended. The Department of Toxic Substances Control (DTSC) and the Environmental Protection Agency (EPA) concurred with the EBS in a letter dated 25 September 2003.

RFA 170 was a drum storage area that was investigated as part of the Resource Conservation and Recovery Act Facility Assessment (RFA) (NFECWS SDIEGO 1993) and for which the DTSC concurred with the Department of the Navy's recommendation for NFA in a letter dated 23 July 1996. Solid Waste Management Unit (SWMU) 198 was a wash rack that was investigated and repaired. While NFA for SWMU 198 was approved by the RWQCB, concurrence from DTSC was pending at the time of writing this report. OWS 759A and UST 759B were associated with the wash rack (SWMU 198). Response actions have been conducted for these LOCs; however, further actions are required (Geofon 1999B).

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and VSIs conducted in 2002 in support of the 2003 EBS, and in 2004 as part of supplemental site reconnaissance:

- Floor drains were identified in the maintenance area of this building during the 2002 VSI conducted in support of this EBS. Based on the industrial nature of this shop, releases of hazardous materials or pollutants such as petroleum hydrocarbons, and volatile organic hydrocarbons from vehicle maintenance activities may have occurred to the environment. Further evaluation was recommended.
- Hydraulic lifts were observed in the north portion of the building. Oil-based hydraulic lifts have a system of pumps and pipes to supply oil to operate the lifts. These systems may leak and result in a release of petroleum hydrocarbons. No evidence of releases petroleum hydrocarbons were observed near the hydraulic lifts or equipment tie-down areas. No further investigation of these features was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

### 3. Sampling and Analysis Summary

Sampling was conducted for PRL 655 in April 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

Four soil samples were collected at locations HA1, HA2, HA3, and HA4 near the floor drains. The samples were collected 3 feet below the ground surface using hand auger equipment and analyzed for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH). The results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

### 4. Investigation Results

This section presents analytical results and discusses the results of data evaluation and risk screening.

#### 4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE

The analytical results for the samples collected at PRL 655 along with the United States EPA Region 9 or California-Modified residential preliminary remediation goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report. In addition, it was noted that methylene chloride was reported in field and laboratory quality control samples, and the sample results qualified accordingly.

#### 4.2 RESULTS EVALUATION AND RISK SCREENING

TPH was detected in the soil samples from HA1, HA2, HA3, and HA4. The major contributors to the TPH detections were from the groups of TPH associated with diesel and motor oil. However, the concentrations of TPH at locations HA1, HA2, HA3, and HA4 are not indicative of a significant release. Furthermore, the detections are assessed to be representative of the maximum concentrations in soil as the samples were collected adjacent to the nearest sources of release, i.e., the floor drains. No PRGs exist for TPH or its subcategories (i.e., TPH<sub>g</sub>, TPH<sub>d</sub>, and TPH<sub>m</sub>).

Tetrachloroethene was the only VOC detected at locations HA2 and HA3, and did not exceed its residential PRG (EPA Region 9 2004) value.

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL 655. The methodology for risk screening is presented in Section 3.3 of the Summary Report, and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (VOCs) at PRL 655 is 1.4E-09, which is below the EPA point of departure risk level of 1.0E-06. The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of VOCs is expressed as a hazard index (HI) of 1.8E-05, which is below the target HI of 1.

### 5. Conclusions and Recommendations

The primary objective of investigations conducted at PRL 655 was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data do not indicate that a significant release of hazardous substances or pollutants has occurred at PRL 655. The concentrations of TPH in the soil samples

collected near the floor drains do not indicate that a significant release of petroleum hydrocarbons has occurred via the sewer system. The detected concentrations of COPCs (VOCs) were less than their residential PRGs, and are not indicative of a release. The cancer risk at PRL 655 is less than the EPA point of departure value of 1.0E-06, and the noncancer risk is less than the target HI of 1. Based on these observations and results, no further investigation is recommended for PRL 655.

## 6. References

Bechtel. 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A – Site 24 MCAS El Toro, California, Vol. I*. March.

Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

———. 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

Geofon, Inc (Geofon). 1999A. *Underground Storage Tank Removal Report, UST 655B, Marine Corps Air Station El Toro, California*. June.

———. 1999B. *Underground Storage Tank and Oil/Water Separator Removal Report, UST 759B and OWS 759A, MCAS El Toro, California*. October.

Southwest Division, Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro, California, Installation Restoration Program Final Resource Conservation and Recovery Act (RCRA) Facility Assessment Report, Vol. I*. July

———. 1994. *MCAS El Toro, California, Installation Restoration Program, Remedial Investigation/Feasibility Study, Final Soil Gas Survey Technical Memorandum Sites 24 and 25*. October.

———. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL 655**

Analytical Group and Method <sup>a</sup>	Sample Location	HA1	HA2	HA3	HA4
	EPA ID	LJ460	LJ461	LJ462	LJ463
	Sample Depth (feet bgs)	3	3	3	3
	Sampling Technique	Hand Auger	Hand Auger	Hand Auger	Hand Auger
VOCs 8260B		X	X	X	X
TPH <sup>b</sup> 8015B		X	X	X	X

## Notes:

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

<sup>b</sup> Analytical results for TPH are reported as TPH as gasoline (TPH<sub>g</sub>), TPH as diesel (TPH<sub>d</sub>), and TPH as motor oil (TPH<sub>m</sub>).

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL 655**

Analyte	MCAS EI Toro Background Concentrations (95th Quantile) <sup>a</sup>	Residential Soil PRG <sup>b</sup>	Sample Location	PRL655-HA1	PRL655-HA2	PRL655-HA3	PRL655-HA4
			Sample Depth	3 feet bgs	3 feet bgs	3 feet bgs	3 feet bgs
			EPA ID	LJ460	LJ461	LJ462	LJ463
<b>Volatile Organic Compounds (µg/kg)</b>							
Tetrachloroethene	--	4.8E+02		4.7 U	0.6 J	0.7 J	4.5 U
<b>Total Petroleum Hydrocarbons (TPH) (mg/kg)</b>							
TPH as Diesel	--	--		36	49	65	200
TPH as Motor Oil	--	--		200	180	350	610

**Notes**

-- = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

J = indicates an estimated value

µg/kg= microgram per kilogram

mg/kg =milligram per kilogram

<sup>a</sup> Source: BNI 1996<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL 655**

COPC	MCAS El Toro Background Concentrations (95th Quantile) <sup>a</sup>	Maximum EPC (µg/kg)	Carcinogenic PRG <sup>b</sup> (µg/kg)	Noncarcinogenic PRG <sup>b</sup> (µg/kg)	Risk Corresponding to Maximum EPC			
					Carcinogenic		Noncarcinogenic	
					Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Volatile Organic Compounds (µg/kg)</b>								
Tetrachloroethene	--	0.7	4.8E+02	3.8E+04	1.4E-09	100.0%	1.8E-05	100.0%
<b>Cumulative Maximum Risk</b>					<b>1.4E-09</b>		<b>1.8E-05</b>	

**Notes:**

-- = value does not exist

µg/kg= microgram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

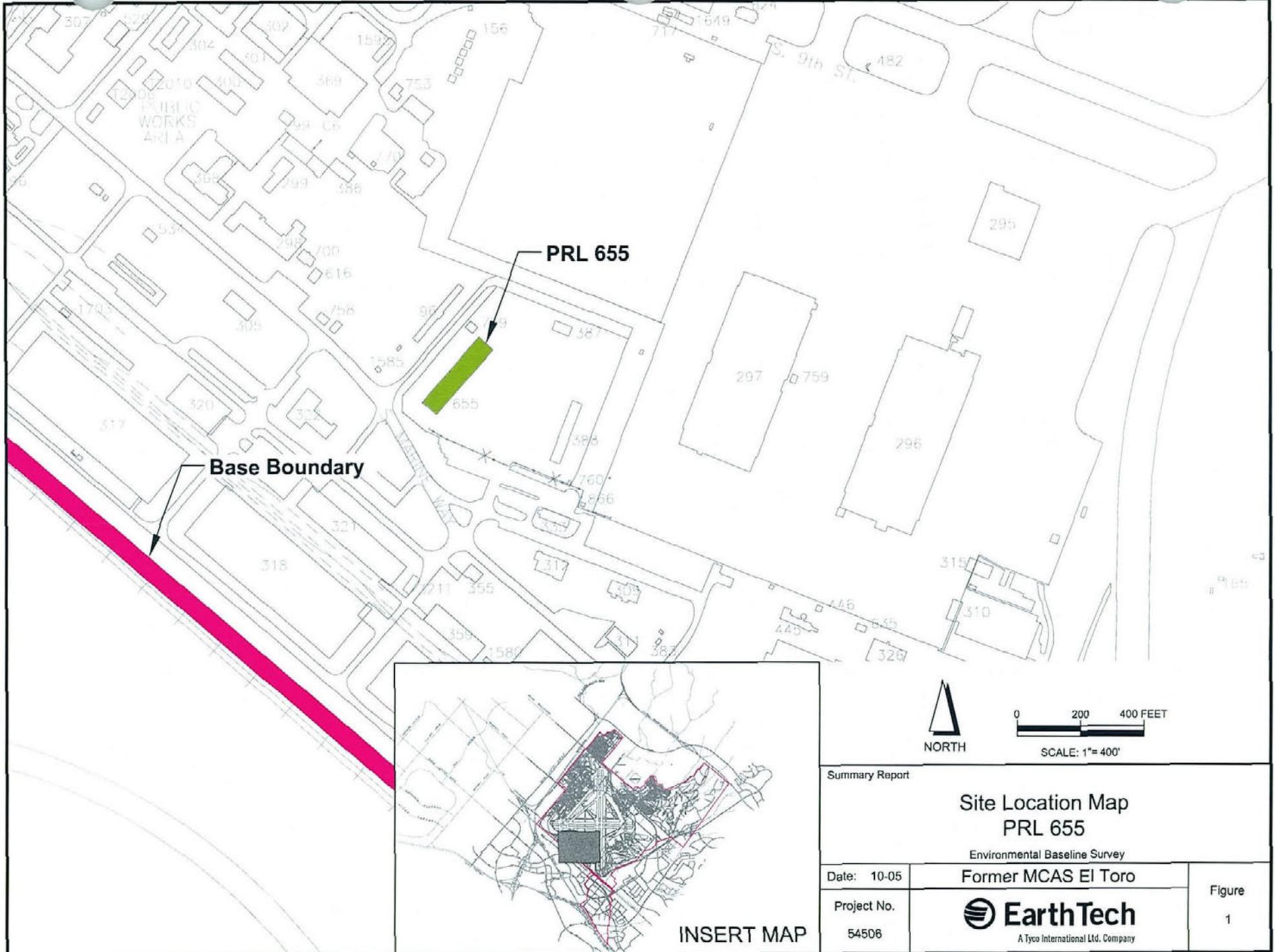
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL 655

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



PAGE NO. 16

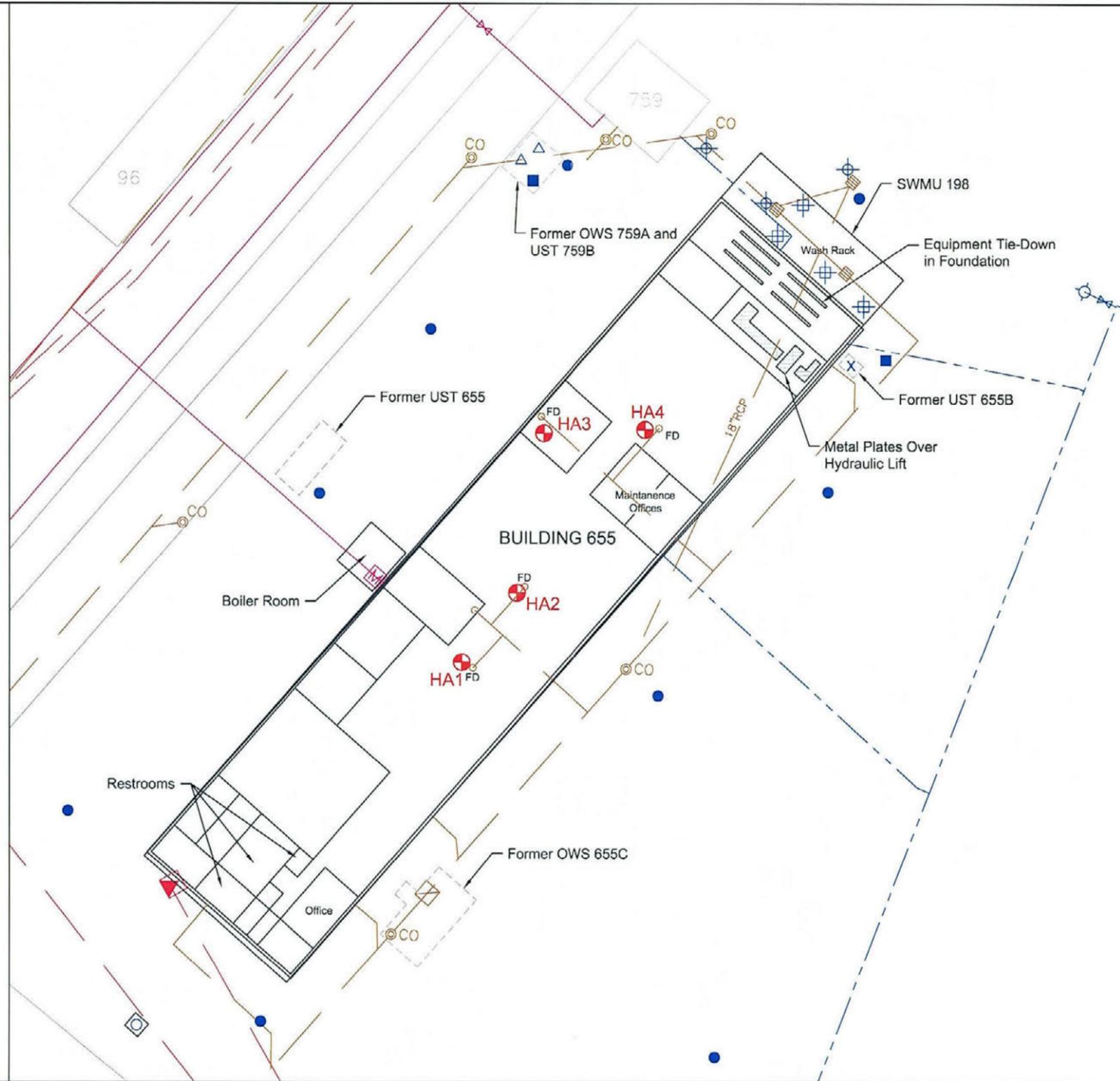
THIS PAGE IS INTENTIONALLY LEFT BLANK



Northwest Side of Building 655 with Washrack in Foreground (Facing South)

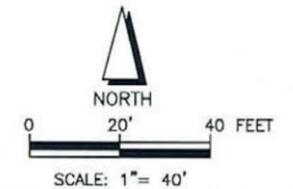


Inside of Building 655 with Floor Drain Adjacent to Seam and Crack in Concrete



**LEGEND:**

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Clean Out
- Transformer
- Fire Hydrant
- Water Valve
- Gas Meter
- Floor Drain
- Approximate Soil Boring Location (NFEC SW SDIEGO, 1993) (Sample Depth: 5 ft bgs; Analytes: VOCs, SVOCs, Pesticides, PCBs, and Metals)
- Approximate Soil Boring Location (NFEC SW SDIEGO, 1993) (Sample Depth: 25 ft bgs; Analytes: VOCs, SVOCs, Pesticides, PCBs, and Metals)
- Approximate Soil Boring Location (NFEC SW SDIEGO, 1994) (Sample Depth: 12 to 20 ft bgs; Analytes: TPH, TCE, and Freon 113)
- Phase I RI Monitoring Well (Bechtel, 1997)
- Approximate Soil Boring Location (Geofon, 1999) (Sample Depth: 14 ft bgs; Analytes: VOCs and TRPH)
- Confirmation Soil Sample Location (Geofon, 1999) (Sample Depth: 8 ft bgs; Analytes: TRPH and VOCs)
- Confirmation Soil Sample Location (Geofon, 1999) (Sample Depth: 9 to 10 ft bgs; Analytes: TRPH and VOCs)
- Soil Sample Location (Earth Tech, 2005) (Sample Depth: 3 ft bgs; Analytes: TPH and VOCs)



Note: Features and interior layout are approximate and may not be to scale

Summary Report		
<b>Site Plan</b> <b>PRL 655</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS EI Toro	
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	Figure 2

**Appendix A**  
**Validated Laboratory Analytical Data**

Validated Analytical Data for PRL 655

		EPA ID:	LJ460	LJ461	LJ462	LJ463
		Location ID:	PRL655-HA1	PRL655-HA2	PRL655-HA3	PRL655-HA4
		Sample Type:	SS	SS	SS	SS
		Sample Depth:	3	3	3	3
		Sample Date:	29-Apr-05	29-Apr-05	29-Apr-05	29-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>				
<b>Volatile Organic Compounds</b>						
Acetone	ug/kg	8260B	93 U	88 U	96 U	90 U
Benzene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Bromodichloromethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Bromoform	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Bromomethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
2-Butanone (MEK)	ug/kg	8260B	93 UJ	88 UJ	96 UJ	90 UJ
Carbon Disulfide	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Carbon Tetrachloride	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Chlorobenzene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Chlorodibromomethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Chloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Chloroform	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Chloromethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Dichlorodifluoromethane (F12)	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1-Dichloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,2-Dichloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1-Dichloroethene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
cis-1,2-Dichloroethene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
trans-1,2-Dichloroethene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,2-Dichloropropane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
cis-1,3-Dichloropropene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
trans-1,3-Dichloropropene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,2-Dichlorotetrafluoroethane	ug/kg	8260B	4.7 UJ	4.4 UJ	4.8 UJ	4.5 UJ
Ethylbenzene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
2-Hexanone	ug/kg	8260B	47 U	44 U	48 U	45 U
Methylene Chloride	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
4-Methyl-2-Pentanone	ug/kg	8260B	47 U	44 U	48 U	45 U
Methyl tert-butyl ether	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Styrene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1,1,2-Tetrachloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1,1,2,2-Tetrachloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Tetrachloroethene	ug/kg	8260B	4.7 U	0.6 J	0.7 J	4.5 U
Toluene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1,1-Trichloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1,2-Trichloroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Trichloroethene	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Trichlorofluoromethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Vinyl chloride	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Total xylenes	ug/kg	8260B	14 U	13 U	14 U	14 U
tertiary-Butyl alcohol (TBA)	ug/kg	8260B	19 UJ	18 UJ	19 UJ	18 UJ
Diisopropyl Ether	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
Ethyl-tert-butyl ether (ETBE)	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
tert-Amyl methyl ether (TAME)	ug/kg	8260B	4.7 U	4.4 U	4.8 U	4.5 U
<b>Total Petroleum Hydrocarbons</b>						
Gasoline	mg/kg	8015B GRO	9.7 U	9.4 U	9.7 U	10 U
PHC as Diesel Fuel	mg/kg	8015B DRO	36	49	65	200
Motor Oil	mg/kg	8015B DRO	200	180	350	610

		EPA ID:	LJ460	LJ461	LJ462	LJ463
		Location ID:	PRL655-HA1	PRL655-HA2	PRL655-HA3	PRL655-HA4
		Sample Type:	SS	SS	SS	SS
		Sample Depth:	3	3	3	3
		Sample Date:	29-Apr-05	29-Apr-05	29-Apr-05	29-Apr-05
Parameter	Units	Analytical Method <sup>1</sup>				
<b>Others</b>						
Moisture	%	ASTM D 2216	9.7	6.6	13.4	8.1

Notes:

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

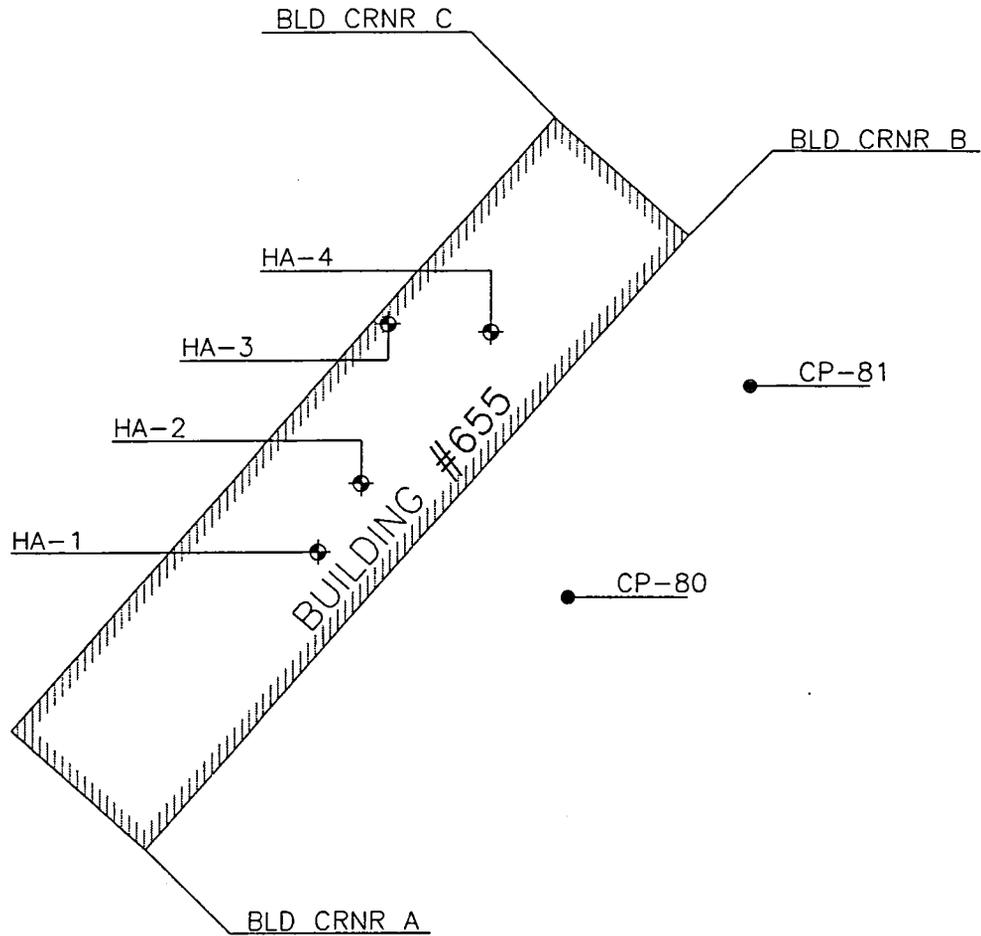
J = indicates an estimated value

UJ = indicates the compound or analyte was analyzed for but was not detected. The sample detection limit is an estimated value.

ASTM = American Society of Testing and Materials

SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #655 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2188645.80	6108787.93	
BLD CRNR B	2188851.03	6108969.86	
BLD CRNR C	2188890.83	6108924.96	
CP 80	2188729.94	6108929.81	277.57
CP 81	2188800.49	6108990.89	278.49
BLD 655-HA 1	2188745.24	6108845.93	278.74
BLD 655-HA 2	2188768.17	6108860.38	278.65
BLD 655-HA 3	2188821.49	6108869.30	278.74
BLD 655-HA 4	2188818.77	6108903.30	278.77



**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310) 327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #655

SCALE: 1"=60' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535

**Attachment 14**  
**Summary Report**  
**PRL Railroad**



**Summary Report for PRL Railroad,  
Environmental Baseline Survey**

**FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

**October 2005**

Prepared for:

**Base Realignment and Closure  
Program Management Office West  
San Diego, California**

Prepared by:

**Earth Tech, Inc.  
841 Bishop Street, Suite 500  
Honolulu, HI 96813-3920**

Prepared under:

**Naval Facilities Engineering Command  
Contract Number N62742-94-D-0048  
Contract Task Order 0104**

PAGE NO. ii

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## CONTENTS

Acronyms and Abbreviations	v
1. Background	1
2. Issues and Concerns	1
3. Sampling and Analysis Summary	2
4. Investigation Results	2
4.1 Analytical Results and Quality Assurance	2
4.2 Results Evaluation and Risk Screening	2
5. Conclusions and Recommendations	2
6. References	3

## TABLES

Table 1: Sampling and Analyses Summary – PRL Railroad	7
Table 2: Analytical Results Summary – PRL Railroad	9
Table 3: Risk Screening – PRL Railroad	11

## FIGURES

Figure 1: Site Location Map – PRL Railroad	15
Figure 2: Site Plan – PRL Railroad	17

## APPENDICES

A Validated Laboratory Analytical Data	
B Land Surveying Data	

PAGE NO. iv

THIS PAGE IS INTENTIONALLY LEFT BLANK

---

## ACRONYMS AND ABBREVIATIONS

APHO	aerial photograph anomaly
BNI	Bechtel, National, Inc.
bgs	below ground surface
COPC	chemical of potential concern
DoN	Department of the Navy
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EPA	Environmental Protection Agency
HA	hand auger
HI	hazard index
IRP	Installation Restoration Program
MCAS	Marine Corps Air Station
NFA	no further action
NFEC SW SDIEGO	Southwest Division Naval Facilities Engineering Command
PAH	polynuclear aromatic hydrocarbon
PRG	preliminary remediation goal
PRL	potential release location
RFA	Resource Conservation and Recovery Act Facility Assessment
RR	railroad
RWQCB	Regional Water Quality Control Board
SWMU	Solid Waste Management Unit
VSI	visual site inspection

## 1. Background

Potential Release Location (PRL) Railroad (RR) consists of the railroad spurs located in the western quadrant of the former Marine Corps Air Station (MCAS) El Toro, California (Figure 1). Supplies, materials, and equipment delivered by rail were offloaded in this area and stored in the buildings that line the railroad spurs. The facility description at the time of the visual site inspection (VSI) in support of the 2003 Environmental Baseline Survey (EBS) (NFECSSW SDIEGO 1995) was Rail Road Use. Figure 2 shows the plan of PRL RR and the surrounding area.

Seven locations of concern are associated with the railroad area. Solid Waste Management Unit (SWMU) 98 (Resource Conservation and Recovery Act Facility Assessment [RFA] 98) is a former wash rack west of Building 359 for which the Department of Toxic Substances Control (DTSC) concurred with the Department of the Navy's (DoN) recommendation for no further action (NFA) obtained in a letter dated 23 July 1996. SWMU 99 (Temporary Accumulation Area 359B, RFA 99) is a former drum storage area associated with Building 359 for which NFA was recommended in the 1995 EBS report. SWMU 100 (RFA 100) is a former trichloroethylene degreaser in Building 359 for which the DTSC concurrence for NFA was obtained in a letter dated 23 July 1996. SWMU 253 (RFA 253) is a former vehicle wash rack, located in the northwest corner of Building 317. Concurrence for NFA was obtained from the DTSC in a letter dated 23 July 1996, and from the Regional Water Quality Control Board (RWQCB) in a letter dated 28 September 2000. Installation Restoration Program (IRP) Site 12 is the location of two former wastewater treatment plants where extractable total petroleum hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls, and arsenic had been detected in soil samples. Further action was recommended in the 2003 EBS (NFECSSW SDEIGO 2003). IRP Site 21 (including SWMU 94) is a former chemical storage shed that was assigned NFA status in a Record of Decision dated 30 September 1997 and signed by the Environmental Protection Agency (EPA), DTSC, and RWQCB. Aerial photograph anomaly (APHO) 122 was identified on a 1955 photograph and is located northwest of Building 317, in an area that was occupied by a former loading dock, a former lumber storage area, and an abandoned railroad spur. Building 317 was used as a supply and spares warehouse and a laundry pickup location. APHO 122 is also located near the boundary of IRP Site 12 (Sludge Drying Beds). Further investigation of the area encompassed by APHO 122 is currently being addressed by the DoN.

## 2. Issues and Concerns

The following issues and concerns associated with this PRL were identified during the records review, previous investigations, and VSIs conducted in 2002 in support of the 2003 EBS, and in 2004 as part of supplemental site reconnaissance:

- The railroad spurs have been identified as a PRL due to the potential for releases of hazardous substances and pollutants during loading and unloading operations as well as the possibility of a release of liquids from train engines. Railroad ties are typically treated with creosote, which is known to contain polychlorinated biphenyls. Additionally, herbicides were applied along railroad grades for weed control. It is likely these substances may be present in the soil. Further investigation was recommended to determine if releases of polynuclear aromatic hydrocarbon (PAH)-containing substances may have occurred.
- Two areas between Buildings 317 and 318 appeared to be stained, suggesting a potential spill occurred on the railroad track. Further investigation was recommended.

A sampling program was proposed to further investigate the issues identified and assess whether a release to the environment of hazardous substances or pollutants has occurred. A summary of soil sampling activities is presented in Section 3, and the results are presented in Section 4.

### **3. Sampling and Analysis Summary**

Sampling was conducted for PRL RR in May 2005. The sample locations are shown on Figure 2, and a summary of sampling and analyses is provided in Table 1.

Seven soil samples were collected at locations HA1, HA2, HA3, HA4, HA5, HA6, and HA7 to assess if releases to the environment have occurred in association with the railroad activity. Samples were collected using hand auger (HA) equipment at 2 feet below ground surface (bgs) and analyzed for PAHs. Soil Sample (HA2) was collected along the railroad track between Buildings 317 and 318 to assess the potential spill area using HA equipment at 2 feet bgs and analyzed for PAHs.

### **4. Investigation Results**

This section presents analytical results and discusses the results of data evaluation and risk screening.

#### **4.1 ANALYTICAL RESULTS AND QUALITY ASSURANCE**

The analytical results for the samples collected at PRL RR along with the United States EPA Region 9 or California-Modified residential preliminary residential goals (PRGs) are presented in Table 2 (EPA 2004). Appendix A presents the validated laboratory analytical data and Appendix B presents the land surveying data.

Some results were qualified as estimated in the data validation process. These qualifications do not affect the findings or conclusions of this report.

#### **4.2 RESULTS EVALUATION AND RISK SCREENING**

None of the PAHs exceeded their residential PRGs (EPA 2004) or former MCAS El Toro anthropogenic reference levels (BNI 1996).

Risk screening was performed to evaluate risks associated with potential exposures to detected analytes in the soil at PRL RR. The methodology for risk screening is presented in Section 3.3 of the Summary Report and results are presented in Table 3.

The cumulative maximum carcinogenic risk due to potential exposure to maximum detected concentrations of chemicals of potential concern (COPCs) (detected analytes) at PRL RR is  $3.5E-07$ , which is below the EPA point of departure risk level of  $1E-06$ . The cumulative maximum noncancer hazard associated with potential exposure to maximum detected concentrations of COPCs is expressed as a hazard index (HI) of  $1.2E-05$ , which is below the target HI of 1.

### **5. Conclusions and Recommendations**

The primary objective of investigations conducted at PRL RR was to assess whether a release of hazardous substances or pollutants into the environment has occurred. A review of available records, VSIs, and soil sampling analytical data indicates that no significant release of hazardous substances or pollutants has occurred at PRL RR. The detected concentrations of all COPCs (PAHs) were less than their residential PRG levels, and are not indicative of a release. The cancer risk at PRL RR is less than the EPA point of departure value of  $1E-06$ , and the noncancer risk less than the

target HI of 1. Based on these results and observations, no further investigation is recommended for PRL RR.

## 6. References

Bechtel National, Inc. (BNI). 1995. *Final Workplan Phase II Remedial Investigation/Feasibility Study MCAS El Toro, California*. July.

\_\_\_\_\_. 1996. *Final Report, Anthropogenic PAH Reference-Level Study, MCAS El Toro, California*. San Diego, California. July.

\_\_\_\_\_. 1997. *Draft Final Phase II Remedial Investigation Report Operable Unit 2A – Site 24 MCAS El Toro, California, Vol. I*. March.

Environmental Protection Agency (EPA), United States. 2004. *SW-846 On-Line, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*.  
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>. Office of Solid Waste.

\_\_\_\_\_. 2004. *EPA Region 9 PRGs [Preliminary Remediation Goals] Tables*. San Francisco, CA. October.

GeoSyntec Consultants, Inc. (GeoSyntec). 2001. *Final Report: Environmental Site Assessment for the Former MCAS El Toro*. Huntington Beach, CA.

Southwest Division Naval Facilities Engineering Command (NFEC SW SDIEGO). 1993. *MCAS El Toro, CA Installation Restoration Program Final RCRA Facility Assessment Report*. July.

\_\_\_\_\_. 1995. *MCAS El Toro El Toro, California Installation Restoration Program Final Environmental Baseline Survey Report*. April.

\_\_\_\_\_. 2003. *Final Environmental Baseline Survey, Former Marine Corps Air Station, El Toro, California*. San Diego, CA. September.

PAGE NO. 4

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Tables

PAGE NO. 6

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 1: Sampling and Analyses Summary – PRL Railroad**

Analytical Group and Method <sup>a</sup>	Sample Location	HA1	HA2	HA3	HA4	HA5	HA6	HA7
	EPA ID	LJ523	LJ524	LJ540	LJ525	LJ537	LJ538	LJ539
	Sample Depth (feet bgs)	2	2	2	2	2	2	2
	Sampling Technique	HA						
PAH 8270-SIM		X	X	X	X	X	X	X

## Notes:

SIM = selective ion monitoring

X = analysis was performed for the specified analyte

<sup>a</sup> Analysis was in general accordance with the listed methods provided in EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

PAGE NO. 8

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 2: Analytical Results Summary - PRL Railroad**

Analyte	MCAS El Toro		Residential Soil PRG <sup>b</sup>	Sample Location	PRL RR-HA1	PRL RR-HA2	PRL RR-HA3	PRL RR-HA4	PRL RR-HA5	PRL RR-HA6	PRL RR-HA7
	Anthropogenic Reference Level <sup>a</sup>			Sample Depth	2 feet bgs						
	Maximum Value	95% UCL		EPA ID	LJ523	LJ524	LJ540	LJ525	LJ537	LJ538	LJ539
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>											
Acenaphthylene	4	—	—		30 U	31 U	9 J	31 U	29 U	28 U	27 U
Anthracene	8	—	2.2E+07		30 U	31 U	16 J	31 U	2 J	28 U	0.9 J
Benzo(a)anthracene	70	22	6.2E+02		30 U	31 U	6 J	31 U	4 J	28 U	2 J
Benzo(a)pyrene	110	27	6.2E+01		30 U	31 U	14 J	31 U	4 J	28 U	2 J
Benzo(b)fluoranthene	95	28	6.2E+02		30 U	31 U	25 J	31 U	5 J	28 U	3 J
Benzo(g,h,i)perylene	95	29	—		30 U	31 U	20 J	31 U	2 J	28 U	2 J
Benzo(k)fluoranthene <sup>c</sup>	100	24	3.8E+02		30 U	31 U	8 J	31 U	3 J	28 U	2 J
Chrysene <sup>c</sup>	100	31	3.8E+03		30 U	31 U	12 J	31 U	6 J	28 U	4 J
Dibenz(a,h)anthracene	30	8	6.2E+01		30 U	31 U	2 J	31 U	29 U	28 U	27 U
Fluoranthene	150	45	2.3E+06		30 U	31 U	11 J	31 U	8 J	28 U	6 J
Indeno(1,2,3-cd)pyrene	84	21	6.2E+02		30 U	31 U	14 J	31 U	1 J	28 U	2 J
Phenanthrene	65	18	—		30 U	31 U	3 J	31 U	5 J	28 U	2 J
Pyrene	140	41	2.3E+06		30 U	31 U	14 J	31 U	11 J	28 U	5 J

**Notes**

— = value does not exist

bgs = below ground surface

U= indicates the compound or analyte was analyzed for but was not detected at or above the stated limit

J = indicates an estimated value

µg/kg= microgram per kilogram

<sup>a</sup> Source: BNI 1996

<sup>b</sup> Analytical results were compared to EPA Region 9 PRGs (2004)

<sup>c</sup> Analytical results for benzo(k)fluoranthene and chrysene were compared to Cal-modified PRGs (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 10

THIS PAGE IS INTENTIONALLY LEFT BLANK

**Table 3: Risk Screening Results - PRL Rail Road**

COPC	MCAS El Toro Anthropogenic Reference Level <sup>a</sup>		Maximum EPC	Carcinogenic PRG <sup>b</sup>	Noncarcinogenic PRG <sup>b</sup>	Risk Corresponding to Maximum EPC			
	Maximum Value	95% UCL				Carcinogenic		Noncarcinogenic	
						Excess Cancer Risk <sup>c</sup>	Percent Contribution to Cancer Risk <sup>d</sup>	HI <sup>e</sup>	Percent Contribution to Noncancer Risk <sup>d</sup>
<b>Polynuclear Aromatic Hydrocarbons (µg/kg)</b>									
Acenaphthylene	4	--	9	--	--	--	--	--	--
Anthracene	8	--	16	--	2.2E+07	--	--	7.3E-07	6.3%
Benzo(a)anthracene	70	22	6	6.2E+02	--	9.7E-09	2.7%	--	--
Benzo(a)pyrene	110	27	14	6.2E+01	--	2.3E-07	63.6%	--	--
Benzo(b)fluoranthene	95	28	25	6.2E+02	--	4.0E-08	11.4%	--	--
Benzo(g,h,i)perylene	95	29	20	--	--	--	--	--	--
Benzo(k)fluoranthene <sup>f</sup>	100	24	8	3.8E+02	--	2.1E-08	6.0%	--	--
Chrysene <sup>f</sup>	100	31	12	3.8E+03	--	3.2E-09	0.9%	--	--
Dibenz(a,h)anthracene	30	8	2	6.2E+01	--	3.2E-08	9.1%	--	--
Fluoranthene	150	45	11	--	2.3E+06	--	--	4.8E-06	41.4%
Indeno(1,2,3-cd)pyrene	84	21	14	6.2E+02	--	2.3E-08	6.4%	--	--
Phenanthrene	65	18	5	--	--	--	--	--	--
Pyrene	140	41	14	--	2.3E+06	--	--	6.0E-06	52.2%
<b>Cumulative Maximum Risk</b>						<b>3.5E-07</b>		<b>1.2E-05</b>	

**Notes:**

-- = value does not exist

µg/kg= microgram per kilogram

EPC = exposure point concentration

<sup>a</sup> Source: BNI 1996

<sup>b</sup> U.S. EPA Region 9 PRGs (2004)

<sup>c</sup> Excess cancer risk = 1E-06 x (Maximum EPC/Carcinogenic PRG)

<sup>d</sup> With respect to cumulative excess cancer risk or hazard index

<sup>e</sup> HI = Maximum EPC / Noncarcinogenic PRG

<sup>f</sup> Analytical results for benzo(k)fluoranthene and chrysene were compared to Cal-modified PRGs (2004) because they are significantly more protective than the corresponding EPA Region 9 PRGs

PAGE NO. 12

THIS PAGE IS INTENTIONALLY LEFT BLANK

## Figures

PAGE NO. 14

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

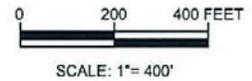
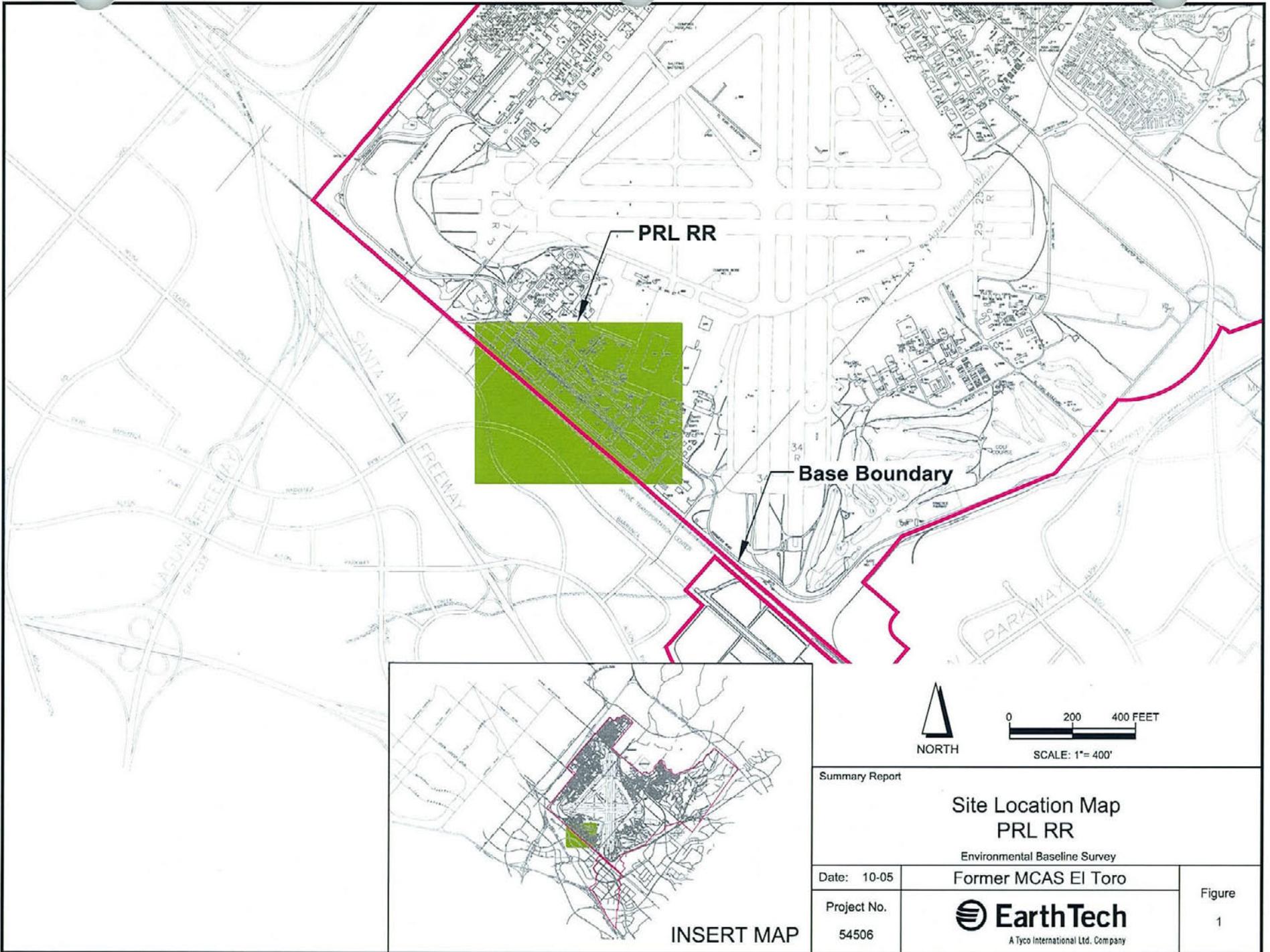
PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FIGURE 1 – SITE LOCATION MAP  
PRL RR

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)



Summary Report		
<b>Site Location Map</b> <b>PRL RR</b> Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	
Project No. 54506	 <b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	Figure 1

INSERT MAP

PAGE NO. 16

THIS PAGE IS INTENTIONALLY LEFT BLANK



Building 317 and PRL Railroad  
in Lower Right Hand Corner



Drain Located Northeast of Railroad



Drains Located in Truck Loading Dock

**LEGEND:**

- Sanitary Sewer
- Water Line
- Natural Gas Line
- Electrical Line
- Carve-out Boundary
  
- HA1 Soil Sample Location (Earth Tech, 2005)  
(Sample Depth: 2 ft bgs; Analytes: PAHs)
- CO Clean Out
- MH Manhole
- Transformer
- Fire Hydrant
- Water Valve
- Gas Meter

**PREVIOUS INVESTIGATIONS OF LOCs:**

**SWMU 98** Former Vehicle Wash Rack (Bechtel, 1995)  
Hand Auger Samples (NFEC SW SDIEGO, 1993)  
(Sample Depth: 2 and 5 ft bgs; Analytes: VOCs, SVOCs, Pesticides, PCBs, and Metals)

**SWMU 99** Former Drum Storage Area (Bechtel, 1995)  
Soil Boring Samples (NFEC SW SDIEGO, 1993)  
(Sample Depth: 5 to 25 ft bgs; Analytes: VOCs, SVOCs, Pesticides, PCBs, and Metals)

**SWMU 100** Former TCE Degreaser (Bechtel, 1995)  
Soil Boring Samples (NFEC SW SDIEGO, 1993)  
(Sample Depth: 10 to 60 ft bgs; Analytes: VOCs, SVOCs, Pesticides, PCBs, and Metals)

**SWMU 253** Former Vehicle Wash Rack (Bechtel, 1995)  
Hand Auger Samples (NFEC SW SDIEGO, 1993)  
(Sample Depth: 2 and 5 ft bgs; Analytes: VOCs, SVOCs, Pesticides, PCBs, and Metals)

**IRP Site 8**  
IRP Site 8 was used as a storage area for containerized liquids, scrap, and salvage material from MCAS El Toro and MCAS Tustin. Investigations conducted at IRP Site 8 include Phase I and Phase II (BNI 1996) remedial investigations, where soil samples were collected. TPH was detected at 15 to 20 feet bgs. PCBs and PAHs were detected in shallow soil samples. Further action is required at the site.

**IRP Site 12**  
IRP Site 12 consisted of two former wastewater treatment plants. The Phase I Remedial Investigation (Jacobs, 1993) characterized the soil surface and subsurface as well as groundwater for any contaminants. Soil samples were analyzed for VOCs, SVOCs, Herbicides, Pesticides, PCBs, Metals, and TPH. Groundwater samples were analyzed for VOCs, SVOCs, TRPH, TPH, Metals, Pesticides, PCBs, and General Chemistry.

**IRP Site 21**  
IRP Site 21 was used for the storage of drummed materials since approximately 1946. Several investigations led to the characterization of the soil surface and subsurface as well as groundwater for impacts to the environment (NFEC SW SDIEGO, 1993). Soil samples were analyzed for VOCs, SVOCs, Metals, Herbicides, Pesticides, PCBs, and TPH. Groundwater samples were analyzed for VOCs, Metals, and General Chemistry.

Summary Report		
<b>Site Plan</b>		
<b>PRL RR</b>		
Environmental Baseline Survey		
Date:	10-05	Former MCAS El Toro
Project No.	54506	 A Tyco International Ltd. Company
		Figure 2 Sheet 1 of 2

PAGE NO. 18

THIS PAGE IS INTENTIONALLY LEFT BLANK

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE  
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

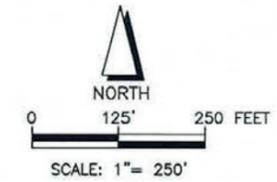
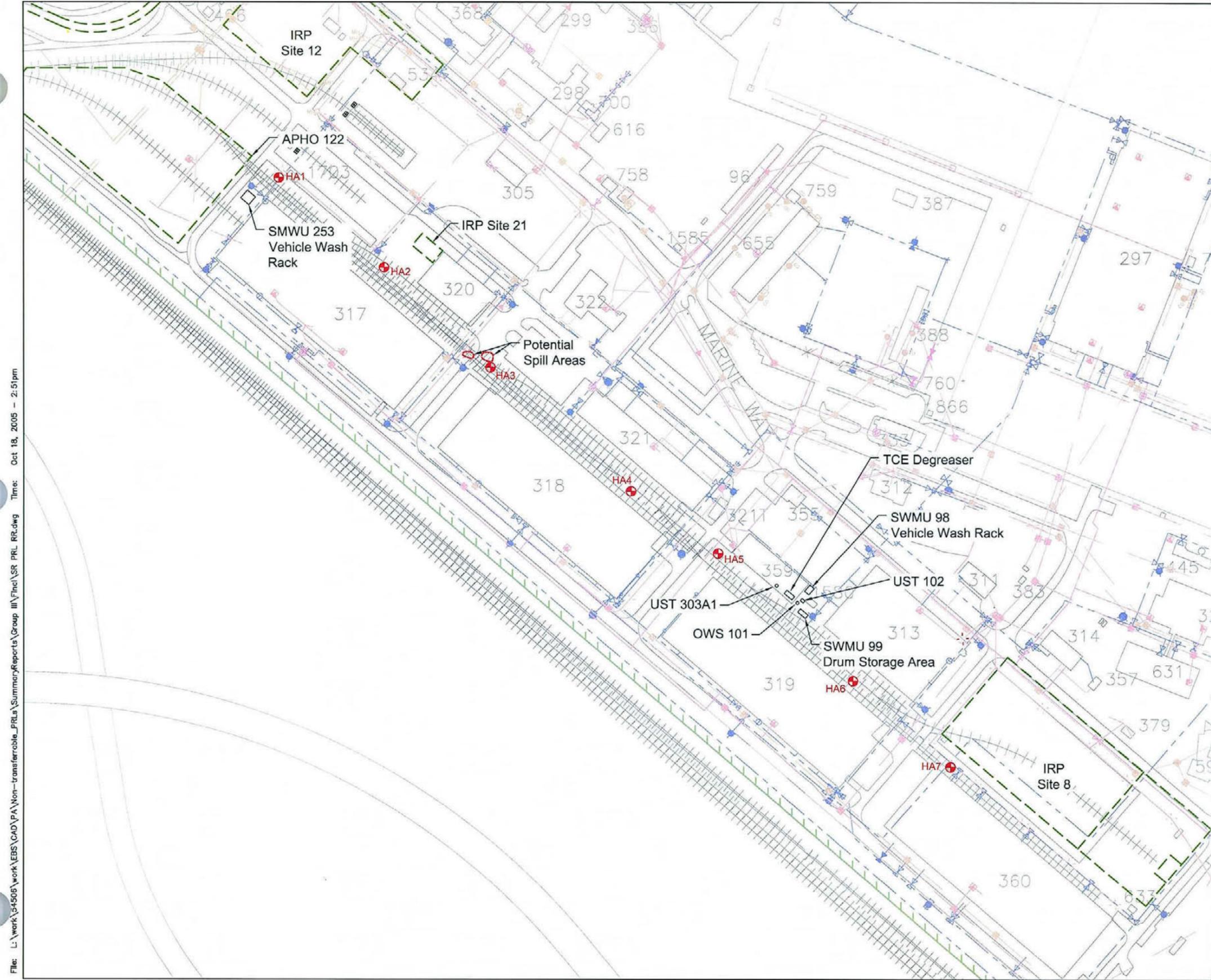
FIGURE 2 – SITE PLAN  
PRL RR  
SHEET 2 OF 2

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER  
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST  
1220 PACIFIC HIGHWAY  
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280  
E-MAIL: [diane.silva@navy.mil](mailto:diane.silva@navy.mil)

SENSITIVE



Note: Features and interior layout are approximate and may not be to scale

File: L:\work\34506\work\EB5\CAD\PA\Non-transferable\_PRLs\SummaryReports\Group III\Final\SR\_PRL\_RR.dwg Time: Oct 18, 2005 - 2:51pm

Summary Report		
<b>Site Plan</b> <b>PRL RR</b>		
Environmental Baseline Survey		
Date: 10-05	Former MCAS El Toro	Figure
Project No. 54506	<b>EarthTech</b> <small>A Tyco International Ltd. Company</small>	2
		Sheet 2 of 2

SENSITIVE

**Appendix A**  
**Validated Laboratory Analytical Data**

**Validated Analytical Data for PRL RR**

		EPA ID:	LJ523	LJ524	LJ540	LJ525	LJ537	LJ538	LJ539
		Location ID:	PRLRR-HA1	PRLRR-HA2	PRLRR-HA3	PRLRR-HA4	PRLRR-HA5	PRLRR-HA6	PRLRR-HA7
		Sample Type:	SS						
		Sample Depth:	2	2	2	2	2	2	2
		Sample Date:	03-May-05						
Parameter	Units	Analytical Method <sup>1</sup>							
<b>Polynuclear Aromatic Hydrocarbons</b>									
Acenaphthene	ug/kg	PAH-SIM	30 U	31 U	26 U	31 U	29 U	28 U	27 U
Acenaphthylene	ug/kg	PAH-SIM	30 U	31 U	9 J	31 U	29 U	28 U	27 U
Anthracene	ug/kg	PAH-SIM	30 U	31 U	16 J	31 U	2 J	28 U	0.9 J
Benz(a)anthracene	ug/kg	PAH-SIM	30 U	31 U	6 J	31 U	4 J	28 U	2 J
Benzo(a)pyrene	ug/kg	PAH-SIM	30 U	31 U	14 J	31 U	4 J	28 U	2 J
Benzo(b)fluoranthene	ug/kg	PAH-SIM	30 U	31 U	25 J	31 U	5 J	28 U	3 J
Benzo(g,h,i)perylene	ug/kg	PAH-SIM	30 U	31 U	20 J	31 U	2 J	28 U	2 J
Benzo(k)fluoranthene	ug/kg	PAH-SIM	30 U	31 U	8 J	31 U	3 J	28 U	2 J
Chrysene	ug/kg	PAH-SIM	30 U	31 U	12 J	31 U	6 J	28 U	4 J
Dibenz(a,h)anthracene	ug/kg	PAH-SIM	30 U	31 U	2 J	31 U	29 U	28 U	27 U
Fluoranthene	ug/kg	PAH-SIM	30 U	31 U	11 J	31 U	8 J	28 U	6 J
Fluorene	ug/kg	PAH-SIM	30 U	31 U	26 U	31 U	29 U	28 U	27 U
Indeno(1,2,3-Cd)Pyrene	ug/kg	PAH-SIM	30 U	31 U	14 J	31 U	1 J	28 U	2 J
2-Methylnaphthalene	ug/kg	PAH-SIM	30 U	31 U	26 U	31 U	29 U	28 U	27 U
Naphthalene	ug/kg	PAH-SIM	30 U	31 U	26 U	31 U	29 U	28 U	27 U
Phenanthrene	ug/kg	PAH-SIM	30 U	31 U	3 J	31 U	5 J	28 U	2 J
Pyrene	ug/kg	PAH-SIM	30 U	31 U	14 J	31 U	11 J	28 U	5 J
<b>Others</b>									
Moisture	%	ASTM D 2216	16.9	20.3	5.6	20.1	15.1	9.3	6.7

**Notes:**

<sup>1</sup> = Environmental Protection Agency Method unless otherwise noted.

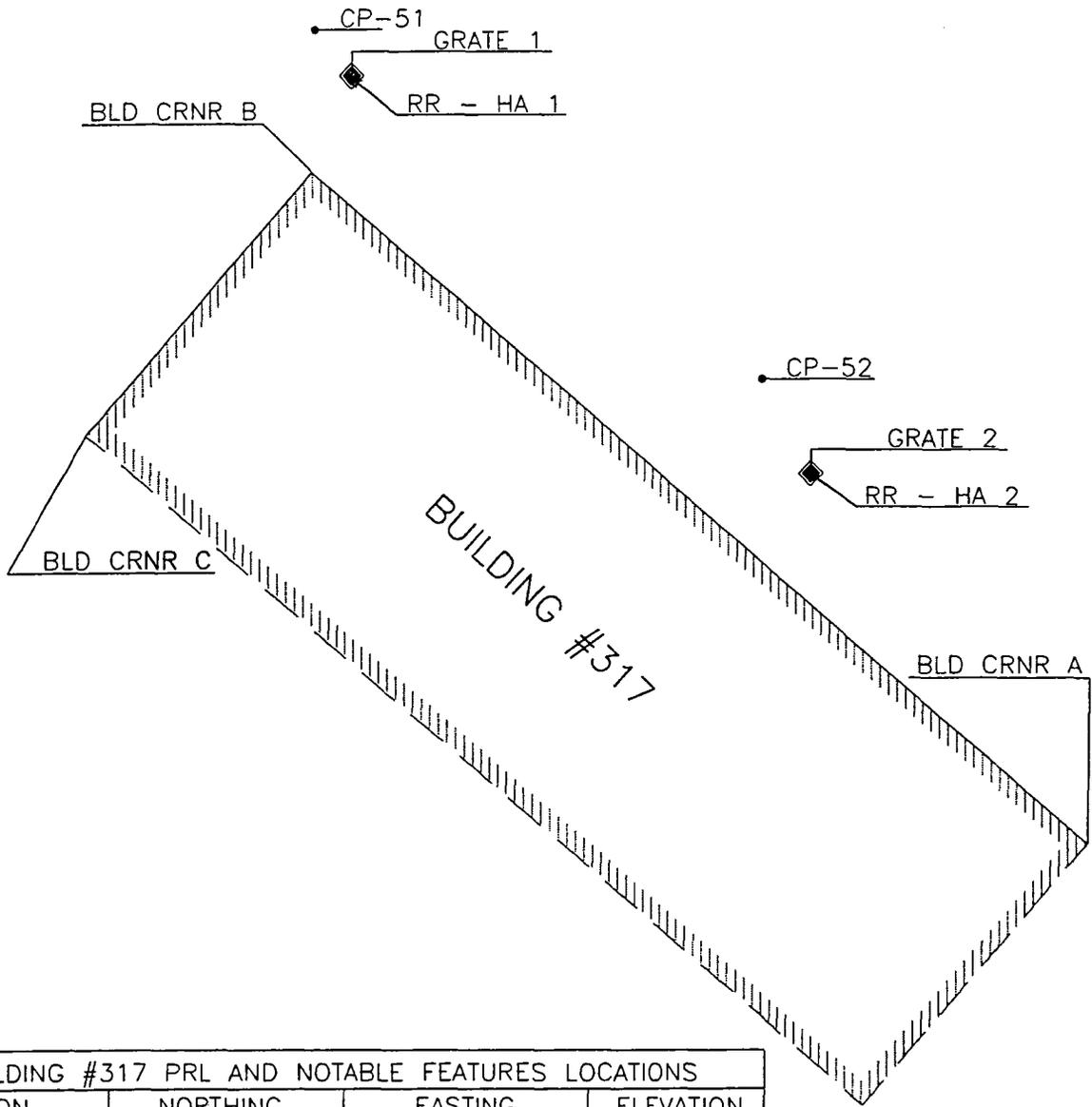
U = indicates the compound or analyte was analyzed for but was not detected at or above the stated limit.

J = indicates an estimated value

ASTM = American Society of Testing and Materials

SS = Soil Sample

**Appendix B**  
**Land Surveying Data**



BUILDING #317 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2188526.36	6108016.51	
BLD CRNR B	2188918.95	6107559.63	
BLD CRNR C	2188765.42	6107427.71	
CP 51	2189002.43	6107561.35	255.52
CP 52	2188797.94	6107824.73	257.19
RR-HA 1	2188972.80	6107585.30	252.90
RR-GRATE 1	2188975.25	6107583.17	253.11
RR-HA 2	2188741.19	6107855.66	255.26
RR-GRATE 2	2188742.63	6107853.99	255.26

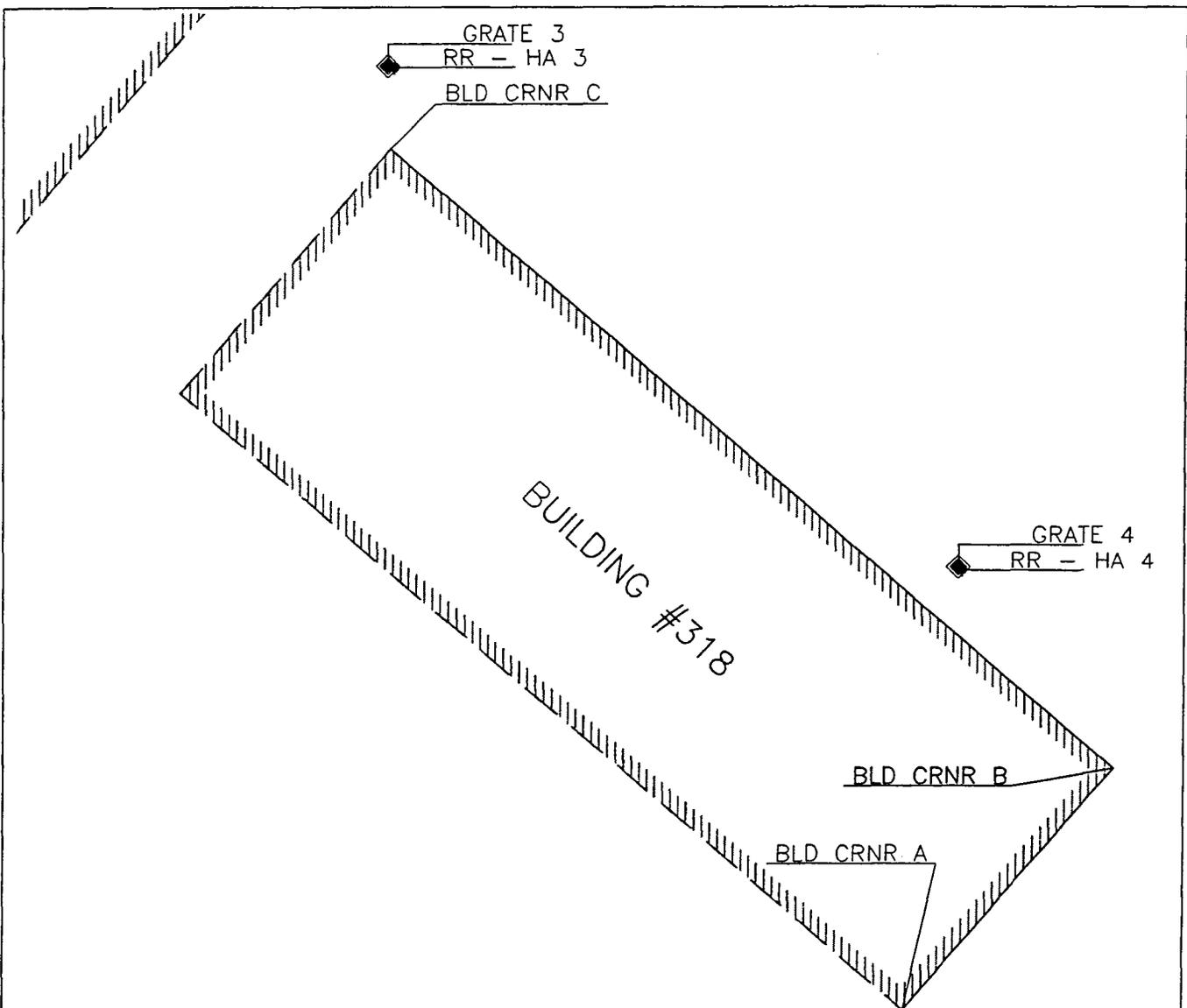


**DCA** CIVIL ENGINEERING GROUP

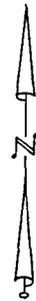
17625 Crenshaw Blvd., Ste. 300  
 Torrance, California 90504  
 Tel: (310) 327-0018  
 Fax: (310) 327-0175  
 www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
 BUILDING #317 (RAILROAD)

SCALE: 1"=100'      DATE: 06-06-05  
 BY: JCL      JOB NO.: 04-1058-2227.000-535



BUILDING #318 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2187884.20	6108453.58	
BLD CRNR B	2188037.65	6108585.52	
BLD CRNR C	2188430.40	6108128.37	
RR-HA 3	2188482.10	6108130.59	258.07
RR-GRATE 3	2188482.83	6108126.60	258.47
RR-HA 4	2188162.86	6108490.33	259.62
RR-GRATE 4	2188164.84	6108487.97	259.72



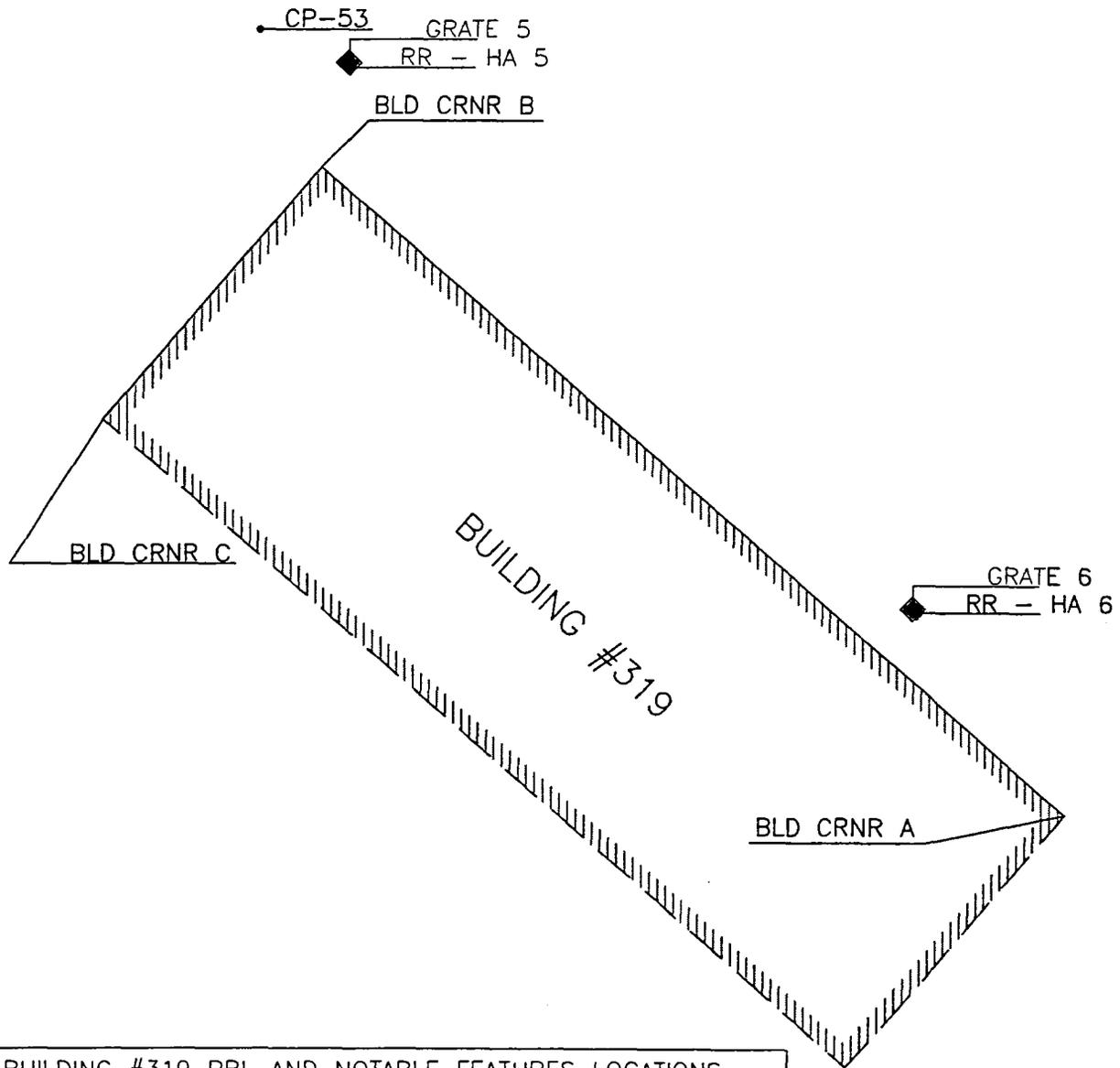
**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310)327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #318 (RAILROAD)

SCALE: 1" = 100' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535



BUILDING #319 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2187548.87	6109154.27	
BLD CRNR B	2187941.29	6108697.38	
BLD CRNR C	2187788.07	6108565.50	
CP 53	2188025.03	6108659.47	262.85
RR-HA 5	2188001.81	6108714.40	260.77
RR-GRATE 5	2188004.60	6108713.76	260.91
RR-HA 6	2187671.71	6109062.06	262.95
RR-GRATE 6	2187673.83	6109059.48	263.26



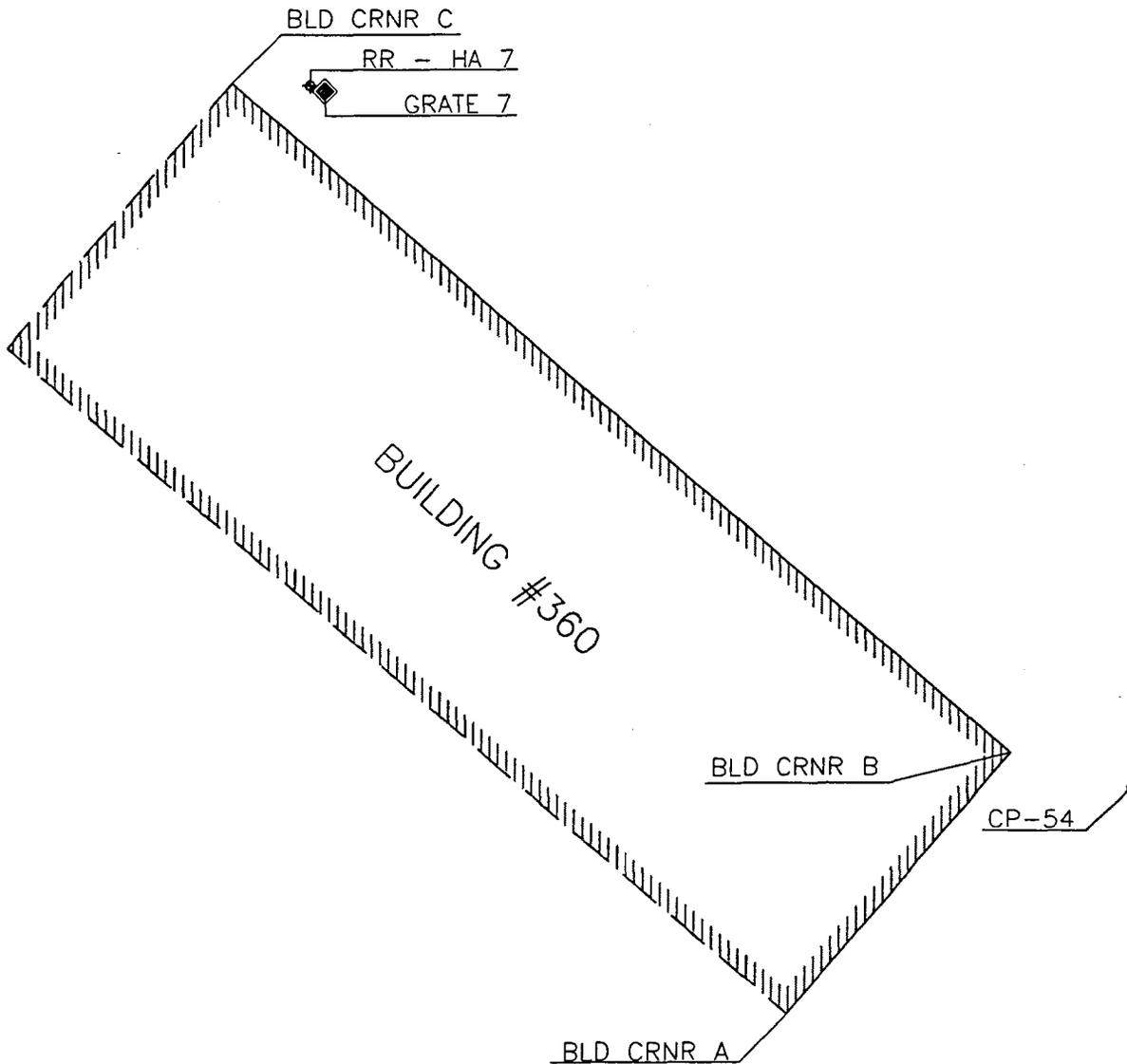
**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310) 327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #319 (RAILROAD)

SCALE: 1"=100' DATE: 06-06-05

BY: JCL JOB NO.: 04-1058-2227.000-535



BUILDING #360 PRL AND NOTABLE FEATURES LOCATIONS			
STATION	NORTHING	EASTING	ELEVATION
BLD CRNR A	2186906.03	6109594.45	
BLD CRNR B	2187058.41	6109725.33	
BLD CRNR C	2187451.24	6109268.08	
CP 54	2187037.76	6109796.38	268.86
RR-HA 7	2187449.73	6109313.44	264.08
RR-GRATE 7	2187446.32	6109322.27	263.89



**DCA** CIVIL  
ENGINEERING  
GROUP

17625 Crenshaw Blvd., Ste. 300  
Torrance, California 90504  
Tel: (310) 327-0018  
Fax: (310) 327-0175  
www.dcacivileng.com

POTENTIAL RELEASE LOCATION SKETCH  
BUILDING #360 (RAILROAD)

SCALE: 1" = 100'      DATE: 06-06-05

BY: JCL      JOB NO.: 04-1058-2227.000-535